

# SCOTTISH HOSPITALS INQUIRY

## **Bundle of documents for Oral hearings commencing from 19 August 2024 in relation to the Queen Elizabeth University Hospital and the Royal Hospital for Children, Glasgow**

### **Bundle 27 - Miscellaneous Documents Volume 10**

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## Review of *Cryptococcus* spp cases diagnosed in NHS Greater Glasgow and Clyde laboratories

### Background

Two cases of *Cryptococcus neoformans* were detected in inpatients at Queen Elizabeth University Hospital within 17 days in late [REDACTED] 2018. Given the unusual nature of the pathogen, and time, place, person links between the cases, the public health protection unit undertook to review case of *Cryptococcus* in the Greater Glasgow and Clyde area.

In the absence of specific criteria for fungal infection, in this document hospital acquired (HAI) and healthcare associated (HCAI) infections definitions used are from the Health Protection Scotland SAB guidance.

Due to small numbers and inclusion of clinical details, there is a possibility of deductive disclosure, and therefore this document should not be shared outwith the IMT

### Search Strategy

ECOSS, the national laboratory data system, was interrogated for all positive results for *Cryptococcus* spp. for all specimen types, detected in GRI, SGH or RAH microbiology labs, for the 10 year period between January 2009 and December 2018

### Results

Unless otherwise stated, results are for *Cryptococcus neoformans*. Due to the small numbers, data should be interpreted with caution.

A total of 37 unique patients were identified.

The following exclusions were applied:

- 11 faecal samples, where patient had diagnosis of cryptosporidiosis (an unrelated parasitic gastrointestinal infection)
- 6 cases where the sample was referred from another Board area
- 1 case where the diagnosis of *Cryptococcus albicans* was later changed to *Candida albicans* following reference lab testing.

Limited additional information available in the electronic case record for some patients.

### Summary (n=19)

Cases were predominantly male (14/19, 74%), and median age was 53 (range 1 year to 80 years)

Specimens were predominantly from normally sterile sites – blood and/or CSF (some cases had positive results from more than 1 sample type) – with one case having positive sample from peritoneal dialysis fluid (described further below). Two cases had samples from non sterile site – mouth swab, wound tissue.

Mortality in this patient group was 32% at 30 days and 47% at 60 days, though only a proportion of these deaths are attributable to *Cryptococcus* infection.

## Epicurve

The chart below demonstrates that distribution of cases over time.

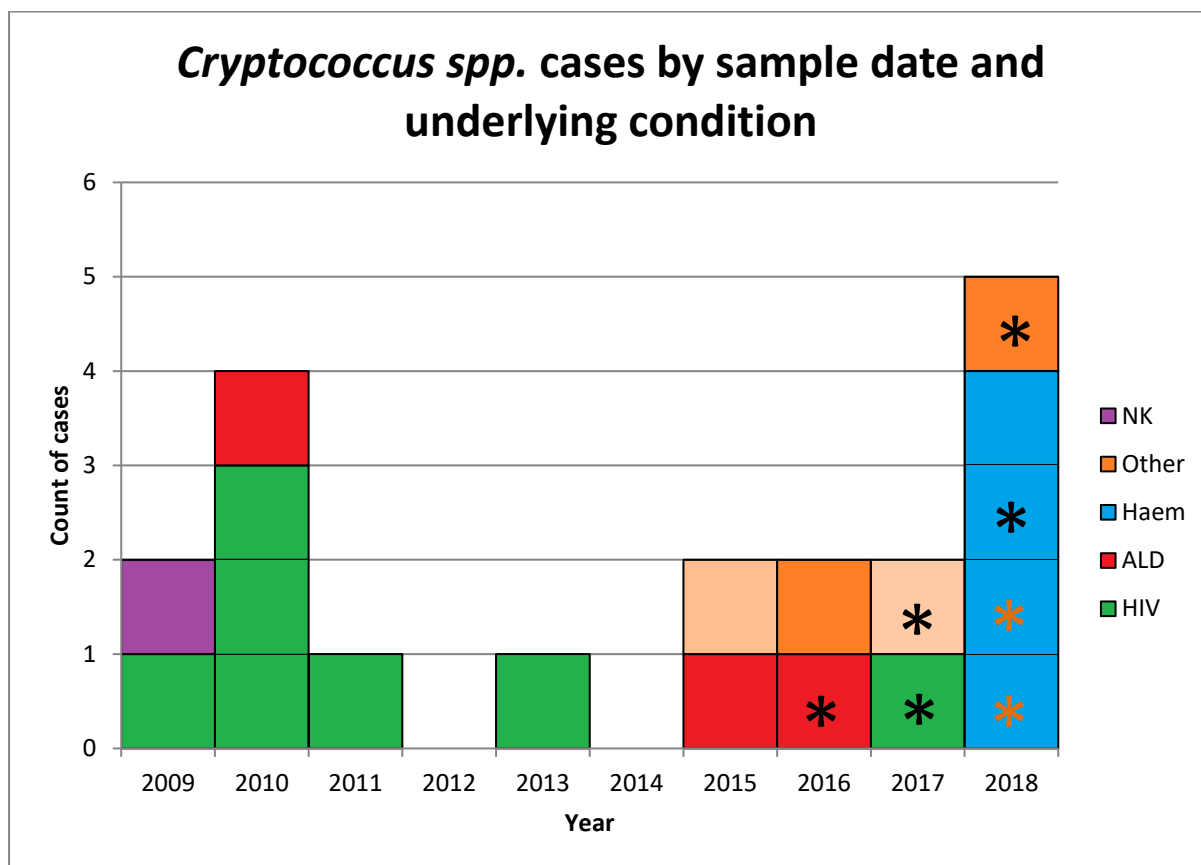


Figure 1. Each box=1 case. Lighter shaded boxes indicate species other than *C. neoformans*. Cases marked '\*' meet definition for hospital acquired or healthcare associated infections. See Text for details

## Case details

Two patients met criteria for HAI. Five patients meet criteria for HCAI: 3 had outpatient/community venepuncture; 2 had more significant invasive interventions.

### HIV

*Cryptococcus* infection is a well documented infection in patients with HIV. One patient had venepuncture within 30 days of sample date, meeting the HCAI definition.

The two HAI cases with underlying [REDACTED] are well known to the IMT and are not further described here. They are the only two cases with recent inpatient management in QEUH/RHC.

The other two [REDACTED] cases both had myeloproliferative disorders. Both had recently ceased treatment with hydroxyurea. The regular care of both patients was at GGC sites other than QEUH

The first of these patients had gone on to develop AML shortly prior to their *Cryptococcus* diagnosis, and had a bone marrow aspirate 24 days prior to sample date, meeting the HCAI definition.

The other patient had a cardiac procedure (angiography) at QEUH approximately four months prior to sample date.

### *Alcoholic liver disease*

One patient meets HCAI criteria due to venepuncture within 30 days prior to sample date. No other relevant information for these patients in electronic record.

### *Other*

- Paediatric renal patient, awaiting transplant, on peritoneal dialysis. Recurrent peritonitis. *C. Curvatis* one of four organisms isolated from peritoneal fluid during one of the admissions for peritonitis. Meets HCAI definition.
- Patient referred for ?hand, foot and mouth disease. Respiratory sample positive for enterovirus. Mouth swab had light growth of *C. Lauretti* along with two candida species. Clinical significance likely to be limited.
- Adult patient, fit and well. Soft tissue from infected wound following accidental penetrating injury (hand tool driven into finger) positive for *C. neoformans*
- Patient with multiple co-morbidities, but no obvious significant immunosuppression. Approximately 6 weeks prior to sample date had been prescribed prednisalone for COPD exacerbation and cochineal for flare up of gout. Both have possible immunosuppressive effects. Meets HCAI criteria due to venepuncture within 30 days prior to sample date

### Summary

- Disease caused by *Cryptococcus* spp. are rare, with only 19 cases over ten years.
- In the earlier part of the study period cases are dominated by patients with HIV
- In recent years the picture is mixed.
- 2018 had the highest number of cases (5), with cases clustered in the second half of the year. Second highest incidence was 2010 (4)
- In 2018 the cases were predominantly in patients with underlying [REDACTED] conditions
- As well as the two previously identified HAI cases, there were five cases attributable as HCAI. 3 of these cases meet HCAI definition due to venepuncture within 30 days of sample date.
- The limited information available to PHPU does not support a link between the current incident and any additional cases.

## Thematic- Horne Optitherm Taps

### Exposure to Increased Risk of Infection

#### Executive Summary

This report has been compiled to understand the sequence of events relative to the installation of the Horne Optitherm Taps, as part of the 'water system' within the QEUH / RHC estate and more specifically those high-risk areas associated with immunocompromised paediatric haemato-oncology patients.

The report will cover a time period between 12 December 2011 following an outbreak of *Pseudomonas Aeruginosa* at the neonatal unit at Altnagelvin Hospital, Londonderry and 26 September 2018, following outbreak of numerous bacterial infections and concerns over environmental integrity. This resulted in the subsequent decant of paediatric haemato-oncology patients from "Schiehallion unit" of Royal Hospital for Children (RHC), Glasgow.

Specifically, the report highlights significant concerns around the Horne Optitherm Taps as potential repository for the colonisation of bacteria and subsequent source of increased risk of infection for immunocompromised paediatric patients. Indeed, the report highlights

- NHS Scotland awareness of such risks and issuance of guidance to NHS Scotland community, including NHS GGC from 2012.
- Development of guidance by Health Protection Scotland (HPS) in June 2013 which stated, ***"Biofilm can develop on flow straighteners and it is recommended that these are removed from taps."***
- Updates to guidance within SHTM 04-01: part A Design, Installation and Testing, section 9.51, note 12<sup>1</sup>; suggesting that the HPS recommendation should be applied universally in all clinical areas across the hospital.
- Following a request in March 2014 from GGC for guidance, HPS produced an SBAR detailing risks associated with installation of the Horne Optitherm Taps, with clear recommendations as to how to proceed.
- Concerns, recorded in writing in April 2014, on the part of NHS GGC Microbiologists/ Infection, Prevention and Control Doctors responsible for the RHC and more specifically those high-risk areas, included request for the removal of all Horne Optitherm Taps prior to occupancy of patient group in June 2015.
- Creation of NHSGGC Standard Operating Procedure, effective from April 2015 with a review date of June 2018, containing the statement ***'High risk areas whose water outlets***

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<sup>1</sup> Health Facilities Scotland (HFS) 2012, Scottish Health Memorandum 04-01: The control of legionella, hygiene, 'safe' hot water, cold water and drinking water systems Part A: Design, Installation and Testing.

***in patient areas have flow straighteners should be sampled 6-monthly***. There is no evidence to support such sampling.

- High level discussion in early 2014, as recorded in the ‘Early Warning Minutes’, between contractor Currie & Brown and NHS GGC Facilities & Estates, acknowledged the risk but agreed to accept the risk, retaining the Horne Optitherm taps within those identified high-risk areas.
- Agreement was reached that the risk mitigation strategy would transfer from Currie & Brown to NHS GGC, Facilities and Estates and become a ‘maintenance matter’ to be **carried out every three months**. There is no evidence of any maintenance having been carried out.
- As part of the risk mitigation, NHS GGC Board were required to draft and implement a management process for the maintenance of the taps in critical care areas. There is no evidence that this occurred.
- Further, NHS GGC Board were required to secure a letter from Heath Facilities Scotland confirming agreement. There is no evidence that this was done.
- NSS representing both HPS and HFS state that they were unaware of the decision to retain the Horne Optitherm Taps, contravening their guidance as detailed in the 2014 SBAR. NSS did not find out until March 2018.
- To date there is no evidence of any maintenance being carried out on the Horne Optitherm Taps in those high-risk areas between the point of installation and March 2018, when they became a specific focus of concern.
- As part of the commissioning process, silver hydrogen peroxide was used to sanitise the water system. Horne Optitherm Taps are not compatible with the use of silver hydrogen peroxide.
- HPS were not made aware of the compatibility issue until two years later (2017).
- In 2015, 2017 and 2018, DMA Canyon, conducted three separate external expert reviews of the water and water system from QEUH/RHC identifying numerous high-risks, including risks associated with the installation, commissioning, servicing and maintenance of the Horne Optitherm Taps. Neither report was ever acted upon at the time.
- In 2017, GGC conducted an internal review of the water and water system resulting in similar findings to the DMA Canyon reports. There is no evidence to support that this report was ever acted upon.
- CEL of May 2013 stated ***‘It is the intention that the Board Water Safety Group will provide an assurance annually to the NHS Board on compliance with the requirement of this CEL through the Board’s annual Controls Assurance process. Accordingly, NHS Boards should report annually confirming compliance or, where compliance has not been met, a plan and timescale for achieving compliance.*** ‘There is no evidence to date that such assurance was given.
- Expert advice was sought from a variety of identified experts in their field, including Dr Suzanne Lee, Tom Making and Intertek Water Solutions Group.
- In March 2018, Dr Christine Peters (Microbiologist NHSGGC) investigated, following significant bacterial infections across the QEUH/RHC estate, where Horne Optitherm Taps were considered a contributing factor.

- The investigation, which involved removal and deconstruction of a number of Horne Optitherm Taps identified significant widespread bacterial growth across all of the component parts of the Horne Optitherm Taps.
- On 25 April 2018, Dr Suzanne Lee stated ***'The trust design guide should exclude the use of outlets with inserts and opt for more hygienic single bore outlets which are demountable for disinfection. In high-risk areas consideration should be given to removing these high-risk outlets and replacing with those that can be easily maintained.'***
- On 22 June 2018, Intertek Water Solutions carried out investigation. The investigation involved examination of 25 unused flow straighteners, which following testing concluded no biofilm with the total microbial load being very low compared to those flow straighteners examined after use.
- Tests were conducted on straighteners following 1 week through to 1 month use with increasing levels of biofilm detected. Testing for bacteria identified numerous organisms all of which are detailed within the report. The findings indicate that this was not a localised issue but effecting ALL flow straighteners.
- Intertek also examined water samples provided by NHSGGC which indicated that the contamination was not localised but widespread throughout the system.

## Background/Context

On 12 December 2011 the Western Health and Social Care Trust (Western Trust) declared an outbreak of **Pseudomonas aeruginosa** at the neonatal unit at Altnagelvin Hospital, Londonderry, after three babies were confirmed to be infected. One baby had tragically died and a second baby had been transferred to the regional neonatal unit in the Royal Jubilee Maternity Service (RJMS). The third baby continued to be cared for in Altnagelvin at that time.

On 17 January 2012 the Belfast Health and Social Care Trust (Belfast Trust) declared an outbreak of **Pseudomonas aeruginosa** in the RJMS regional neonatal unit. At that time two babies who had been confirmed as having the infection had tragically died and another baby was known to have been infected. A third baby sadly died after the outbreak was declared.

Subsequently information became available through typing of strains of **pseudomonas** that one of the babies who had died in Belfast had a strain of **pseudomonas** which has been linked to Craigavon neonatal unit. It was also found that a baby, who had been diagnosed with **pseudomonas** at Craigavon Hospital in December 2011, had the strain of **pseudomonas** which caused the outbreak in Belfast. This baby sadly died in January 2012. **Pseudomonas** was not the reported cause of death.

During the period from 17 to 31 January 2012, screening of babies in units across Northern Ireland confirmed that there were babies in other units who had been colonised with **pseudomonas** on their skin.

On 30 January 2012, Mr Edwin Poots, the Minister for Health, Social Services and Public Safety, asked The Regulation and Quality Improvement Authority (RQIA) to facilitate the establishment of an independent review into the circumstances leading to the incidents and the effectiveness of the response.

An interim report was submitted to the Minister on 30 March 2012 and published on 4 April 2012, with a final report being published on 31 May 2012<sup>2</sup>. Suffice it to say that the incident and subsequent findings and recommendations influenced guidance throughout the United Kingdom and indeed Scotland.

## NHS Scotland- Letter of Instruction

On 07 February 2012, the then Chief Medical Officer, Sir Harry Burns and Derek Feeley, Director General, jointly sent a letter<sup>3</sup> to numerous individuals across NHS Scotland, including all Board Chief Executives, Directors of Estates and Facilities, Health Protection Scotland and Health

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<sup>2</sup> <https://www.rqia.org.uk/RQIA/files/ee/ee76f222-a576-459f-900c-411ab857fc3f.pdf>

<sup>3</sup> [https://www.sehd.scot.nhs.uk/mels/CEL2012\\_03.pdf](https://www.sehd.scot.nhs.uk/mels/CEL2012_03.pdf)

Facilities Scotland, Infection Control Managers and HAI Executive leads, titled, Water Sources and potential infection risk to patients in high-risk units<sup>4</sup>.

The purpose of the letter was to remind everyone of the potential infection risks posed by water systems in healthcare facilities and to clarify actions required. Indeed, this letter was a follow up to Health Facilities Scotland (HFS) email of 25 January 2011 "*water sources and potential for infection from TAPS and sinks*"<sup>5</sup> and communication to Infection Prevention and Control Teams (IPCT's) of January 2012 "*SBAR on Pseudomonas and Water*"<sup>6</sup>.

The letter referenced the fact that emerging evidence was being collected that would lead to future guidance on sampling, testing and monitoring however provided immediate instruction as to actions that were required, namely: -

#### Chief Executives

- Ensure all high-risk units where patients may be at increased risk of pseudomonas and related infections are identified.
- Ensure directors of these units are fully alerted to this issue.
- Ensure best practice relating to the use of hand washing facilities is consistently and fully applied.

#### Infection Prevention and Control Teams

- Ensure any *Pseudomonas aeruginosa* found in invasive specimens are identified as an alert organism and ensure appropriate surveillance systems are in place.
- Ensure full and appropriate investigation of any such infection, including an assessment of whether the source may be water in this instance.
- If water may be considered the source, the case/incident must be discussed with HPS.

In addition, IPCT were to review existing microbiological data to determine whether there are areas which could pose an immediate pseudomonas risk and undertake a risk assessment in these

- areas as a priority, including sampling.
- In an area where there may be an immediate risk, work urgently with Estates/Facilities to minimise any risk identified.

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<sup>4</sup> For example, high dependency adult, paediatric and neonatal critical care, renal, transplant, haemato-oncology and burns unit.

<sup>5</sup>

<sup>6</sup>



Directors of Estates/Facilities

- Ensure site engineering and cleaning protocols are fully compliant with current guidance (including SHTM 04-01) and that manufacturers' instructions with regard to installation and maintenance have been followed.
- Ensure a coordinated approach between IPCTs and Estates/Facilities department on all water issues including through the establishment of a board/hospital water safety group.
- Ensure all taps are flushed in accordance with the attached best practice for handwash basins to minimise the risk of *Pseudomonas aeruginosa* contamination in high-risk units.

**NHS- Letter of Instruction**

It is the case that this instruction was further updated on 03 May 2013 by way of a letter CEL 08 (2013)<sup>7</sup> again from Sir Harry Burns and Derek Feeley, within which they reference matters alluded to in the background section above. Recipients were directed towards revised parts A and B of Scottish Health Technical Memorandum 04-01: Water safety for healthcare premises (SHTM-04-1) as well as National Services Scotland Guidance for (NNU's), adult and paediatric intensive care units in Scotland to minimise the risk of *pseudomonas aeruginosa* infection from water. The authors thereafter provide instruction that NHS Boards must ensure that: -

- **all high-risk units where patients may be at increased risk of pseudomonas** and related infections are identified and control measures applied.
- best practice relating to the use of hand washing facilities is consistently and fully applied.
- **all taps in all clinical areas in high-risk units** (manually or automatically) are flushed daily (and a record kept) to minimise the risk of pseudomonal contamination. Flushing should be for a period of **one minute**, first thing in the morning, at the maximum flow rate that does not give rise to any splashing beyond the basin.
- domestic staff have been trained in the correct decontamination procedures for sinks, basins and taps in ICUs and neonatal units to minimise the risk of *pseudomonas*.
- **they have established a system of clear governance with accountability to the appropriate Executive Director.**
- they are compliant with revised SHTM-04-01.

Further the letter states that

*'It is the intention that the Board Water Safety Group will provide an assurance annually to the NHS Board on compliance with the requirement of this CEL through the Board's annual Controls Assurance process. Accordingly, NHS Boards should report annually confirming compliance or,*

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<sup>7</sup> [https://www.sehd.scot.nhs.uk/mels/CEL2013\\_08.pdf](https://www.sehd.scot.nhs.uk/mels/CEL2013_08.pdf)

*where compliance has not been met, a plan and timescale for achieving compliance.* **Concern over installation of Horne Optitherm Taps**

It is the case that in March 2014 concerns were raised as to the matters alluded to in the background section above, relative to the installation of Horne Optitherm taps across the QEUH/RHC estate, resulting in discussions between a variety of stakeholders, including NHSGGC, Currie & Brown, one of the main contractors and National Services Scotland, which govern relevant entities such as Health Protection Scotland (HPS) and Health Facilities Scotland (HFS) (NSS).

During this time, Health Protection Scotland (HPS), produced: -

SBAR- April 2014- Pseudomonas-Removal of Flow Straighteners from Taps- NHS National Services Scotland- Bundle 3- Doc A 37746908 (page 5)

This followed a request by NHS GGC for advice on the requirement to remove flow straighteners from the taps procured for the QEUH/RHC. Health Protection Scotland (HPS) produced the SBAR, detailing their expert opinion and recommendations.

Within the report HPS state that the Horne Optitherm tap, which incorporates flow straighteners, was procured for all clinical environments within the new QEUH/RHC prior to the publication of UK and Scotland wide pseudomonas guidance in June 2013<sup>8 9</sup>. The HPS guidance, June 2013<sup>7</sup>, states "*Biofilm can develop on flow straighteners and it is recommended that these are removed from taps.*" This recommendation is also made within SHTM 04-01: part A Design, Installation and Testing, section 9.51, note 12<sup>10</sup>; suggesting that it should be applied universally in all clinical areas across the hospital.

HPS conclude that in considering water safety for healthcare premises, in particular minimising the risk of *Pseudomonas aeruginosa* arising from water, the removal of flow straighteners from taps in high-risk units is one of a number of critical controls to be considered in the hospital water delivery system.

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<sup>8</sup> Health Protection Scotland (HPS) 2013, Guidance for neonatal units (NNUs) (Levels 1,2 & 3), adult and paediatric intensive care units (ICU's) in Scotland to minimise the risk of *Pseudomonas aeruginosa* infection from water.

<sup>9</sup> Scottish Executive Health Department, CEL (2013) 8, Water sources and potential infection risk to patients in high-risk units- a revised guidance.

<sup>10</sup> Health Facilities Scotland (HFS) 2012, Scottish Health Memorandum 04-01: The control of legionella, hygiene, 'safe' hot water, cold water and drinking water systems Part A: Design, Installation and Testing.

HPS thereafter provided three options to tap installation in QEUH/RHC:

1. Instruct the contractor to install the procured taps in all clinical areas across the site. This would subsequently require NHS GG&C to commence a water sampling regime to monitor for Pseudomonas in high-risk units.
2. Instruct the contractor to install:
  - Procured taps in all clinical areas across the hospital excluding high risk units; and
  - Procured taps without flow straighteners in high-risk units.
3. Instruct the contractor to install:
  - The procured taps in all clinical areas across the hospital excluding high risk units; and
  - New compliant taps (without flow straighteners) in high-risk units.

In conclusion HPS stated that their guidance for NNU's, adult and paediatric ICUs in Scotland is designed to minimise the risk of infection with Pseudomonas aeruginosa, whilst recognising that the risk can never be eliminated. However, following consideration of the extant national guidance on water safety and potential infection risks to patients in high-risk units, HPS recommended that NHS GG&C progress with option 2 or 3.

#### **Concerns by NHS GGC Infection, Prevention and Control Doctor (IPCD)**

In furtherance of the increasing concerns, in March 2014 NHS GGC IPCD sought advice and guidance from peers during which time, stated.

*'My own personal feeling is that they should remove these straighteners /replace taps in the high-risk units i.e.ICU/NICU **now** before these units are occupied. Keeping these straighteners in place will make them noncompliant with HTM04-01 , the Scottish pseudomonas guideline, and the CEL. I think its easy to say sample and react accordingly but there is a high likelihood they will find Pseudomonas and need to remove them at some point anyway so why not do it now when the units are unoccupied, and they are not exposing patients to the risk. Also, if there is an incident/outbreak in one of these units then where does that leave them? -think they need to be mindful of why these guidelines were issued.*

*Out with the high-risk areas then perhaps the HFS advice is appropriate i.e they remove them when contractual requirements allow it.'*

{email communications between IPCD and external peers}

**Comment:** - The point raised that keeping the straighteners and by definition, the Horne Optitherm Taps, will make them non-compliant with HTM 04-01, the Scottish pseudomonas guidelines and the CEL. The professional opinion also concludes that pseudomonas will develop which is exactly what occurred in March 2018. It is also important to reflect on why the guidelines were issued in the first place.

In addition, and in response to the NSS/HPS proposed 2014 SBAR and detailed recommendations, the IPCD stated.

*' I am not comfortable including recommendation 1 - I think the risk is too high. I think the recommendations should be 1) remove straighteners from taps in high-risk units i.e. adult ICU and NICU or 2) If unable to remove straighteners replace taps with compliant ones in high risk units.'*

{email communications between IPCD and NSS}

**Comment:** - again it appears clear, that the professionals charged with ensuring a safe environment for this cohort of vulnerable patients, does not consider option 1 to be viable as the risks are too great.

1. *Instruct the contractor to install the procured taps in all clinical areas across the site. This would subsequently require NHS GG&C to commence a water sampling regime to monitor for Pseudomonas in high-risk units.*

{HPS SBAR, 2014}

It was this option that NHS GGC adopted, against advice from NSS and their own IPCD.

### **NHS GG&C- Standard Operating Procedure**

In furtherance of the forgoing NHS GG & C produced a Standard Operating Procedure (SOP) for minimising the risk of Pseudomonas aeruginosa infection from water<sup>11</sup>. This SOP was effective from April 2015 with a review date of June 2018. Therefore, this is the GGC instruction from the point of handover until the height of the water contamination crisis. It is of note that contained within the SOP, is a critical sentence: -

***'High risk areas whose water outlets in patient areas have flow straighteners should be sampled 6-monthly'.***

This is significant, in that the Horne Optitherm tap, contained flow straighteners and therefore, the instruction within the SOP pertains directly to those high-risk areas of QEUH/RHC, including wards 2A and 2B. It also contravenes the advice and subsequent recommendations by HPS.

It would be fair to say that events during this time are contested, especially between Currie & Brown, NHS GG & C and Health Protection Scotland (HPS/NSS).

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<sup>11</sup> <https://www.nhsggc.org.uk/media/242414/sop-pseudomonas-aeruginosa-april-2017-v1.pdf>

Although, what is apparent is, they expose significant issues with regards to the exposure of patients within high-risk areas to increased risk from infection, especially *Pseudomonas aeruginosa*.

Suffice it to say, that relevant responses from those stakeholders are contained within Substantive Core Participant Responses to Provisional Paper 5.

However, extracts, which relate specifically to the installation of Horne Optitherm taps and associated risks are detailed at this stage to ensure chronology of events.

### **Currie & Brown- Page 8 Review of Substantive Core Participant Responses to Provisional Paper 5**

#### *“1.3 Water System concern- Taps*

*1.3.1 In March 2014, GGC sought guidance from HPS about the taps which had been procured for the new hospitals. The taps were not compliant with NHS Guidance (SHTM 04-01). Nor were they compliant with guidance which had recently been issued by HPS (guidance neo natal units (NNU’s) (levels 1,2 and 3) adult and paediatric intensive care units (ICU’s) in Scotland to minimise the risks of pseudomonas aeruginosa infection from water)”*

{Extract from PI Timeline}

‘Currie & Brown have queried why the taps are being stated as not compliant. Currie and Brown had understood that it was the SBAR response to the Northern Ireland issue that considered the taps not compliant but the design/specification of the taps were compliant with the SHTM guidance in place at time of briefing and specification.’

{Page 8 Review of Substantive Core Participant Responses to Provisional Paper 5}

*“1.3.4 The Horne Taps which were ultimately installed on all clinical wash hand basins across QEUH and RHC were fitted with flow regulators, contrary to the advice within the HPS SBAR”.*

{Extract from PI Timeline}

Currie & Brown records, from the notes of the Early Warning Meeting on 12 June 2014, provide as follows: -

*“Pseudomonas in taps- Retrospective guidance post BMCL Contract Guidance. DH noted that there had been a CEL issued relating to Pseudomonas in taps and specifically the flow straighteners in the taps. The NHS had related this back to the NHS Board centrally. It was understood that industry wide this issue is being reviewed. DH enquired if Horne and Shanks are undertaking a review of their design/have any comments about their taps. DH noted that there was no specific action for the project team at this time. (16/01/2014) DH advised that he had*

*forwarded the information to mercury. DH noted that Armitage Shanks have changed the flow straighteners to the Marquick taps. The CEL only relates to high-risk areas. The high-risk areas will need to be discussed with infection control reps. (23/01/2014) – Response from Horne noted that taps were compliant and it was a maintenance issue to ensure these are kept clean-IP to contact HFS if appropriate. IPowrie is in discussion with HFS on the way forward (06/03/2014). DP agreed to forward information to IPowrie- looking at a pressure reducer installation- WIP (13/03/2014) DP advised that he had spoken to Steve on 19/03/2014 and Steve has prepared a paper and has scheduled a meeting with Horne. It is suggested that it is not a straightener issue but a moisture issue and that it would be better to retain the straightener so that there is a maintainable part (20/03/2014 DP advised that IP is liaising with HPS and HFS and there is a couple of queries re Steve’s paper. DH acknowledged that this is not a contractual issue at the moment. It would be helpful if BMCL could provide the as fitted detail of the Horne taps. (27/03/2014) DP advised that Horne had responded and that IP had raised a couple of queries with Steve (04/04/2014). DH noted that there had been a review undertaken by Health Protection Scotland and there was a meeting scheduled later that day to discuss the HPS review. (10/04/2014) DP noted that meeting is awaited with Horne. (17/04/2014) PM noted that there was a meeting being arranged to discuss. Target date 1<sup>st</sup> May 2014. (24/05/2014) DP advised that the meeting had been held. The next step is for a meeting with HPS through HFS. PM acknowledged that DL had been in contact with HFS to organise the meeting. (08/05/2014) DH advised that a meeting had been set up with HPS, HFS and Horne so that Horne can present their case. IP will attend this meeting as an observer. DP advised that he would also like to attend this meeting as an advisor. DS noted that this matter was being driven by HPS and HFS-is not a BMCL/NHS issue. DH noted that it is not a contract issue for BMCL at the moment acknowledging that this matter is due to retrospective guidance (15/05/2014) It was noted that HPS/HFS meeting to be held. DS noted that it was his view that this should not impact on PC. PM advised that this matter was a Board issue so should not impact on PC (29/05/2014) Following a meeting with HFS the tap issue appears resolved, although the Board will need to draft and implement a management process for the maintenance of the taps in critical care areas. Board to secure a letter from HFS confirming agreement or secure minutes of meeting. (12/06/2014)”*

{Page 9 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment-** 1) From the information provided it appears that risk management of the ‘issue’ has transferred from the contractor to NHS GGC, specifically as a maintenance issue with certain conditions attached to that acceptance; a) Board will need to draft and implement a management process for the maintenance of the taps in critical areas (high risk areas); b) Board to secure a letter from HFS confirming agreement.

However, when one considers the views of NSS, that they were unaware of NHS GGC decision to contravene HPS recommendations as detailed in the SBAR of 2014, as detailed later in this report, it seems unlikely that the Board secured such a letter from HFS. Additionally, as will become clear, it appears no written scheme relative to maintenance existed nor was any maintenance evident during subsequent examination by DMA Canyon. It is important to note that within the DMA report of 2017 (October), it states: -

*'Horne Optitherm TMV taps are designed to be demounted for maintenance and servicing elsewhere but the facilities for this are yet to be completed and commissioned. Specific service method statements and maintenance requirements for these items in these areas should form part of the written scheme.*

*In addition, the strainers located on the supplies to the TMV taps in "non-Clinical" areas (eg patient, visitor and staff toilets) are located behind panels and therefore infection control procedures are required (scribe) in order to remove panels for service. We understand that no servicing of any of these valves and the associated strainers in non-high-risk areas has been carried out since the hospital opened and there has been very limited program of servicing in 'high risk' areas.*

*We are unaware of any servicing works having been carried out and had [ ] (need to clarify the omission of the word here as this is critical) access to servicing records on TMV taps in other areas of the hospital at the time of assessment.*

*The recent (prior to assessment delivery) issue with regards to **Curpriedus** bacteria being detected in the system water (NOTE this comment predates the 06 March 2018 IMT and microbiology examination of the taps in March 2018) has highlighted that the servicing requirements of the TMV taps should be reviewed to ensure that in addition to manufacturers service instructions being carried out the servicing of TMV taps includes any additional control measures as deemed necessary by infection control e.g. full thermal bypass/disinfection of the taps where practicable and safe (this would be required to be carried out remotely from patient areas) and flow regulator, or rings and other components cleaning, disinfection and/or replacement. (NOTE- the question of whether such measures were carried out is posed by Dr Peters in her report of March 2018)*

**Comment-** when one considers the DMA report of 2017, they highlight concerns, amongst other things, around high risks associated with the water; concerns around maintenance of the taps; confirmation of the presence of **Cupriavidus** in the water BEFORE the bacterial infections in patients in March 2018 and before the IMT and Microbiology examination of taps from ward 2A. The subsequent water sampling (March 2018) again confirmed the presence of **Curpriedus** in the water, at least 6 months after it was identified in the DMA report. It is also critical to re-enforce that NHS GG & C employees Tommy Romeo, Ian Powrie, Mary Anne Kane and Paul McAllister, as well as those others who had awareness of the contents of such reports, were at the various governance groups, convened to establish the causation of bacterial infections in immunocompromised patients, who were, in the words of the clinicians at the IMT, *'exposed to life threatening risk.'*

As reported in their submission to the Public Inquiry, Currie & Brown note that at a special meeting, convened by Health Facilities Scotland on 05 June 2014 to consider the issues in relation to their guidance, it was unanimously agreed (para 5.3) that, as the **taps** installed within the new build development had complied with guidance current at the time of its specification and briefing and that the hospital was in the process of being commissioned, it should be regarded as

being in the ‘retrospective’ category, not “new build”. Accordingly, there was no need to apply additional flow control facilities or remove flow straighteners and any ‘*residual perceived or potential risks would form part of the routine management process.*’

**COMMENT:** - As previously alluded to in this report, DMA Canyon highlight that there was no management process in place relative to maintenance, particularly in respect of taps. Indeed, it is worthy to reflect on the letters of instruction, various guidance documents and GG & C’s own standard operating procedures especially when DMA reported: -

*“Where Estates have advised tasks are being completed records had **not** been made available for inspection by the time of issue. We would advise these {are} made available to establish the level of compliance achieved where tasks are being completed.*

*The information gathered highlights significant gaps in the legionella (and potentially other bacteria) control on site both in terms of management processes and the implementation of the recommended planned preventative maintenance tasks.*

*The Estates Manager (Tommy Romeo), placed in the role of “AP Water” (Authorised Person) has not undergone any training in legionella control (or other bacteria) and has limited knowledge of the water systems on site and the requirements of L8, HSG 274 and SHTM 04-01.*

*It is unclear which responsibilities lie with which department (Clinical, Estates) and which persons within these departments. It is also unclear which responsibilities lie with estates and which lie with NHSGGC Compliance Team (or HFS).*

**Comment:** - reference is made to the April 2014 email by Dr Inkster seeking clarity on roles and responsibilities, especially relative to ‘potable water’ and is advised by return email that this is the role of Estates.

*A written scheme guidance was issued by DMA in 2015 though it has not been updated as anticipated to be fully utilised as the written scheme for the site and become the overarching control document for legionella control. NHS GGC Estates have since issued a general ‘written scheme’ to be implemented on each of their sites however DMA are awaiting feedback from NHS Estates (Compliance Team) on a number of queries raised before any changes are made to make this site specific. A draft document for discussion has been supplied to Phyllis Urquhart and DMA are awaiting feedback on this.*

*We would advise corrective actions are taken as a matter of immediate urgency to ensure accurate and compliant written scheme is compiled {compiled} and the appropriate PPM (Pre-Planned Maintenance) schedule implemented.*

*We would describe the legionella management on site as being high risk until remedial actions highlighted within the legionella risk assessment and within this gap analysis are implemented. ‘*



**Currie & Brown- Page 10 Review of Substantive Core Participant Responses to Provisional Paper 5**

“3.5 Flow Straighteners and Pseudomonas (February 2016)

3.5.1 On 02 February 2016, the Board Water Safety Group (BWSG) meeting minutes record a discussion between lead ICD and GGC Senior Estates Manager (assessed to be Ian POWRIE) of ‘*water and environmental issues*’. Discussion had taken place about the risk of pseudomonas with the use of flow regulators. HPS advice was recorded as being remove, sanitise, and return the flow straightener to the tap and to replace the plastic components every three months, or alternatively to keep the flow straighteners in place with sampling to be undertaken in high-risk areas.”

{Extract from PI Timeline}

Currie & Brown state that as recorded in the Early Warning Meeting, referred to above, the issue with the taps was a maintenance matter. The minutes referred to in paragraph 3.5.1 of PPP 5 confirm this and align to the guidance/decision to retain taps.

{Page 10 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - It is clear that Currie & Brown consider the issue with Horne Optitherm Taps is one of maintenance with risk management transferring from Currie & Brown to NHS GG & C, with risk mitigation measures adapted, in line with advice and guidance from an amalgam of sources, resulting in agreement for those taps to be subject to maintenance every three months, from point of installation.

**NHS National Service Scotland -Page 57 Review of Substantive Core Participant Responses to Provisional Paper 5**

1.3.4 The Horne taps, which were ultimately installed on all clinical wash hand basins across the QEUH and RHC were fitted with flow regulators, contrary to the advice within HPS SBAR’.

{Extract from PI Timeline}

NSS Response

“NSS was unaware that the advice in its SBAR had been contravened until March 2018.”

{Page 68 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - it seems incredible that having engaged the national entity for Scotland seeking advice and guidance, they failed to notify them a) on the intention to progress in terms of the

issue identified; and b) they were ignoring the advice provided and installing the taps identified as posing a risk. It is important therefore for GG & C to provide the record of their decision making and the rationale for doing so along with the risk mitigation plan to prevent the exposure of increased risk to patients.

1.3.5 The taps which were installed were not compatible with the use of silver hydrogen peroxide, which was to be used in the commissioning process to sanitise the water system.

{Extract from PI Timeline}

#### NSS Response

*“HPS was not aware of this during the commissioning process. It became aware two years later through its involvement with the Technical Water Group.”*

{Page 57 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - had HPS been aware of this, how would this have influenced their SBAR of April 2014, especially with regards any maintenance regime.

1.4.1. Between April and December 2015 NHS GGC conducted testing of water outlets for Legionella only (in line with national requirements). The testing was carried out by two F&E managers with no training in taking samples. Sampling was taken from 500-600 sentinel points throughout the campus. The April test results showed positive results for Legionella species in certain areas. Between April and December 2015, some water samples were positive for legionella spp and had high TVCs. Where positive samples were found, the area/outlet was disinfected until 3 consecutive samples were negative.

{Extract from PI Timeline}

#### NSS Response

*‘HPS did not receive any water tests results until April 2018.’*

{Page 57 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - If the National Authority were unaware of water tests results, how were NHS GG & C ensuring compliance with the instruction given in the CEL of May 2013- *‘It is the intention that the Board Water Safety Group will provide an assurance annually to the NHS Board on compliance with the requirement of this CEL through the Board’s annual Controls Assurance process.’*

*Accordingly, NHS Boards should report annually confirming compliance or, where compliance has not been met, a plan and timescale for achieving compliance. '*

In addition, it is critical to reflect on the email chains from 2015- detailed within the DMA Canyon timeline- which show repeated attempts by microbiologists to access the water test results. Indeed in 2021, Professor Mike Stevens, Chair of the Case Note Review, send a letter to the CEO Jane Grant expressing his concern that microbiologists were unable to access the data they required to fulfil their role.

1.5.6. The recommendations made within the report were not actioned prior to 2018. It is not clear why that occurred. The report (and possibly others) is said to have "surfaced" when papers were being provided to HPS/HFS. The report was not disclosed publicly until November 2019.

{Extract from PI Timeline}

#### NSS Response

*'The said papers (DMA Canyon Papers) were provided to HFS in late April 2018'*

{Page 57 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - Microbiologists, tasked with investigating the source of the contamination, were not made aware of the existence of these reports until end of June 2018. Indeed, senior management within NHS GG & C, claim they were unaware of the existence of those reports until June 2018, despite the fact that evidence shows numerous members of senior management, engaging in detailed email communication with regards to the reports from 2015 onwards. (Please refer to DMA canyon Timeline)

3.4.4. This is the first of two instances of infection which NHS GG & C appear to accept are linked to the hospital environment (the second being an instance of mycobacterium chelonae in 2019)

{Extract from PI Timeline}

#### NSS Response

*"The initial report published in May 2018 referred to infections linked to the environment which NHS GG & C did not refute. Therefore, it is our understanding NHS GG & C had accepted in 2018 that there was an environmental link to infections."*

{Page 68 Review of Substantive Core Participant Responses to Provisional Paper 5}

### '3.5 Flow Straighteners and Pseudomonas (February 2016)

3.5.1 On 2 February 2016, the Board Water Safety Group (BWSG) meeting minutes record a discussion between the Lead ICD and GGC Senior Estates Manager (assessed to be Ian Powrie) of 'water and environmental issues'. Discussion had taken place about the risk of Pseudomonas with the use of flow regulators. HPS advice was recorded as being to remove, sanitise, and return the flow straightener to the tap and to replace the plastic components every three months, or alternatively to keep the flow straighteners in place with sampling to be undertaken in high-risk areas.'

{Extract from PI Timeline}

#### NSS Response

*'HPS advice was not as stated. It remained as per the relevant SBAR. None of the options recommended by HPS involved retaining the flow straighteners.'*

{Page 58 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - It appears that HPS are stating that the actions by NHS GG & C were not in accordance with the SBAR of April 2014. This is a key issue and the presence of the straighteners appears a contributing factor to the increased risk of pseudomonas, as detailed in all of the advice/guidance within this report.

### '4.23 Cupriavidus (CU) in Ward 2A (September 2017

4.23.2 This was the second instance of patient infection with CU. This case was similarly linked to the isolation of CU bacteria in a clinical handwash basin within Ward 2A, which could not be removed but which was disinfected at the time, although it is unknown whether typing of the isolates confirmed a match. This suggests that water sampling investigations into the source of this infection took place, although these are not documented in the OB Timeline and the HPS reporting suggests that no sampling took place.'

{Extract from PI Timeline}

#### NSS Response

*'This second case was not reported or investigated by NSS Health Protection Scotland (HPS) in 2017. HPS became aware of it in 2018 when there was a third case reported. HPS understand that the infection control doctor was off at the relevant time in 2017 and the incident was not investigated and no water sampling took place.'*

{Page 69 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - It is incredible to note that a corporate entity such as GG & C has no resilience to ensure corporate response to risk management processes. This strikes at the heart of business continuity and ensuring such resilience exists in order to maintain a level of infection, prevention and control.

#### '5.2 DMA Canyon Report 2017 finalised (31 January 2018)

5.2.1 By 31 January 2018, a report by DMA Canyon for 2017 is said to have been completed and finalised. In response to the report, F&E is said to have formulated a work plan to action the recommendations.'

{Extract from PI Timeline}

#### NSS Response

*'HFS did not receive the DMA Canyon reports of 2017 or 2017 until April 2018. These were provided to HFS (Ian Storrar and Eddie McLaughlin) as part of the investigation into the water system as requested by NHS GG & C. They were provided along with other technical data.'*

{Page 59 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - This is requiring of significant clarity. The DMA Canyon Report 2017 finalised (31 Jan 2018) is in two separate and distinct parts. The first part relates to the Legionella Risk Assessment, commencing on 08 September 2017. As detailed throughout the report, the ultimate recipient NHS GG & C and in particular Tommy Romeo, were continually, verbally updated on the progress-specifically that HIGH RISK concerns existed, and nothing had been progressed since the 2015 report! Therefore Facilities & Estates formulation of a plan to action recommendations was allegedly after 31 January 2018, when they would have had knowledge of those concerns from 08 September 2017. Indeed, reference in this report to the 2015 report is made. However, we are led to believe that the 2015 report did not 'surface' until March 2018? The timeline is not reflective of the facts. In addition, the second part of the DMA report, dated 30 January 2018, by Alan McRobbie and Craig Guyer was provided to a separate readership cohort. The report has different page numbering from part 1 and is detailed from 1-12. This suggests two separate and distinct reports. Clarity is however required from DMA Canyon with regards to completion and submission of each report. This should be compared with the 'investigation' conducted by GGC into the 'lost report' to ensure coherence and factual accuracy.

#### 5.9 GGC request support from HPS (March 2018)

5.9.1 Following the discovery of microbiological contamination of water outlets, GGC requested support from HPS and HFS on 16 March 2018. Included within the papers provided to HFS was a copy of the DMA Canyon 2015 report. The recommendations of the 2015 DMA report were similar to those in the 2017 DMA report and were included in the work plan

created by F&E to action the latter.

{Extract from PI Timeline}

### NSS Response

*'The DMA Canyon Reports were provided to HFS (Ian Storrar and Eddie McLaughlin) as part of the investigation into the water system as requested by NHS GG & C in April 2018. They were provided along with other technical data. The Authorising Engineer (Water) {assessed to be Tommy Romeo- who was not trained to fulfil the role} Legionella Control, was commissioned to carry out a review of the water systems as per SHTM 00 by NHS GG & C. That report was also provided by NHS GG & C as part of the technical review and is cited in the "technical review, water management issues NHS GG & C AND RHC" paper issued. The Authorising Engineer report, dated May 2017, highlighted similar issues to that found by DMA Canyon.'*

{Page 60 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - Several concerning issues arise from the update from HPS. Firstly, they re-iterate that the DMA Canyon reports were provided in April 2018, along with 'The Authorising Engineer report dated May 2017.' The Authorising Engineer is assessed to be GG & C employee Tommy Romeo, who, from the DMA report of January 2018, was not trained to carry out such a role. However, the report to which they refer, highlights similar issues to the DMA Canyon reports. If this is the case, separate reporting to that of DMA "lost reports" was available to GG & C senior management in May 2017; detailing similar issues to that of the DMA reports. Therefore, what was done about this at the time? Access is required to this report in order to better understand WHO, WHAT, WHY, WHERE and WHEN in relation to those findings together with HOW those similar findings were communicated and acted upon. Secondly, 16 March 2018 is the date that the reports allegedly 'surfaced' for HPS consideration, although HPS contend that this was not the case, rather it was April 2018. However, of critical importance is when did they surface for the attention of GGC senior management? Indeed, why then did Shona Robinson MSP state in parliament what she did relative to the water contamination- was she not informed of the detail within the 'surfaced reports' prior to her address to the parliament on 20 March 2018?

### 5.13 Technical Water Group (April 2018)

5.13.3. External advice was sought from a water expert, Susanne Lee, and a further expert Tom Makin.

{Extract from PI Timeline}

NSS Response

*'Expert advice was also sought from Tom Wafer from Intertek Water Solutions Group. He is technical and Compliance Director within the company and also an authorising engineer (water) and an expert of Chlorine Dioxide systems.'*

{Page 61 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - it is important to note that the company INTERTEK, provided a report dated August 2018 relative to water across NHS GG & C and RHC. Further, as an authorised engineer water, it will be important to compare and contrast his views to those detailed in the GG & C report by the untrained Tommy Romeo. In addition, it is important to reflect on the significance of the comments made by HPS – 'The taps which were installed were not compatible with the use of silver hydrogen peroxide, which was to be used in the commissioning process to sanitise the water system.' Did Tom Wafer proffer an opinion on the impact of silver hydrogen peroxide use at the point of commissioning?

'5.38.5 HPS reported that 'exact link' between 'patient cases and the water system' was said not to have been made. It is unclear what the authors intended to suggest here, and the report proceeds to hypothesis a link between 'environmental and person contamination' and Enterobacter within the drains.'

{Extract from PI Timeline}

NSS Response

*"In environmental sampling if an organism is detected and sent for typing an exact match is more challenging. Environmental organisms grow and may speciate particularly those which grow in optimal conditions such as biofilm. When samples are sent for typing, only a few isolates from the sampling plate are selected and the likelihood of selecting the exact organism type that was responsible for a clinical case is not impossible however often unlikely.*

*Therefore, a positive typing result helps support the hypothesis of environmental transmission significantly. No match does not exclude the likelihood of environmental transmission. The organism is still present and capable of transmission. Therefore, we advise typing to include the source of the environment but not to exclude.'*

{Page 62 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - this supports my widely held view that absence of evidence is not evidence of absence. Indeed, this is further compounded by the fact that water samples were not taken at the time of bacterial infection, especially in the case of my daughter. Indeed, both myself and the lead paediatric oncologist, Dr Sastry leading on my daughters' care, repeatedly requested such water sampling. The samples were taken one year following her contracting mycobacterium

chelonae, and proved positive for this bacterial infection, although a different strain. Therefore, the comments by HPS are significant in lending support to probability and possibility.

'6.56.3 Typing of the GNB organisms collected from sampling and those found in patients revealed that the isolates were different and unique.'

{Extract from PI Timeline}

#### NSS Response

*'Different and unique organisms can indicate an environmental source.'*

{Page 66 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - It is important to understand that the concerns on the part of microbiologists and clinicians were not simply due to the numbers of bacterial infection over a short space of time, within a closed group of similar type patients, but the type of rare pathogens that were being identified. Many of those identified had not been observed in the last 25 years with a number not even being listed on the alert organism database.

#### **NHS Greater Glasgow & Clyde -Page 14 Review of Substantive Core Participant Responses to Provisional Paper 5**

Unlike other Core Participants, NHS GGC response does not cross refer to the PI Timeline and therefore it is challenging to have a corresponding passage to reflect and contextualise their comments however the following sections from their response are considered pertinent to this report.

#### NHS GG & C Response

...'NHSGGC does not accept that, on the basis of the evidence currently available, any aspect of the water, drainage or ventilation systems in the new QEUH and RHC buildings ('QEUH') has posed a risk to the safety of patients beyond that which maybe reasonably expected in any comparable hospital environment. "

{Para 4 Page 14 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - it is considered that as taps are referenced throughout various reports as forming part of the water system, the above statement can be considered in terms of the installation of Horne Optitherm Taps in that NHS GG & C do not consider that such installation posed a risk to



the safety of patients beyond that which maybe reasonably expected in any comparable hospital environment.

NHS GG & C Response

‘...the suggestion in the narrative that patients were exposed to an increased risk to their safety by any aspect of those systems at the QEUH, is not accepted by NHSGGC.’

{Para 7 Page 15 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - as per comments above.

NHS GG & C Response

‘The adopted strategies were often devised with input from external bodies such as HPS.’

{Para 11 Page 16 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - It is important to reflect on the comments by NSS earlier in this report. Whilst they provided input following invitation to do so by NHS GG & C, expert opinion and /or recommendations relative to the installation of the Horne Optitherm taps were ignored and therefore the statement that strategies were often devised with input from external bodies such as HPS, does not represent the facts. Indeed, evidence from DMA Canyon further cements the fact that they do not adhere to expert advice/guidance and recommendations when provided.

NHS GG & C Response

‘The systems were designed with input of clinical specialists. A clinical output specification was prepared that was then captured in Employers’ Requirements by the lead Consultant, Currie and Brown. Those requirements were subject to peer review. The requirements then informed the design of the QEUH/RHC by the main contractor.’

{Para 15 Page 17 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - It is clear that there were numerous clinical output specifications, including the two CEL in 2012 and 2013, which detail clinical requirements in respect of potential infection of pseudomonas within water, however, as has become clear, such clinical specification was ignored and not implemented. In addition, as detailed within the Currie & Brown Early Warning minutes above, a) Board will need to draft and implement a management process for the maintenance of the taps in critical areas (high risk areas); b) Board to secure a letter from HFS confirming agreement; NHS GG & C failed to adhere to this expert specification either.

NHS GG & C Response

...'NHSGGC considers that context must be provided in order to give a full chronology of NHSGGC's actions in relation to risk of infection from ventilation and water systems, otherwise it would appear from the PPP that the first clinical specialist involvement was in 2014/2015. That is not the case. The role of each of the entities involved in the design, build and commissioning phases, together with the clinical specialists who informed the design, needs to be understood in order to give the full picture of any concerns raised prior to the handover and the validity of those concerns.'

{Para 16 Page 17 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - It for this reason that we have reflected on various documents pre 2014/2015, most notably, for the purpose of this document, CEL 2012 and CEL 2013. It is perhaps worth inviting NHS GG & C to reflect on those also.

NHS GG & C Response

'...the question of whether any aspect of the building system caused QEUH patients to be exposed to increased risk of infection. ....NHSGGC seeks to highlight two points at the outset.

*"First, it is important for the inquiry to distinguish facts from impressions and to have regard to evidence rather than speculation."*

*"Secondly, it should be acknowledged that no building is, or can be and entirely sterile environment and hospitals are no exception.'*

{Para 18/19 Page 18 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - it is considered that this report reflects on evidence, more specifically from a variety of sources relative to installation of Horne Optitherm taps and relationship with increased risk from pseudomonas. It is accepted that we cannot prevent every instance of bacterial infection, however we can better protect when we implement those risk management protocols that the very entity NHS GG & C accepted. Failure to protect, increases the likelihood of exposure to risk and potential bacterial infection.

NHS GG & C Response

*'...the inquiry is invited to consider two questions in relation to both ventilation and water systems, namely 1) whether the design met the relevant standard or guidance, where available at the time; 2) whether testing of the system provided evidence of any widespread issues in the sense of having*

*exposed patients to a risk of infection beyond which may reasonably be expected in any comparable environment.'*

{Para 20 Page 18/19 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - it is considered that in terms of the design and subsequent installation of the taps, NHS GG & C accepted the risk but failed to implement their own risk mitigation plan. It is also the case that they did not have a written scheme in place, they operated with untrained Authorised Engineers- Water, did not share water testing results; did not test when requested to do so by microbiologists, clinicians or concerned families, and they did not act on high-risk identification, provided by external experts in a timeous manner. Therefore, they exposed patients to increased risk of infection beyond which may have been reasonably expected within any comparable environment.

#### NHS GG & C Response

*'Requirements and guidance on water testing are limited to only a few organisms (namely coliforms, E.Colli and Pseudomonas and total viable counts (TVC's). '*

{Para 31 Page 22 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - this report relates to pseudomonas, as well as other bacteria.

#### NHS GG & C Response

*'There is no guidance on whether the presence of other micro-organisms in hospital water systems is acceptable. This means that, where hospital water is tested for different micro-organisms, such as Cupriavidus, and it is found, there is no guidance that would permit the result to be interpreted to show whether or not the water was 'unsafe''*

{Para 32 Page 22 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - Consider comments from clinicians who attended the various IMT who stated that the presence of those bacteria identified during 2018 with 'life threatening' to the patient group within ward 2A. Therefore, how can it be considered acceptable to have such organisms in water/water systems such as those identified within the Horne Optitherm taps? The phrase 'life threatening suggests it is unsafe!

NHS GG & C Response

*'Testing carried out from 2015 onwards does not demonstrate that there is any noteworthy issue with water quality across the QEUH campus. NHSGGC has exceeded the requirements as set out in the available guidance on water testing in relation to the QEUH since its opening in 2015.'*

{Para 33 Page 22 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - This is a matter for challenge as there is clear evidence that those testing the water, where not trained, had no understanding of water systems, failed to share their results and failed to adhere to their own maintenance scheduling, ensuring water systems were kept clean. There was no written scheme in place from which to operate. There is also considerable evidence that they failed to test the water following bacterial outbreaks, especially rare pathogens, not routinely tested for. Even when the water is subject of testing for legionella, when high-risks are identified in 2015 onwards, they are not acted upon!

NHS GG & C Response

*'..... the taps which were installed on all clinical wash hand basins across QEUH and RHC were fitted with flow regulators, contrary to advice within HPS SBAR.' ....'NHSGGC requested a meeting with HPS to review the position. A meeting took place on 05 June 2014 and was attended by representatives of NHSGGC, HPS, HFS, Horne Engineering Ltd and Public health England including Dr Jimmy Walker (member of the Inquiry expert panel). It was unanimously agreed by representatives involved including HPS, that as the taps installed within the new build development complied with guidance current at the time of its specification and briefing, and as the hospital was in the process of being commissioned, it should be regarded as being in the "retrospective" category, not a "new build". It was agreed that there was no need for NHSGGC to apply additional flow control facilities or remove flow straighteners within the QEUH or RHC and that any residual perceived or potential risk would form part of the management process.'*

{Para 51 Page 28 Review of Substantive Core Participant Responses to Provisional Paper 5}

**Comment:** - please refer to previous comments relative Early Warning minutes as provided by Currie & Brown and also those comments by HPS which conclude that NHS GG & C contravened their expert opinion as detailed in the SBAR of 2014.

**Significant Bacterial Infection across NHS GGC RHC where Horne Optitherm Taps were considered a contributing factor- March 2018**

It is reported in March 2018, (see internal report by Dr C Peters) that, in response to two cases of ***Cupriavadus pauculus* bacteraemia's** in children treated on ward 2A (Haemato-oncology and Bone Marrow Transplant paediatric ward 4A) a Problem Assessment Group (PAG) agreed to the testing of water from two outlets on ward 2A; the treatment room and prep room. These were positive for ***Cupriavadus pauculus*** and the Infection Prevention Control Team (IPCT) instigated a

number of control measures. **Taps** and showers were removed, and a sample sent to Microbiology for environmental sampling to look specifically for *Cupriavidus pauculus* on 02.03.18 and again on 14.03.18. Further samples from detergents, lotions and wipes were sent on 20.03.18. These were processed to detect *Cupriavidus* and *Stenotrophomonas sp.*

**Taps** and showers were *alleged* to be subject to routine maintenance regimes, however it is unclear when the last thermal disinfection occurred, when the last routine maintenance took place or the age of the taps TMV cartilages, each of which may influence the microbiological testing of the fittings. In short, concern was expressed that NO maintenance had been carried out on the taps from the point of installation in 2014, to the removal for the purposes of microbiological testing in March 2018.

Suffice it to say that Dr Peters identified widespread bacteria across all of the component parts of the Horne Optitherm Tap. During deconstruction of the sample taps it was noted that it required considerable force to do so, indicating that the said taps had not been deconstructed for maintenance prior to this point. Included amongst the bacteria identified from the sample tap removed from ward 2A was widespread cupriavidus pauculus which is a rarely reported organism in water and clinical cases. From the tap removed from ward 4B, examination revealed numerous gram-negative bacteria including curpiavidus pauculus, Sphingimonas paucimobilis, Ochrobactrum anthropic, Brevundimonas sp, Burkholderia sp, Comamonas, Delfia acidovorans, Serratia fonticola, rhodotorula mucilaginosa, candida guillermondi and Bordetella bronchisepticum.

The findings from Dr Peters report were discussed at various IMT including,

#### **IMT Minutes- 06 March 2018- 'Water Contamination ward 2A'**

**Note**, both Ian Powrie and Tommy Romeo, recipients of DMA Canyon reports 2015 and 2017 respectively were present at this meeting. It is important to establish if the contents of DMA reports were disclosed; if not, why not? This is even more significant when the bacteria, subject to investigation, namely *Cupriavidus* was mentioned in the DMA report of 2017.

In addition, from minutes supplied by Currie and Brown (Page 8 - Review of Substantive Core Participant Responses to Provisional Paper 5), Ian Powrie is present when discussions took place in 2014 with regards to the acceptance of the risk of installation of the referred to **Thorne taps**, and relationship to the risk of *Pseudomonas*. It is also noted that '*...the Board (GGC?) will need to draft and implement a management process for the maintenance of the taps in critical areas. (Ward 2A is regarded as a critical area). Board to secure a letter from HFS confirming agreement or secure minutes of the meeting. (12 June 2014)*'

**Comment:** - was such a management process drafted for the maintenance of the taps in critical areas. If so, where is this document. In addition, did the 'board' secure a letter from HFS confirming agreement. If so, where is this letter.

The full minute of the IMT should be considered for context however for ease of reference a verbatim summary of the microbiology report, presented at this meeting, is detailed.

- *The IMT were reminded that multiple water samples from ward 2A were positive for **Cupriavidis** and one water sample had also grown **Pseudomonas**. All isolates have been sent for typing.*
- *TI (Dr Teresa Inkster) informed the group of the findings from the microbiological sampling carried out on the **tap** and showerhead removed from the ward last week. To date, **Cupriavidis**, **Sphingomonas** and **fungi** have been grown. **Cupriavidis** is growing from the **hot tap** and the **flow straightener**, other **components are still being investigated**. Full ID is still awaited on the **fungi** which was grown from a showerhead in Room 15.*
- *BG (Prof. Brenda Gibson) and DM (Dr Dermott Murphy) expressed concern that not only had patients had clinical infections due to **Cupriavidis** and **pseudomonas**, there had also been an incident relating to **Aspergillus** infection last year. BG and DM queried whether the **Aspergillus** cases may have been acquired as a result of **fungi** in the **outlets**. TI (Dr Teresa Inkster) explained that it was impossible to answer this at present as the **fungi** was yet to be identified however the finding of **fungi** is of concern and if indeed it is identified as being **Aspergillus**, further investigations would take place. It was agreed to sample further showerheads and water for fungus.*
- *DM noted that the organisms found in the water and **outlets** are environmental ones often associated with building works and queried if the patients on ward 2A are **at risk from their surrounding environment**. TI explained that the literature does not point towards **Cupriavidis** being associated with building works. **It is known to colonise water systems** and outbreaks have been linked to dialysis water and ECMO machines. TI also noted that **Cupriavidis** would not have been tested for routinely and that advancements in laboratory testing methods now enable identification of this organism.*

**Comment:** - It is important to note that within the DMA Canyon report of 2017 (October) it is stated

DMA noted small debris including washers in Bulk Water Tank 2B

- *BG (Brenda Gibson) and DM (Dr Dermot Murphy) queried if the concerns of the clinical teams relating to the environmental risks in 2A had been communicated higher. TI (Dr Teresa Inkster) explained that she shares these concerns and had indeed reported these to the highest level in GGC and HPS over 2 years ago. DM and BG felt dissatisfied that there had been any response from senior management or out with GGC which offered reassurance to clinicians. TI encouraged clinicians to share their concerns with senior management again and reported that this incident has been reported to Health Protection Scotland who in turn have reported it to the Scottish Government. DM/BG were concerned that senior management and the board were made aware of the serious implications of fungus as well as Gram Negative bacteria being present in the water system. Both of these*

*are life threatening to immunocompromised. Contamination with two organisms of a completely different species raises concerns of major infrastructure problems.*

### **IMT Minutes 09 March 2018**

### **IMT Minutes 12 March 2018**

Note, Mary Anne Kane, Phyllis Urquhart and Paul McAllister all present at the meeting. Each have awareness of the details of the DMA reports of 2015, 2017 and 2018 (Phyllis Urquhart named in the 2018 report as recipient and Paul McAllister is named as an Estate Representative assisting DMA). It is important to establish if the contents of DMA reports were disclosed at this IMT; if not, why not? This is even more significant when the bacteria, subject to investigation, namely **Cupriavidus** was mentioned in the DMA report of 2017.

### **External Expert Review- Dr Susanne Lee – Public Health Microbiologist**

On 25 April 2018, Dr Susanne Lee attended QEUH following invitation by Dr Teresa Inkster. She was requested to provide expert opinion on a number of water related issues following the identification of hospital acquired infections *Cupriavidus pauculus* and *Stenotrophomonas* spp associated with the water system. The full report is contained within the data room however the following has been extracted as it relates to this report.

#### **3.7 Flow Straighteners/aerators**

*'Inserts at the outlet are not recommended in healthcare and have been linked to pseudomonas aeruginosa infections in patients including the deaths of 3 neonates in Belfast. Work carried out by Public Health England isolated  $2.2 \times 10^6$  cfu/ pseudomonas aeruginosa from the inserts from the NICU at BHSC. As long ago as 1966 plastic inserts were identified as being a cause of waterborne HAIs. This is because they increase significantly, the surface area so providing a large surface for biofilm formation, the small meshes collect dirt and debris providing further surface area for colonisation. This is exacerbated when the outlet is placed over the drain as splashback from the drain may include not only pseudomonas aeruginosa but also strains carrying antibiotic resistance genes.*

*Recommendation- The trust design guide should exclude the use of outlets with inserts and opt for more hygienic single bore outlets which are demountable for disinfection. In high-risk areas consideration should be given to removing these high-risk outlets and replacing with those that can be easily maintained.*

{Page 7 Dr Susanne Lee Report}

**Comment:** - from the expert opinion of Dr Lee it appears that there is a consistent view from experts as to the use of taps with flow straighteners within high-risk areas. This view has been expressed from 2012 through to 2018. Indeed, when the SBAR of 2014 with relevant recommendations are made, in-line with such expert view, NHS GG & C contravene the advice and install taps that significantly increased risk to patients.

### 3.9 Patient and Environmental isolates

'...there was some discussion relating to the finding that the environmental strains did not match the patient isolates and whether water could then be ruled out as the potential source. It is likely that water was the source and cannot be ruled out because the isolates did not match. To date three different strains of *Cupriavidus Pauculus* have been identified. However, to be sure that there is no patient strain in the system, multiple isolates from several samples from around the site where the patients may have been would have to be picked and identified. Statistically you would need to identify at least 30 different isolates from each culture plate to be sure a particular strain was not missed.

{page 8 Dr Susanne Lee Report}

**Comment:** - the commentary from the expert Dr Lee provides valuable insight into why trained and informed staff must be involved in water testing. It makes the disclosure by DMA Canyon that staff were not trained, all the more significant. The conclusions drawn by NHS GG & C do not stand scrutiny when compared to the views of experts in the field.

### External Expert Report by Intertek

On 22 June 2018 D Holloway, Water Microbiology Manager from the firm Intertek commenced investigation into contamination of flow straighteners. He concluded his report on 11 July 2018 with a copy of the report stored within the data room.

Suffice it to say that this was an extensive report by a recognised expert in the field. The investigation involved examination of 25 unused flow straighteners which following testing concluded no biofilm with the total microbial load being very low compared to those flow straighteners examined after use. Tests were conducted on straighteners following 1 week through to 1 month use with increasing levels of biofilm detected. Testing for bacteria identified numerous organisms all of which are detailed within the report. The findings indicate that this was not a localised issue but effecting ALL flow straighteners.

In addition, Intertek examined water samples provided by NHS GG & C, which indicated that the contamination is not localised but is widespread through the system.



Comment: - It seems inconceivable that NHS GG & C contest the integrity of the water or indeed those flow straighteners incorporated into the Horne Optitherm Taps. This is further examples of an external expert view being ignored by NHS GG & C.

## Conclusion

In conclusion it is suggested that NHS GG & C were presented with a raft of letters, reports, expert opinion and risk assessments with regards to the risks associated with the installation of Horne Optitherm Taps across high-risk areas with QEUH and RHC. Even when accepting of the risks in favour of removal/replacement which would have caused delay and additional cost, they failed to implement those identified risk mitigation measures. They deployed staff to 'manage' such risk with no written scheme, no understanding of water systems and no knowledge as to proper processes and procedures required to test the water. They failed to maintain the Horne Optitherm Taps in accordance with agreed advice, failed to secure a letter from HPS to support agreement for such risk mitigation measures and in fact, failed to notify HPS or the decision they had taken, to instal those taps against expert advice.

In all the circumstances NHS GG & C have failed in their statutory duty to protect vulnerable patients in high-risk areas and exposed them to increase risk of bacterial infection, knowing the severe risks to their mortality. Indeed, this was continually re-enforced by clinicians.

In addition, there are those within NHS GG & C who have engaged in a conspiracy of silence, failing to identify the significant risks highlighted by DMA Canyon in 2015 and 2017. They remained silent with regards their own Engineers Report of 2017 which found similar failings to DMA Canyon. Even when challenged by microbiologist's time after time, they ignored the requests and failed tom provide the information they had. It is the case that they have vilified those microbiologists who simply wished to protect their patients from such preventable risks.

It is the case that NHS GG & C have individually and collectively engaged in a series of wilful acts, so reckless as to show an utter disregard for the consequences. They knowingly exposed vulnerable children to increased risk of infection.

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**From:** McCallum R (Richard)  
**Sent:** 23 February 2022 10:58  
**To:** Morrison A (Alan)  
**Subject:** RE: Briefing regarding Queen Elizabeth University Hospital

**Categories:** For Action

I suppose key thing is that NSS and Glasgow are content with where we are too. Do you know how the Glasgow Board meeting went yesterday?

---

**From:** Morrison A (Alan) [REDACTED]  
**Sent:** 23 February 2022 08:54  
**To:** McCallum R (Richard) [REDACTED]  
**Subject:** RE: Briefing regarding Queen Elizabeth University Hospital

A note was sent up yesterday. I have attached it, though it basically says they are on track to re-open at the beginning of the month and there is no sense of the underlying drama of the last few days. The response from Cab Sec I have also included as he outlines how full implementation of the recommendations from the Advice Assurance and Review Group could be tied to de-escalation.

---

**From:** McCallum R (Richard) [REDACTED]  
**Sent:** 23 February 2022 08:16  
**To:** Morrison A (Alan) [REDACTED]  
**Subject:** RE: Briefing regarding Queen Elizabeth University Hospital

How did things go yesterday and did we get any feedback from the GGC board?

---

**From:** Morrison A (Alan) [REDACTED]  
**Sent:** 21 February 2022 18:54  
**To:** McCallum R (Richard) [REDACTED]  
**Subject:** FW: Briefing regarding Queen Elizabeth University Hospital

For info.

The further correspondence between Assure and GG&C was pretty unhelpful as it said '*NHS Scotland Assure is not in a position to give assurance on the safety of the water systems...*' I spoke to Julie and said we can't re-open the wards if that is your position, but despite that Julie said that Mary's view was that the ward will reopen on time(!). I think it reflects that Julie is not used to operating in a space like this and the Assure position lacked nuance. Qualified support, that relies on GG&C implementing an agreed action plan and working with NHS Assure to address all issues, is a place that we can get to (I think), but there is work to be done.

I will update you tomorrow once Assure and GG&C have had a further meeting.

---

**From:** Henderson C (Calum) [REDACTED]  
**Sent:** 21 February 2022 18:20  
**To:** Cabinet Secretary for Health and Social Care [REDACTED]  
**Cc:** DG Health & Social Care [REDACTED] Ward C (Christine) [REDACTED] Burns J (John)  
[REDACTED] Morrison A (Alan) [REDACTED] Raghavan S (Shalinay)  
[REDACTED] McMahon A (Alex) [REDACTED] Chief Nursing Officer

[REDACTED] Rafferty D (Donna) [REDACTED]

**Subject:** Briefing regarding Queen Elizabeth University Hospital

PS/ Cabinet Secretary for Health and Social Care

The Chief Nursing Officer flagged a briefing would be sent tonight regarding the Queen Elizabeth University Hospital.

There has been further correspondence between NHS Greater Glasgow and Clyde and NHS Assure which requires further discussion between the relevant parties

We shall provide the full briefing tomorrow once the latest position is established on Wards 2A/2B.

Many thanks

Calum Henderson  
Chief Nursing Officer Directorate  
E: [calum.henderson](mailto:calum.henderson) [REDACTED]  
Mobile: [REDACTED]

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**From:** Henderson C (Calum)  
**Sent:** 23 February 2022 08:33  
**To:** Morrison A (Alan)  
**Subject:** FW: QEUH Response - Submission to Cabinet Secretary - NHS GGC Wards 2A and B - Clean version - February 2022

**Categories:** For Info

Thanks

Calum Henderson  
Chief Nursing Officer Directorate  
Mobile: [REDACTED]

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**From:** Raghavan S (Shalinay) [REDACTED]  
**Sent:** 22 February 2022 17:17  
**To:** Chief Nursing Officer [REDACTED] Ward C (Christine) [REDACTED]  
**Cc:** Henderson C (Calum) [REDACTED]  
**Subject:** RE: QEUH Response - Submission to Cabinet Secretary - NHS GGC Wards 2A and B - Clean version - February 2022

I'm just off the phone to EVH – the report to the board was high level and ward opening was mentioned as “beginning of March” – no questions were asked

Tom Steele is in Spain but EVH going to message him about Assure Pathway progress – she isn't sighted on the detail

I'm just out of a meeting but will update Cab Sec Submission and get sent off now

Thanks  
Shalinay

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**From:** McMahon A (Alex) [REDACTED] **On Behalf Of** Chief Nursing Officer  
**Sent:** 22 February 2022 16:39  
**To:** Raghavan S (Shalinay) [REDACTED] Ward C (Christine) [REDACTED] Chief Nursing Officer [REDACTED]  
**Cc:** Henderson C (Calum) [REDACTED]  
**Subject:** RE: QEUH Response - Submission to Cabinet Secretary - NHS GGC Wards 2A and B - Clean version - February 2022

Do we know what was said today at the board and also have GG&C given Assure the info, particularly the EAE sign off?

Professor Alex McMahon  
Chief Nursing Officer  
Scottish Government  
St Andrews House  
Edinburgh

EH1 3DG

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**From:** Raghavan S (Shalinay) [REDACTED]  
**Sent:** 22 February 2022 15:02  
**To:** Ward C (Christine) [REDACTED] Chief Nursing Officer [REDACTED]  
**Cc:** Henderson C (Calum) [REDACTED]  
**Subject:** QEUH Response - Submission to Cabinet Secretary - NHS GGC Wards 2A and B - Clean version - February 2022  
**Importance:** High

Christine/Alex

Grateful for any comments before sending to Cab Sec PO.

Comms have been made aware of the Wards opening and I will put them on the cc list for this briefing.

Gaye is in the process of organising the AARG for Monday and has agreed to do the minutes in John Lewis' absence.

Thanks  
Shalinay

Miss Shalinay Raghavan  
Head of QEUH and Scottish Hospitals Inquiry Response Team  
Chief Nursing Officer's Directorate  
Scottish Government 2ER St Andrew's House Regent Road  
Edinburgh EH1 3DG  
Tel: [REDACTED]

---

**From:** Julie Critchley [REDACTED]  
**Sent:** 24 February 2022 17:38  
**To:** Chief Nursing Officer; Henderson C (Calum); Raghavan S (Shalinay); Ward C (Christine); Morrison A (Alan); Angela Wallace (NHS Forth Valley); Steele, Tom; Grant, Jane [Chief Exec]; Mary Morgan  
**Subject:** RE: Wards 2a/2b Update  
**Attachments:** 2022-02-24 Ward 2ab - Final briefing statement re water supply.docx; Water 2A and 2B response for NHSGGC 24-02-22 final.docx  
**Categories:** For Action

Hi all

Please see attached the documentation we have discussed today giving Assurance from NSS NHS S Assure on NHSGGC reopening of Wards 2A and 2B.

In addition to the assurance documentation I would personally like to thank the teams from NHSGGC and NHSS Assure for their timely and dedicated approach to ensuring we are able to provide safe care for these patients.

Kind regards J

**Julie Critchley**

Director of NHS Scotland Assure  
Procurement Commissioning and Facilities

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# Briefing statement regarding water supply.

**Wards 2a and 2b at NHS GGC**

**24 Feb 2022**



## Assurance

Following on from the meeting between NSS and NHS GGC, SG and CNO on 17<sup>th</sup> Feb 2022.

We (NHS S Assure) worked together with staff from NHS GGC. We provided a document that detailed the questions we had from the information supplied to us regarding the safety of the water supply in Wards 2A and 2B.

They (NHS GGC) endeavoured to collate and supply information to us quickly so that we would be able to provide assurance on the reoccupation of the Wards 2A and 2B. This was provided securely through a TEAMS channel

We all agreed that we would use the same methodology that we use for KSAR assurance projects:

- NHS GGC provide us with initial tranche of information (11<sup>th</sup> Feb)
- NHS S Assure review and respond to information provided and provide additional requests for information (17<sup>th</sup> Feb)
- GGC provided additional information (22,23<sup>rd</sup> Feb)
- NHS S Assure reviewed and worked with GGC to allow them to produce an action plan that is held, monitored and actioned by NHSGGC
- Assurance is given by NHS S Assure that we are satisfied that all risks and issues are mitigated by inclusion on the action plan

Information was supplied to us on 22/23<sup>rd</sup> Feb and we have responded with recommendations for inclusion in an action plan to be monitored and completed by NHSGGC.

NHS S Assure have several recommendations for action prior to opening wards 2A and 2B, they are listed below

- Legionella assessment including completion of resultant action plan
- Pseudomonas assessment including completion of resultant action plan
- Subordinate loop monitoring and recording as detailed in HSG274 must be undertaken including consideration of remote monitoring and documented before occupation
- An SOP for reporting, managing and investigating filter failure (pseudo-failure or otherwise) must be completed before occupation
- A document on locally agreed levels has been developed by NHSGGC. This must be approved by the IPCT, and the BICC and WSG before occupation. The IPCT must agree and monitor the level of water quality for patient use/access acceptable for this patient population before occupation.
- Pre flush samples and results must be obtained before occupation
- Details of communication and management of an abnormal water result are required to be available for NHSGGC. This should be in place before occupation and should include whose responsibility is it to communicate/escalate and to whom: in the event

of a clinical case: when a PAG/IMT is held and confirmation that a HIIAT assessment will be undertaken

We have discussed these with the NHSGGC team this afternoon (24<sup>th</sup>) and have been assured that they have most of these highlighted issues already in train and all will be completed prior to Wards 2A and 2B reopening.

Therefore, NHS S Assure based on the comprehensive information presented to us, are able to support the reopening of wards 2A and 2B at QEUH, subject to NHSGGC confirmation (received in the joint meeting on 24<sup>th</sup> February) of their action plan and commitment to address the issues identified.

J Critchley  
Director NHS S Assure

## GG&C response to NHS Assure 21/02/2022 and NHS S Assure recommendations for inclusion in GGC action Plan

In addition to the specific actions from the items listed below we would also recommend that all the new hardware installed on the ward i.e. new hand wash stations, have been installed and operate correctly.

Item	Question	Document (file name)	Assure Comment	GG&C Response	NHS Scotland Assure 23-02-2022 comments/ for inclusion in GGC action plan
	General		None of the documents are signed		NHSGGC to ensure all documents are specific to the site/patient population and are dated and signed by both facilities, IPCT and management. This should include contractors where appropriate
1.	Sight of the Legionella risk assessment: including when this was last undertaken, the state of completion and the action points	QEUH 2019 Water RA (3) (1)	This is not the legionella risk assessment. It is an action plan. The legionella risk assessment this is based on is April 2019 and was scheduled for revision on 2021. The 2019 and 2021 documents have not been provided.	<p>Copies of risk assessment- <b>See Teams Ref 1.1 Risk assessment zip file.</b></p> <p>New separate risk assessment to be carried out specifically on 2A/2B Feb 22</p> <p>Full new risk assessment of the entire Estates is being arranged via Compliance in 2022</p> <p>IC will update Pseudomonas risk assessment for 2A/2B.</p> <p>DMA included training records etc and registration with the LCA to demonstrate "competency" in this area.</p> <p>Within the 2015 L8 RA DMA included training records.</p> <p>DMA are LCA Registered (specifically with reference to L8 Risk Assessments) and a copy of this was included within the 2015 L8 RA.</p> <p>Within BS8580:2010 section 6.2.5 advises on the actions required to appraise the safe operation of the water system. On each of the points within this section DMA highlighted they complied with these points.</p> <p>As this was a new system with no previous records, and DMA had limited access to the commissioning records, and at the time of the original assessment there was no management structure for L8 control in place at the time, appraising the safe operation of the new system was where our works were concentrated.</p> <p>BS 8580:2010 6.2.5 Appraisal of the safe operation of the systems a) includes a description of the correct operation of the plant and any precautions taken <i>At the beginning of each section of the DMA RA – normal operating parameters are described for the water system</i></p>	<p>Confirmation of a RA for 2019. 2021 not provided</p> <p>Legionella RA (including completion of resultant action plan) for 2A and 2B recommended <b>before</b> occupation</p> <p>Pseudomonas RA (including completion of resultant action plan) for 2A and 2B recommended <b>before</b> occupation</p> <p>Training records should be current not circa 2015 BS8580 is actually 2019.</p>

Item	Question	Document (file name)	Assure Comment	GG&C Response	NHS Scotland Assure 23-02-2022 comments/ for inclusion in GGC action plan
				<p>b) details any start-up and shut down procedures, and plant rotation and flushing requirements for little used outlets <i>Section 10 of the DMA RA describes various procedures for start-up and shut downs, with task frequencies for L8 control regime also within this section and other individual sections describing actions required for different plant items and outlets (with recommendations made also compiled into section 2)</i></p> <p>c) includes where appropriate method statements e.g. for major tasks such as cleaning operations <i>Example method statements are incorporated into Section 10 of the DMA RA.</i></p> <p>d) outlines any tests that are to be completed on the system, along with the require frequency of the tests and the acceptable control parameters <i>Section 10 of the DMA RA tasks highlights with frequencies for L8 control regime (along with normal control parameters). Any tests carried out by DMA as part of the RA are included within the RA.</i></p> <p>e) details defects or out of control parameters; <i>The individual sections for each of the plant items and outlets highlight all survey and control readings carried out by DMA during the RA and any recommendations made (Including remedial actions) and these are then also compiled into Section 2. Within Section 2 all recommendations are also given a "priority rating" to allow for works to be prioritised (Running from 1 (Highest Priority) to 4 (Lowest Priority))</i></p> <p>f) logs appropriate corrective actions <i>see response to e) above</i></p> <p>Section 7 of the document covers the site survey – all the details of our survey are included within the RA</p> <p>Section 8 covers the reporting – copies of the RA were submitted to the appropriate persons when the works were complete.</p>	
2.	Report on Temperature control including the thermal mapping system including tertiary and subordinate loops throughout the building to ensure the	Sentinel Sheet Examples	<p>Sample document dated August 2021. Only considers outlet mixed temperatures and not mapping of building.</p> <p>No detailed response provided by NHS GGC.</p>	<p>The A&amp;C spreadsheets, DMA provided show sampling throughout the buildings (full spreadsheets to be saved into teams folder as only first page appeared as PDF) this includes cold and hot – <b>See Teams Ref 2.1 2021 NHS QEUH A&amp;C Sample Login Sheet zip file.</b></p>	<p>Level 2 CWS temperatures samples and remedial action if outwith parameters</p> <p>Level2 HWS temperatures sampled and remedial action outwith parameters</p>

Item	Question	Document (file name)	Assure Comment	GG&C Response	NHS Scotland Assure 23-02-2022 comments/ for inclusion in GGC action plan
	temperature of the water is sufficient to control pathogens			<p>DMA sheets record both ClO<sub>2</sub> and temperatures at designated locations and includes both TMT and direct hot/cold outlets within these records.</p> <p>EOL sensors on the floors and calorifier temperatures are checked on each shift and shift report completed. Copy of blank Shift report. – <b>See Ref 2.2 Shift Report Template 2022.</b></p> <p>DMA take temperatures at all sample points on hot cold and mixed as per A&amp;C spreadsheet, 6A and PICU monthly. DMA take temperatures at all agreed previous ClO<sub>2</sub> monitoring points weekly Estates take temperatures at all sentinel points monthly. Daily shift report which records that Calorifier have been checked for correct operation Temperatures are taken at every outlet during 6 monthly/annual TMT maintenance.</p> <p>Examples of Calorifier data, Cold Water data and end of line data being reviewed by Schneider and will be uploaded to teams.</p> <p>Hot water is provided at 65c to direct hots and identified with hot water signs. <b>See Teams Ref 2.5 CWS Bult Tank Temperatures 2021 2022</b> <b>See Team Ref 2.6 CWS EOL Sensor 1 Level 6 Jan to Feb</b> <b>See Teams Ref 2.7 HWS EOL Sensor 1 Level 6 Jan to Feb</b></p> <p>BMS EOL sensors. – <b>See Teams Ref 2.4 Examples of EOL sensors for Wards</b></p>	<p>Subordinate loop monitoring and recording as detailed in HSG274 must be undertaken including consideration of remote monitoring and documented <u>before</u> occupation</p> <p>Temperature monitoring should be based on water temperatures at the outlet or measuring surface temperature of return loops</p> <p>The water safety group must be assured that the hot water system is perfectly balanced to ensure flow through all areas</p>
3.	Chlorine dioxide dosing levels at both tanks and outlets	<p>Clo2 Testing Results 210628-04</p> <p>Clo2 Testing Results 210809-15</p>	<p>11 outlets noted. All but one of the tests are noted as “under construction”. This would suggest that no water was being drawn through these taps during construction. Three 2B outlets but no additional comments. There are temperature recorded in excess of 60C; has a risk assessment been carried out or mitigations put in place?</p> <p>11 outlets noted. As above but ward 2B has results (within limits). Mixed temps noted as above the 41C in guidance. No remedial action noted.</p>	<p>The A&amp;C spreadsheets, DMA provided show sampling and ClO<sub>2</sub> levels within tanks which are taken each month (full spreadsheets to be saved into teams folder). - <b>See Teams Ref 2.1 2021 NHS QEUH A&amp;C Sample Login Sheet zip file</b></p> <p>Any location where there are direct hot outlets are in non-patient areas within the hospital (e.g. DSR, Kitchens etc.) and the vast majority of the direct hot outlets have “Caution Hot Water Stickers” at outlet.</p> <p>Outlets which are supplied via TMV/TMT which present a scald risk are notified to Estates who will implement remedial actions (A tolerance of ±2°C has been identified as being “within spec” for TMV/TMTs).</p>	<p>Ensure tank ClO<sub>2</sub> records are available to GGC</p> <p>Chlorite records need to be available to GGC</p>

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		<p>Clo2 Testing Results 210906-12</p> <p>Clo2 Testing Results 211011-17</p> <p>Clo2 Testing Results 211206-12</p> <p>Clo2 Testing Results 220124-30</p>	<p>11 outlets noted. As above but ward 2B has results (within limits)</p> <p>11 outlets noted. As above but ward 2B has results (within limits). Ward 2B up to 50.2C mixed</p> <p>11 outlets noted. As above but ward 2B has results (within limits)</p> <p>As above. The anaesthetics room shows water temps at 40.7C degrees. This is in the legionella growth band. What remedial action was taken?</p> <p>No evidence of results at tanks provided.</p>	<p>ClO<sub>2</sub> levels are measured at CWSTs as part of routine sampling every month. ClO<sub>2</sub> readings were discussed early in the Ward 2A renovations and deemed not really necessary if a flushing regime was in place and ClO<sub>2</sub> levels being monitored in rest of building. As of October 21 when sampling regime restarted within 2A ClO<sub>2</sub> is monitored as part of the sampling regime in this ward</p> <p>Anaesthetics Room was supplied via a TMV so no remedial action was required at this temperature. This TMV has now been removed by other contractor (unsure of date this was replaced.</p> <p>No remedial actions were recommended for any TMTs within Ward 2A/2B during the construction phase as all TMTs were to be serviced and temperatures reset prior to ward reopening. In the end a full swap out of all Markwik 21+ taps was carried out in January 2022 and all showers have had a service/temperature reset carried out in January/February as and when hot water to ward was reinstated.</p> <p>DMA carry out ClO<sub>2</sub> monitoring and will check chlorite monitoring as part of the A&amp;C sampling at agree points.</p> <p>Scotmas carry out monthly maintenance checks on ClO<sub>2</sub> equipment and carry out remote monitoring.</p> <p>DMA check monthly and Shift Supervisors check status of ClO<sub>2</sub> via BMS.</p> <p>Scotmas Insite &amp; BMS monitors all tanks (ClO<sub>2</sub> and Chlorite) and all Alpha and Bravo units create trends data with appropriate alarms set.</p> <p>Tank results in A&amp;C spreadsheets. <b>See Teams- Ref 2.1 2021 NHS QEUH A&amp;C Sample Login Sheet zip file</b></p> <p>ClO<sub>2</sub> reports. – <b>See Teams Ref 2.3 ClO<sub>2</sub> Testing Results zip file.</b></p> <p>ClO<sub>2</sub> information from remote monitoring system attached – <b>See Teams Ref 3.1 Extract from Scotmas Insite Monitoring Systems which monitors ClO<sub>2</sub> levels.</b></p> <p><b>See Teams Ref 3.2 ClO<sub>2</sub> Scotmas Maintenance Schedule</b></p>	

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4.	Further detail on the drain cleaning protocol including chemical usage, timings and if testing would be considered	Drain Sanitising Process	<p>This document is out of date. It was valid between Sept 19 and Aug 20. There is no reference to the type of chemical or contact time or COSHH requirements.</p> <p>There is no evidence of education/training provided or any review/audit. What risk assessment has been undertaken to assess the requirement and frequency of drain cleaning. If drain disinfection is required on a weekly basis consideration should be given to assessment of drain use/practice that necessitates regular disinfection</p>	<p>The SOP was produced in September 18, reviewed annually and is due for its next review in August 22. The chemical which is used for the sanitising process is Hysan. This detail has been incorporated into the SOP - <b>See Teams Ref 4.1 Drain Sanitising Process revised 21.02.22</b></p> <p><b>See Teams Ref 4.2 Hysan HSSC MSDS Issue 6.</b></p> <p>Contact time for product is 2 minute and is detailed within SOP. COSHH safety data has also been incorporated into the SOP. This task is undertaken by the same two staff members who are fully trained, one of whom is a Supervisor. Copy of RHC Drain sanitising weekly schedule attached for information. <b>See Teams Ref 4.3 RHC Weekly Dosing Schedule Template updated Feb 22</b></p> <p>Infection Control to review current practices and information will be uploaded to Teams.</p>	<p>SOP for Drain sanitising complete</p> <p>Clarification that IPC training and escalation records are available and rates monitored.</p> <p><i>Infection Control to review current practices and information will be uploaded to Teams.</i></p> <p>This is an essential element to providing a holistic approach to water/wastewater safety in this high-risk patient group. Whilst the use of disinfectants has proved useful in minimising the risk from drains it is not always effective and it needs to be used as part of processes to mitigate risk. Staff must be aware of the importance of reporting any impaired drainage at the earliest opportunity. Records of drain blockages should be collated and reviewed by the water safety group</p> <p>The SOP should include PPM of drains appropriate to the patient population.</p>
5.	Management of toilets (flushing) if unfiltered water is considered a risk to immunocompromised patients	Dayshift flushing records	<p>From February 2022. Indicates flushing of WC but unclear as to time scales as these are noted as over an hour. No indication of errors being resolved.</p> <p>No detailed response to question provided.</p>	<p>WC's are flushed at the same time that the WHB's and Showers are flushed. The start and end time should be recorded as the same as only one flush takes place per WC. This will be recorded in this manner going forward.</p> <p>Staff member records all errors on flushing record and currently communicates these verbally to the Capital Team in Ward 2A. Going forward all errors will be reported to the Domestic Manager who will email details of errors to Capital team. When the ward is occupied going forward Domestic staff will escalate any issues which prevent them flushing to the SCN in the ward.</p>	<p>There is a lack of response to the original question regarding the risk component of unfiltered water to immunocompromised patients. There is a requirement to add this to GGC action plan <u>before</u> occupation</p>
6.	Review of installation, maintenance and cleaning of the Point of Use filters	QEUH Pall Filter Swaps RAMS (V6 2105) (002)	<p>Document notes that DMA will not supervise other contractors. There is no copy of the "swap" records provided. Page 3 second item 1</p>	<p><b>See Teams Ref 6.1, 6.2 &amp; 6.3 1QEUEH Filter Records Adults 4-11</b></p>	<p>Any practice which has the potential to introduce contamination to the base of the filter is high risk in that it can adversely affect water quality</p>

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		PALL filter instructions  WHB POUF SOP 170920  Showers SOP 2020	<p>minor leak observed it appears that this is allowed. This requires to be confirmed (also page 4 item 10 and page 5 item 9).</p> <p>There should be no leakage around the filter. Evidence of training</p> <p>Is there a risk assessment that supports the longer term use of POU filters? As this appears to be an ongoing control measure POU filter management is a critical component and requires more than an SOP.</p> <p>This notes that if leakage is observed then a new filter should be installed.</p> <p>SOP advises cleaning the filter from base up with TITAN sanitiser @1000ppm.</p> <p>SOP does not mention filters or indeed how to clean shower head correctly</p>	<p>Any minor leaks are addressed as and when filters are being installed or exchanged. DMA RAMS for filter fitting/exchange make clear that any leaks (no matter how small) must be rectified.</p> <p>All Domestic staff fully trained on SOP to clean POUF as part of WHB cleaning SOP. - <b>See Teams Ref 6.4 WHB POUF SOP 170920</b></p> <p>Staff sign off training, which is recorded in staff training record.</p> <p>Not aware of risk assessments risk used elsewhere for extended use, can any be provided for example.</p> <p>Correct DMA will changed filters.</p> <p>SOP for cleaning POUF devised from cleaning guidance provided by manufacturers and has been verified as appropriate by IC colleagues. <b>See Teams Ref 6.4 WHB POUF SOP 170920</b></p> <p>SOP for cleaning shower is based on the cleaning process detailed within national cleaning specification. SOP will be amended to include cleaning of POUF if there is one fitted. – <b>See Teams Ref 6.5 Showers SOP 2020 – updated 22.02.22</b></p>	<p>Is the water safety group assured that:</p> <ul style="list-style-type: none"> <li>• training is such that staff understand the consequences to the patient if filter cleaning is performed incorrectly</li> <li>• as filters are only in place in selected wards all staff not familiar with that environment are going to follow correct practice.</li> <li>• An appropriate audit programme is in place and reports back to the WSG to ensure that the SOP is being adhered to?</li> </ul> <p>An SOP for reporting, managing and investigating filter failure (pseudo-failure or otherwise) must be completed <u>before</u> occupation</p> <p>The compound used (chlorine based) for point of use filter and docking station cleaning must be confirmed as compatible with the filter manufacturer (PALL) and documented</p> <p><i>Check there is no dripping or leaking from the filter connection (If the filter connection is dripping, leaking or loose report it to the Domestic Supervisor)-</i></p> <p>this is taken from the SOP for wash hand basin cleaning. There is no mention of method of checking for leaking from the filter connection. Additionally, leakage can come from higher up – i.e. from the TMT and run along the underside of the outlet and then over the filter. This must be including within the filter SOP and WHB cleaning SOP</p>
7.	Discussion on locally agreed acceptable levels of micro-organisms to provide assurance the water system is under control	QEUH Sampling OOS Parameters IP 2018 (002)	See comments associated with item 11.		<p>A document on locally agreed levels has been developed by NHSGGC. It is unclear how the levels were agreed. This must be approved by the IPCT, and the BICC and WSG <u>before</u> occupation.</p> <p>The IPCT must agree and monitor the level of water quality for patient use/access acceptable for this patient population <u>before</u> occupation.</p>



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8.	Confirmation of Cleaning regime and process for cleaning TMT's/TMV's	2202 QEUH TMV Servicing RAMS (D1)  Showers SOP 2020	When servicing the TMT/TMV/TMS contractor uses alcohol wipes to clean them.  Document effective from 2020 and due for review 2022 Details cleaning for showers	TMV servicing RAMS detail how TMVs/taps to be cleaned upon completion of servicing works  As previous comment relating to shower. – <b>See Teams Ref 6.4 Showers SOP 2020 – updated 22.02.22</b>	
9.	Confirmation of sampling methodology and Pre flush water samples from ward 6A and 2A/B. SHTM 04 – 01 requires boards to collect pre-flush water samples from patient areas which are deemed as augmented care, which would include this cohort of patients.	WQS 017 V5 Water Management Procedure.docx (002)  QEUH Micro Sampling W2A-B (2202-D1).docx  QEUH Pseudo (HTM) Sampling 1910  SRAMS-18-006 Micro Sampling (General) (V4 2010)  AC CWST Filter Unit RAMS Micro Sampling (V1 2102)	Document dated February 2021 There is no specific reference to pre-flush however SHTM 04-01 is referenced This is a SOP detailing the sampling of outlets. It is not clear what relationship this document has with QEUH Sampling OOS Parameters IP 2018 (002) noted in item 11.  This document is dated Feb 2022. It notes this is for pre and post flush testing. There is no reference to any British standards for testing. There is no time scale noted in getting the sample to the lab. The document notes swan neck taps....there should be no swan neck taps on site.  Dated October 2019. There is no reference to any British standards for testing, but does mention HTM04-01. It notes that samples are to be taken where filters are in place through the filter.  This is 2010 document and is v4. It is not specific to QEUH. Microbiological sampling SOP. It notes that this is for pre and post flush samples. There is no indication to what standard the test are taken.  This is a document issued as v4 in October 2020. And is similar to	This is the agreed document which list those area which are sampled and the actions taken. This uses the above previous agreed limit as the basis.  The document referenced is a draft method statement DMA issued for consultation/approval by Estates, ICT and Microbiology. Upon consultation it was agreed that this methodology was not entirely suitable (particularly the pre-flushing sampling) and a new methodology was created. As the sampling methodology for this site has been created as a bespoke methodology based on the site conditions and the specific.  Swan neck taps are only fitted on Mop Sinks (Part of original construction) and new swan neck taps fitted in locations to be filtered where pillar taps could not take a filter and suitable alternative pillar taps not able to be sourced. <b>detected</b>  This document clearly states it is “Based on protocol as described in HTM 04-01 (Part B Operational Management – Appendix E)”. When these samples were to be taken the sampling protocol was written to reflect the microbiological analysis requested by GGC and in conjunction with the processing laboratory samples were initially to be sent to (Intertek).  This is not a document from 2010 – this “2010” is an internal DMA document name only. It is correct this is not specific to QEUH, but is provided to DMA staff as the normal protocol for microbiological sampling (and may be used in other buildings out with the A&C where there are not specific RAMS generated for microbiological sampling).  This document was issued as the sampling protocol to be used for sampling from CWSTs and Filtration units with the A&C.  All DMA RAMS are generated to provide guidance for DMA operators on how sampling should be undertaken. These are not designed to be a replacement for a British Standard. DMA	Clarity required on sampling techniques, training and competency of those undertaking sampling.  BS EN IOS 5667 describes these techniques; those who take the samples must be trained in this methodology and carry it out when taking samples?  NHSGGC should ensure clarity required on which document has precedence and who was consulted in changing the methodology?  Swan-neck tap outlets are not recommended, as they do not empty after use. Similarly, strainers, aerators and flow restrictors should not be used as they become colonised with bacteria. How has this risk been mitigated? Any risk assessments should be specific to the site to which they are to be applied be signed and dated and approved by the local IPCT and WSG.  NHSGGC IPCT must consider their rationale why preflush water sampling was deemed as not being suitable. The reason previously provided for not taking preflush samples (difficulty of timing when patient in room) has no validity for an unoccupied area.  NHSGGC must ensure they have a risk assessment for moving away from preflush samples and this approved by BICC/WSG.  Pre flush samples and results must be obtained <u>before</u> occupation  The document states that the water sampling for <i>Pseudomonas aeruginosa</i> is in accordance with HTM O4 – 01. This does not appear to be the case. It is key to obtain a true preflush sample in order to detect contamination in the last 2 m of pipework, which is a most frequent location for these organisms. The SOP as it stands is unreliable for the detection of these organisms. Prior use of an outlet can be sufficient to

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			SRAMS-18-006 Micro Sampling (General) (V4 2010) There is no indication to what standard the test are taken.	sampling protocols have been audited on numerous occasions by the Legionella Control Association Auditor and other accrediting bodies who have never raised any concerns with the fact no British Standard is referenced within the documentation.	remove all planktonic forms resulting in a false negative water sample.  Document ' <i>microbiological sampling and chlorine dioxide testing wards 2 a and 2B</i> –there seems to be no concept as to what is required to collect a preflush sample. Prior use of an outlet is likely to give misleading results as one is no longer collecting a true preflush sample.
10.	Remedial action, if any, between the positive <i>Stenotrophomonas maltophilia</i> , <i>Cupriavidus</i> spp readings on ward 2a/b and the subsequent negative results	Can't find any documents	No response provided	All Markwik Taps were exchanged w/c 10/01/22 across Ward 2A & 2B. All showers had strainers removed and Thermostatic cartridge disinfected. A comprehensive flushing regime was carried out in the intervening period.	An external report in 2018 recommended that <i>Where POU filters are deemed to be necessary on a WHB where there is an insufficient, ideally the outlet should be replaced to one which allows sufficient height to retain both a sufficient air gap and activity space. Where this is not possible or as an interim measure, the plug can be removed so that the basin cannot be filled and the air gap is therefore protected. Users should be advised why the plug has been removed and how to avoid contaminating the external surfaces of the filter</i>  NHSGGC should ensure this has been considered/actioned in the ward refurbishment  The response provided is from a facilities perspective. The IPCT response has not been included. NHSGGC should be assured from the IPCT and their response included
11.	Detail on proposed ongoing monitoring including monitoring (auditing) of practices, surveillance of cases, training.	QEUH Sampling OOS Parameters IP 2018 (002)	This document is from 2019 There is no note of training Document notes <i>Pseudomonas aeruginosa</i> : < 10 CFU/100ml. Fungi: < 10 CFU/100ml. <i>Legionella Pneumophila</i> : <50 CFU/litre  Also notes a) On establishing microbiological results within the defined acceptable thresholds over 4 consecutive weeks, Microbiological monitoring frequency will be reduced to monthly. b) On recording 3 consecutive monthly results within the defined acceptable thresholds the monitoring frequency will be reduced to quarterly.	All Domestic staff carry out water flushing as part of their cleaning tasks. Training is provided to Domestic staff via a Tool Box talk for this purpose. All Domestic staff provide sign off upon receipt of training – Tool Box Talk attached – <b>See Teams Ref 11.1 Water Flushing Tool Box Talk.</b>  Note ongoing sampling is as per WQS 017 V5 Water Management Procedure.docx (002) and supersedes the original document, although the thresholds for bacterial levels are still used. Since 2012 an electronic patient management system (ICNet) has been used in NHSGGC. This system links information from hospital systems, e.g. Virology including Lighthouse labs, microbiology, theatres and TrakCare. This ensures that results are received in real time (every 15 minutes) by the teams who in turn can act upon this promptly. A full record of the patients' diagnosis and management is included in the system which facilitates documentation audit. The system allows IPCT SMT to view the records of any patient referred via this system	Further detail on auditing/monitoring practices of surveillance/training etc. is required by NHSGCC particularly to ensure adequate flushing is being performed.  Where flushing is occurring in an unoccupied area. NHSGGC should be assured that this is monitored to ensure water temperatures are satisfactory?

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			<p>c) On recording 3 consecutive quarterly results within the defined acceptable thresholds the monitoring frequency will be discontinued and the water quality incident recorded as closed.</p> <p>There is no detail on case finding/active surveillance</p>	<p>in any hospital across the board. ICNet (IPC surveillance software) links directly with the NHSGGC Microbiology &amp; Virology labs.</p> <p>All patients with alert organisms or conditions (AO/AC) are referred to the Infection prevention and Control Teams directly from the laboratories. Patients with alert conditions/organisms are visited by an infection prevention and control nurse, who explains the condition and the precautions necessary to prevent spread, e.g. the requirement for isolation. Ward staff are given care plans or check list with the precautions required to prevent spread and they are asked to review this daily</p> <p>Antimicrobial Resistance Healthcare Associated Infection Group (ARHAI) methodology has been used to monitor gram negative bacteraemias in this specific group of patients since 2019. The chart below is based on this methodology and is updated in real time and includes all children treated by the haematology/oncology department irrespective of location. Rates and not cases are charted. For the past two years every gram negative bacteraemia has triggered a clinical review and the assessment used has thoroughly investigated whether if there has been any positive environmental samples with the same organism as that identified in the patients' blood cultures. All clinical reviews are discussed and reviewed monthly at the Women and Children's Case Note Review Meeting. In addition, to support IPC practice in this area, each month an enhanced supervision assessment takes place. This is a multidisciplinary process with senior nursing staff from the service, IPCT, estates and facilities who review the ward and identify any areas for improvement in terms of IPC practice/standards cleanliness and estates issues that require attention. This is over and above normal IPC systems, e.g. Standard Infection Control Precautions (SICPs) and hand hygiene audits.</p> <p><b>See Teams Ref 11.2 South Sector Water Safety Meeting minutes 10.02.22</b></p> <p><b>See Teams Ref 11.3 WTG 2A Results Discussion 31.01.22</b></p>	
12.	information on water testing that has gone through the GGC water safety group	South Sector Water Safety Minute 10.11.2021	This is not a full Board Water Safety meeting it is a sector water meeting. This notes that a number of RP/AP have lapsed and awaiting budget release. SLWG reviewing sampling across GGC. Testing information not specific to 2A and 2B (gives % of total out of spec)	<p>2A/2B minute results will be submitted as per minutes below to Water Board Meeting.</p> <p>Water Governance PowerPoint. – <b>See Teams Ref 12.1 Water Governance - QEUH</b></p>	<p>There are no minutes as part of response to Q12. However, they are presented for Q11. NHSGGC should ensure these are valid for the response for Q12?</p> <p>No IPC action re GNB noted. NHSGGC should ensure this has been provided.</p>

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		WTG 2A Results Discussion 24.01.2022	Specific group for 2A. No specifics test results recorded. Some options explored but no definite recommendations recorded.	DMA are following the principles of WQS 017 V5 Water Management Procedure.docx (002) as agreed at various meeting for 2A and instigating local disinfection of outlets before re-sampling.  All sample results are incorporated into DMA sampling sheets submitted to GG&C.	Details of communication and management of an abnormal water result are required to be available for NHSGGC. This should be in place <u>before</u> occupation and should include whose responsibility is it to communicate/escalate and to whom: in the event of a clinical case: when a PAG/IMT is held and confirmation that a HIIAT assessment will be undertaken
13.	additional information that has been provided by GGCs external authorising engineer who has had sight of and supported the actions being taken.	Doc A for NHS GGC Management QEUH RHC ver 1.0.docx  QEUH and RHC Audit B Template for NHS GGC .docx ver1.0.docx	Draft document dated February 2021. AE audit for whole site. Notes vast improvement in record keeping and evidence gathering. The summary of actions has not been completed correctly and there is no completion date or signature; rather a task list. Not specific to 2A/2B.  Draft document dated February 2021. Notes that the risk assessment is (just) out of date. There is a note regarding the CLO2 is not as per HSG274 Hot and cold water temperature records missing/not recorded.	Copy of final version will be uploaded to teams – <b>See Teams Ref 13.1 AE Audit - awaiting</b>  Copy of Smartsheet AE audit. <b>See Teams Ref 13.2 QEUH &amp; RHC Audit 2021 (1) from Smartsheet.</b>  Copy of Smartsheet AE audit. <b>See Teams Ref 13.2 QEUH &amp; RHC Audit 2021 (1) from Smartsheet.</b>	Response suggests that items dated from 2021 are resolved as these appear to be open for more than six months. The comment about “There is a note regarding the CLO2 is not as per HSG274 Hot and cold water temperature records missing/not recorded.” Has not been addressed. NHSGGC should be assured that these have been completed.
14.	Other documents provided	Back Shift Flushing records  211029 QEUH AC W2A Injection C_D  211213 QEUH AC W2A Injection C_D  2022-02-18_RHC_2A_updated_water_testing_figures	One set of flushing records provided dated 09-02-2022 for 2A and 2B. One area no access (staff kitchen) and one WC not flushing (2A room 20). No note of any remedial action.  DMA disinfection report for 2A2B using Chlorine  DMA disinfection report for 2A2B using silver hydrogen peroxide  Indicates that in 2A/2B that the MEAN count of Cupriavidus and Sphigomonas are less than 10 CFU/100ml. In floor 1 it would	Staff member records all errors on flushing record and currently communicates these verbally to the Capital Team in ward 2A. Going forward all errors will be reported to the Domestic Manager who will email details of errors to Capital team. When the ward is occupied going forward Domestic staff will escalate any issues which prevent them flushing to the SCN in the ward.  Reports have been submitted to GG&C.  Reports have been submitted to GG&C.  Slides 7 and 8 of 2022-02-18_RHC_2A_updated_water_testing_figures use data visualisation methods that summarise large numbers of data points to help identify spatial and temporal trends. In both	NHSGGC IPCT should ensure they are content with this

Item	Question	Document (file name)	Assure Comment	GG&C Response	NHS Scotland Assure 23-02-2022 comments/ for inclusion in GGC action plan
		Maintenance procedures taken from Written scheme	<p>appear that this is circa 15 CFU/100ml</p> <p>Document not dated. Describes the frequency of maintenance operations. It is not clear if this requires to be updated with the recommendations from AE 2021 Audit.</p>	<p>these slides, each point represents all the samples collected from that area on that day - slide 7 shows prevalence (the proportion of all the samples with any count of the named organism), whereas slide 8 shows mean counts (the mean of all samples collected that day from that area).</p> <p>When discussing means of specific taxa, it is important to specify the time period. For example, yes, it is correct that on Feb 9, the mean count of Sphingomonas on floor 1 was shown as being around 15. That is because eight samples were collected from floor 1 that day, and one was found to have &gt;100 Sphingomonas paucimobilis (as previously explained, e.g. on slides 12 and 20 of 2022-02-07_RHC_2A_Assure_updated_figures.pdf, there is reporting ceiling with named taxa, and values &gt;100 are recoded as 101 for analysis purposes). The mean Sphingomonas count for floor 1 is therefore shown as 101/8 (12.625), though given the reporting ceiling, this is likely an underestimate. In contrast, Sphingomonas prevalence for floor 1 that day was 1 sample out of 8, so 0.125.</p> <p>However, eight samples were also collected from floor 1 on Feb 7 and again on Feb 8, and none had any named organisms. It would be incorrect to say that 'the MEAN count of Cupriavidus and Sphingomonas [...] is circa 15 CFU/100ml' on floor 1, without specifying that this only applies to Sphingomonas, and only for the eight samples collected on Feb 9. The mean would be much lower if a longer time period were used.</p> <p><b>See 14.1 2021 NHS QEUH 3<sup>rd</sup> &amp; 4<sup>th</sup> Flr Sample Login Sheet 2022-02-18</b></p> <p><b>See 14.2 2021 NGS QEUH Ground &amp; 1<sup>st</sup> Flr Sample Login Sheet 2022-02-18</b></p> <p><b>See 14.3 2021 NHS QEUH Ward 2A-B Sample Login Sheet 2022-02-18</b></p> <p>This is a summary of the written scheme activities. Attached is the most recent written scheme, currently under review for minor changes including names. – <b>See Teams Ref 14.4 Written Scheme QEUH Campus – 2021 Rev C</b></p> <p>Attached Maintenance Planner for A&amp;C only. – <b>See Teams Ref 14.5 QEUH (all) Planner 2022 A&amp;C only</b></p>	<p>The WSG/BICC should seek clarity on where Optitherm outlets are permitted. There is previous documentation that these outlets would be removed from augmented care areas following the findings on water 2 a 2 B which resulted in their removal. The lack of visible biofilm does not exclude the presence of biofilm. This is corroborated by a report from Intertek. The outlet also runs an increased risk by having both a cold and blended option, as staff in practice tend to use only blended or cold. The current practice of changing the flow straighteners quarterly was not intended for high risk areas.</p> <p>NHSGGC previously reported an incident of <i>filter failure</i>. NHS GGC should seek clarity whether this was the case and what is implied by a filter being defective. Positive water samples obtained through a filter are rarely due to a filter failure, and most likely due to pseudo-filter failure. Clarity on positive water samples obtained post POU filter requires full investigation on possible causes.</p> <p><i>DMA operators use temp probes to monitor the temperature until it is stable and consistent with expected temperatures for hot and cold water within the building. The time that flushing report commenced in the area is recorded on the site report, but individual times are not recorded for each outlet.</i></p> <p>Response noted. NHSGGC should ensure a written procedure for this and defining what NHS GGC expect as expected temperatures?</p> <p>Response noted.</p> <p><i>The water flushing records for this date do not report any access issues for cleaning /flushing. Therefore the appropriate cleaning procedures would have taken place.</i></p> <p>This response does not answer the question posed for this document. A response to the question should be included in NHSGGC action plan.</p>

Item	Question	Document (file name)	Assure Comment	GG&C Response	NHS Scotland Assure 23-02-2022 comments/ for inclusion in GGC action plan
		<p>220131 W2A-2B flushing report (10406)</p> <p>2021 NHS QEUH A&amp;C sample login sheet</p> <p>2021 NHS QEUH Ward 6A samples</p>	<p>It is noted that outlets flushed until temp is stable but there is no record of temperatures. There is no note of flushing times</p> <p>There is no date on this document but appears to record samples from January 2021 to December 2021 covering all areas of QEUH. moulds/yeast identified with some GNB and high TVC</p> <p>Samples noted as 1<sup>st</sup> flush = preflush. No post flush samples are noted. Shower temperatures and Clo2 levels not recorded. Some high temps...no note of remedial action.</p> <p>06/07/2021 testing according to Excel spreadsheet revealed presence of gram-negative rods in water sample from Ward 6. No results of water tester provided. A request that cleaning procedures are reviewed was made. Could the follow-up documentation please be made available?</p>	<p>DMA operators use temp probes to monitor the temperature until it is stable and consistent with expected temperatures for hot and cold water within the building. The time that flushing report commenced in the area is recorded on the site report, but individual times are not recorded for each outlet.</p> <p>This is correct this document is sent weekly to Estates, IC and Microbiology when new results are obtained and copies saved in SCART folder. This lists all samples by sample dates.</p> <p>All microbiological sampling is carried out by either NHS GRI Water Lab or Intertek Laboratories. Samples submitted to Intertek are prefixed INT, with all other prefixes submitted to GRI (Ward 6A samples prefixed with W6A).</p> <p>The water flushing records for this date do not report any access issues for cleaning /flushing. Therefore the appropriate cleaning procedures would have taken place.</p> <p>OOS reports are received from Estates colleagues to request confirmation that the appropriate cleaning processes are in place.</p> <p>The water flushing records for this date, 06/07/21, do not report any access issues for cleaning /flushing. Therefore the appropriate cleaning procedures were completed. A Robust QA audit process is in place for all wards to provide assurance of the required standards of cleanliness which include monthly FMT audits, additional sample audits and audits by the Boards external auditor.</p> <p>Note as per agreed procedure and in the absence of national standards POU filters on taps are changed by DMA automatically. – <b>See Teams Ref 14.6 6A Room 4 Records Extract</b></p> <ul style="list-style-type: none"> <li>- <b>See Teams Ref 14.7 6A Room 8 Records Extract.</b></li> <li>- <b>See Teams Ref 14.8 Out of Spec 6A Room 4 &amp; 8 Correspondence</b></li> </ul> <p>Filter exchange sheets submitted to GG&amp;C as evidence of filters being exchanged.</p>	

Item	Question	Document (file name)	Assure Comment	GG&C Response	NHS Scotland Assure 23-02-2022 comments/ for inclusion in GGC action plan
		2021 NHS QEUH Ward 1D PICU samples	<p>Mould has been noted at a number of outlets- there was a historical issue with basement tanks and mould. Please explain what these findings are thought to represent.</p> <p>Optitherm outlets as of July last year were still in adult CCU. Please verify if there is an ongoing issue with these outlets and if so are they still present in augmented care areas.</p> <p>16/07/2021 filter was replaced as it was defective. Please provide integrity report to show filter was defective or other evidence to support filter was defective.</p> <p>Philipshill Spinal ward ground floor room high count of Legionella – please provide details to show how this high count was investigated.</p> <p>Samples noted as 1st flush = preflush. No post flush samples are noted. Shower temperatures and Clo2 levels not recorded. Some high temps...no note of remedial action.</p>	<p>Fungi (including yeasts and moulds) are part of the microbial diversity found in water systems, though they have received relatively little attention, as water research, guidance, and regulations have focused largely on bacteria. Given their prevalence in these environments, as with bacteria, we would expect sporadic detection of fungi. However, any outlets with water samples registering counts of 10 or higher on SAB22 or SAB30 tests are flagged as out-of-spec and dealt with as outlined in WQS 017 V5 Water Management Procedure.docx, and our ongoing trend analyses will show if any named taxa appear enriched in specific areas, even if counts remain below this threshold.</p> <p>Optitherm taps flow straighteners are changed quarterly and no visible signs of bio-film.</p> <p>Room 9 Records. – <b>See Teams Ref 14.9 6A Room 9 Records Extract</b></p> <p>Evidence of Filter Change. – <b>See Teams Ref 14.10 6A Evidence of Filter Change.</b></p> <p>This is within a separate building and on a separate water supply. This is not within the A&amp;C and is in Spinal. – <b>See Team Ref 14.11 Incident 21-118 Phillipshill Spinal</b></p> <p>The samples are taken without any disinfection as they are being taken through the filters (Pall advised we should not spray any disinfectant on the filters). They get labelled as pre/1st flush to differentiate from the full disinfect/flush protocol we normally work to.</p> <p>When sampling from showers DMA have not been recording the temperature or the ClO<sub>2</sub> readings as this is “mixed” sample</p> <p>This mix differs from a “TMV mixed” in that it is not collected at the full hot setting, rather at a point between the hot/mixed and cold.</p>	

Item	Question	Document (file name)	Assure Comment	GG&C Response	NHS Scotland Assure 23-02-2022 comments/ for inclusion in GGC action plan
				<p>This can vary slightly depending on who takes the sample and on the valve handle position setting and it is difficult (if not impossible) to be highly accurate on how much of the sample is from hot/mixed and how much is from the cold supply. Any reading may therefore not be reflective of either the hot or cold system temperatures provided due to mixed nature.</p> <p>It should also be noted that generally when showers are being sampled there are other samples being taken within the room from Clinical Taps (Optitherm/Markwik 21+) or from bathroom Taps (Contour 21/Markwik 21+) which will have readings taken for temperature and ClO<sub>2</sub> which will be more representative of the system.</p>	





# Key Stage Assurance Review Workbook



**Commissioning**

October 2022

Version V1.0

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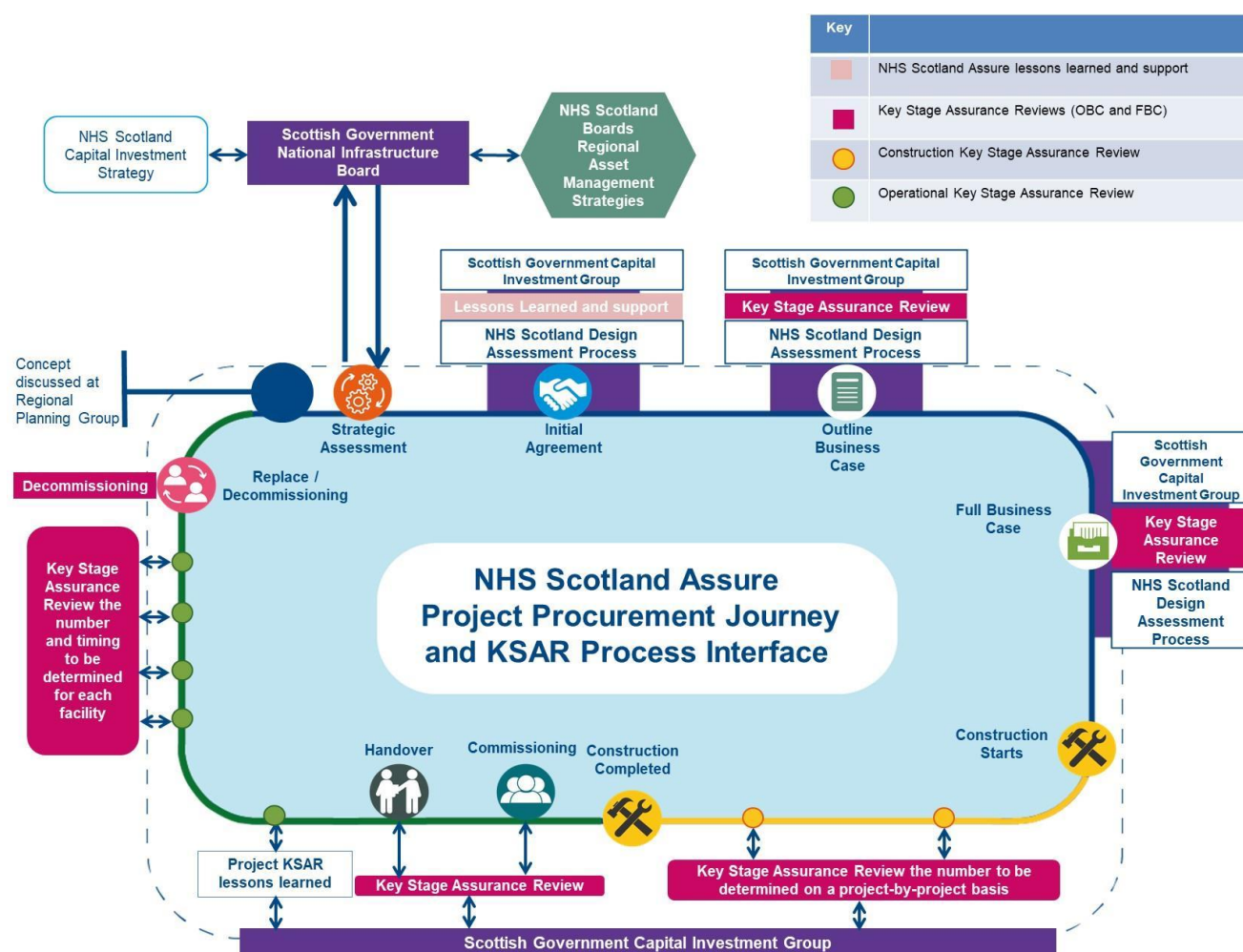
## 1. About this workbook

This workbook supports the Commissioning Key Stage Assurance Review (KSAR), delivered by the NHS Scotland Assure Assurance service.

Further information about the NHS Scotland Assure Assurance service and KSAR process is provided in Section 2.

Figure 1. shows how the Commissioning stage in the procurement and Construction journey. The timing and frequency of KSARs during this stage will vary dependent upon the facility. Specific workbooks have been developed for the other stages within this journey.

**Figure 1: Construction Procurement Journey**



The KSAR process and workbooks provide a transparent, structured framework for all clinical specialisms, facilities and operational management professionals to assess and manage a healthcare build or refurbishment. In turn this assists Health Boards to provide the best and safest outcomes for patients, staff and visitors in the built environment.

KSARs deliver an independent peer review. NHS Scotland Assure staff outside the project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs also focus on how projects are able to demonstrate compliance with relevant guidance and standards.

It is vital to receive feedback on the following elements of health facilities - Infection Prevention and Control (IPC), water, ventilation, electrical, plumbing, medical gases installations and fire. This ensures they are designed, installed and functioning from the initial commissioning of a new facility and throughout its lifetime. Health Boards are required to have appropriate governance in place at all stages of the construction procurement journey.

## Using this workbook

The review at Commissioning stage investigates the approach taken by the Health Board and other stakeholders during this critical stage of the project to ensure that there continues to be an appropriate level of knowledge and awareness of the importance of the Commissioning stage on patient, staff and visitor safety.

The purpose of the KSAR at Commissioning stage is to confirm there is a continued good and comprehensive understanding of the category of patient who will use the proposed facility, and that the project team consider how appropriate quality and safety standards will influence the commissioning of the various systems. It looks to provide assurance that the project can proceed to the Handover phase.

Additionally, the KSAR at Commissioning will carry out an appropriate level of checking of the Testing and Commissioning documentation. This level of checking will be set by the Review Team following their initial discussions on site.

The KSAR workbook is a tool for both NHS Scotland Assure to undertake project reviews and for Health Boards to support the development of their own projects. It provides guidance on the review structure and areas of investigation to be addressed by the review team and should be regarded as indicative and not prescriptive. The review team will consider whether any emerging findings require additional topics to be addressed. If so, evidence relating to these areas, regarding the safety of the patients, staff and visitors, should be provided.



## 2. Key Stage Assurance Review

### Introduction to NHS Scotland Assure – Assurance Service

Good management and effective control of projects are essential elements to the successful delivery and maintenance of healthcare facilities across NHS Scotland estates.

The NHS Scotland Assure Assurance Service will deliver KSARs, designed to provide independent assurance to Scottish Government Health and Social Care Directorates (SGHSCDs).

It will assess if Health Boards Project Management teams (inclusive of clinicians, appointed construction consultants, and contractors) are briefed and following best practice procedures in the provision of facilities. We will review if projects are compliant in all aspects of safety, if specific engineering systems are designed, installed and commissioned, and for ongoing safety maintenance including IPC.

The KSAR process is applicable regardless of procurement route chosen.



## The KSAR Process

The KSAR process examines projects at key points in their lifecycle. It does not remove any legal or contractual obligations from the NHS Health Board, their designers or contractors. It provides assurance to progress successfully to the next review point. KSARs focus on the assessment of the delivery approach and the review team will work with the Health Board's project team to ensure there is comprehensive understanding of the patient cohorts utilising the facility. KSARs also ensure relevant guidance is fully implemented and any technical derogations have been fully reasoned, transparently discussed, the implications understood, recorded and signed-off by the Health Board and their advisors.

KSARs will concentrate on project governance related to the core review topics of water, ventilation, electrical, plumbing, medical gases installations, fire, and associated IPC guidance. If further issues are raised with the review team, they will fully incorporate those issues into the reporting process.

## Value of the KSAR Process

Key Stage Assurance Reviews (KSARs) deliver an independent peer review. NSS staff outside the Health Board's project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs provide an external perspective and provide a challenge to the robustness of the Health Board's brief, plans and processes.

This includes work delivered by construction consultants, employed either directly or through construction contractors, and the work being delivered by the primary contractor, their sub-contractors and specialist suppliers.

The KSAR provides an independent report and recommended action plan, which is shared with the Health Board to ensure:

- Appropriate skills and experience are deployed on the project by the Health Board, consultants, primary contractor and all sub-contractors.
- The clinicians and wider stakeholders covered by the project fully understand the project status, aims and the issues involved.
- Appropriate management structures, put in place to ensure appropriate infection prevention and control measures, are designed into the project to reduce the risk of transmission of infectious agents.
- There is assurance the project can progress to the next stage of development or implementation, with particular emphasis on the safety of the patients, staff and visitors utilising the facility.
- Provision of advice and guidance to programme and project teams by fellow Practitioners.



## KSAR as part of the overall assurance framework

Each NHS Health Board will be fully responsible for the delivery of all projects, and its own internal process and resources for carrying out internal reviews and audits of its activities. The KSAR is seen as a complementary independent review, and not as a replacement for the responsibilities of the Health Board.

NHS Health Boards should have in place an effective framework to provide a suitable level of assurance for their programmes and projects. Health Boards are encouraged and expected to ensure adequate and timely coordination and sharing of information, including plans, between the various internal reviews and functions.

The KSAR process is not a substitute for a rigorous governance framework being put place by the Health Board to manage key processes including business planning, investment appraisal, business case management, risk management and service and contract management.



## The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP)

The Scottish Government's ambition for NHS Scotland's estate and the need for well-designed healthcare environments is articulated in the Policy on Design Quality for NHS Scotland. Good design in the built environment encompasses a wide range of inter-related factors such as, sustainability, engineering, architecture, fire safety, energy, environment, decontamination, space utilisation, landscaping, security, technology, lighting, access for visitors and mobility impaired persons.

The mandated NDAP process is undertaken by NHS Scotland Assure and Architecture and Design Scotland and considers all of the above. It sets the principles for the resolution of potential conflicts of statutory or mandatory compliance to ensure the specific facility provides; the best balance of the technical requirements, meets clinical needs and fulfils the conceptual aims of the policy on Design Quality. The NDAP process begins at the Initial Agreement stage of a project and provides advice through to the Full Business Case. There is no change to either Scottish Capital Investment Manual (SCIM) or NDAP processes.

The Scottish Government is progressing policy to improve the safety of the healthcare environment in relation to the built environment risk. The Assurance Service delivered through NHS Scotland Assure is a response to this policy and the KSARs are integral to the compliance work. The aspiration is not to duplicate any of the work included in the NDAP process, but to provide assurance regarding the critical components highlighted throughout this workbook.

Integral to the KSARs will be a review of the balance between sustainability issues and patient safety.

Where possible the two reviews will be aligned to avoid duplication of work. For example, in instances where the NDAP has reviewed detail at a technical level, this will be used by the KSAR team rather than being separately requested and reviewed.

### Sustainability

The review will provide assurance that the proposals for the project provide an effective balance in terms of patient, staff and visitors safety, whilst meeting required sustainability outcomes and complying with the guidance standards.





## Commissioning KSAR

The Commissioning KSAR will be an independent “peer review” in which NHS Scotland Assure (NHS SA) subject matter experts, independent of the project, use their experience and expertise to review and assess the proposed pre-Commissioning and Commissioning stage documentation and any Commissioning results available (i.e., water microbiology results). It is anticipated that the implementation of the Commissioning KSAR will differ from other reviews, as it will predominately take the form of a site-based audit of the processes and documentation associated with the Commissioning phase.

Any areas of concern found during this KSAR will be immediately raised with the NHS Health Board.

The Commissioning KSAR will consider (particularly with respect to IPC measures):

- Water systems
- Ventilation systems
- Plumbing and drainage
- Fire safety
- Electrical systems
- Medical gases
- Any other building or engineering component critical to the safety and welfare of a particular patient cohort (defined by the review team).
- The requirements of the NHS Scotland National Infection Prevention and Control Manual have been incorporated and implemented to allow staff to deliver the health services in a safe and comprehensive manner.

At all stages of Commissioning phase, knowledge of compliance in design and implementation will need to encompass (but is not limited to) the following:

- NHS Scotland policy letters (DLs, CELs, CMOs)
- Scottish Health Planning Notes (SHPN)
- Scottish Health Facilities Notes (SHFN)
- Scottish Health Technical Memoranda (SHTM)
- Scottish Health Technical Notes (SHTN)
- Scottish Fire Practice Notes (SFPN)
- Health Building Notes (HBN)
- Health Technical Memoranda (HTM)
- Health Facilities Notes (HFN)
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Relevant British Standards

- UK construction industry bodies best practice or design guidance publications e.g., HSE, CIBSE, BRE, IHEEM, IET, BRE, BSRIA, sustainability, dementia and equality.
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Other statutory requirements: Planning permission; Building Regulations compliance; Equality Act compliance; Health and Safety Executive (HSE) compliance; Construction (Design and Management) Regulations compliance. Fire Scotland Act.
- Other mandatory NHS Scotland use of
  - Activity Data Base (ADB);
  - Achieving Excellence Design Evaluation Tool;
  - The Sustainable Design and Construction Guide (SDaC) SHTN 02-01
  - Scottish Government BIM Policy (SPPN 1/2017; implementation of building information modelling within construction projects: March 2017).
- The implementation of NHS Scotland Soft Landings (SL) guidance.
- Confirm that there are plans in place for risk management, issue management and that these plans are being shared with suppliers and delivery partners.
- Evaluation of actions taken to implement recommendations made in earlier assessment of deliverability.
- Confirm there are plans in place to ensure the requirements of the NHS Scotland National Infection Prevention and Control Manual for Scotland are being incorporated into the development in a manner which will allow the staff allocated to the role to deliver the services to the patients.

Additionally, the Commissioning KSAR will carry out an appropriate level of checking of the testing and commissioning results for the solutions adopted. This level of checking will be set by the review team following their initial discussions with the Health Board and other stakeholders.

The review teams consist of experienced operational estates professionals and experienced Infection Control clinicians. The team will work with the Health Board's project team, inclusive of their clinicians and their appointed facility management consultants, contractor and specialist sub-contractors. The review will result in a report being prepared for the Programme Director at the Health Board and a copy of the report will also be provided to Scottish Government Capital Investment Group.

Section 3 below provides the typical question sets for each discipline that the review team will use as the basis for the Commissioning KSAR review process. The team will amend this as necessary depending on the project and areas of particular interest. The Health Board, their designers and contractors should be aware that this is the information which will typically be reviewed during the site visit. It is expected that the Construction stage should effectively be completed at the time of the Commissioning KSAR to ensure the accuracy of the report.

### 3. Assessment of Delivery Approach

It is anticipated that Project Commissioning may be phased as determined by the scale and complexity of the building and systems.

The KSAR will focus on governance, management, planning, resources, risk assessments, method statements, validation and Health Board acceptance of Commissioning results. Those responsible for Commissioning should have the appropriate level of competency to undertake the Commissioning of the systems which they are responsible for. All Commissioning should be carried out in accordance with the Board Contract Requirements (BCR) and appropriate industry standards.

#### Project Governance and General Arrangements

No.	Areas to probe	Evidence expected
1.1	<p>How does the Health Board assure itself that actions from the previous KSAR have been closed out, and any design changes documented?</p> <p>How does the Health Board assure itself that any other design, strategic or project changes have been appropriately reviewed, agreed and documented?</p>	<ul style="list-style-type: none"> <li>• Evidence of a completed action plan, with reference to evidence, to demonstrate close out of actions.</li> <li>• Evidence of any substantive changes to the design from previous review stage.</li> <li>• Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions.</li> <li>• Evidence of ongoing compliance with relevant standards and guidance, for example compliance with Firecode, updated fire strategy, updated water management plan, etc.</li> </ul>
1.2	<p>How does the Health Board ensure that all design activities, including Contractor Design Portions (CDPs) are concluded prior to commencement of commissioning?</p>	<ul style="list-style-type: none"> <li>• Evidence of Health Board design acceptance processes, including stakeholder review/sign-off.</li> <li>• Evidence of engagement with designers, including written acceptance of Contractor Design Portions.</li> <li>• Evidence that any derogations from standards have been agreed by the Health Board and signed-off prior to the start of the Commissioning process.</li> </ul>

No.	Areas to probe	Evidence expected
1.3	Does the Health Board continue to demonstrate service / clinical input into design, Commissioning and Handover decisions based on a current and comprehensive knowledge of patient cohorts?	<ul style="list-style-type: none"> <li>• Evidence of recorded and updated input taken from service lead(s) / clinician(s) about relevant patient cohort characteristics and their typical needs in terms of the accommodation's environment, safety and infection control standards.</li> <li>• Demonstrable expertise of service lead(s) / clinician(s) in providing this advice.</li> <li>• Evidence of how service users / patient cohort needs, and their expected use of the accommodation are influencing the Commissioning brief, including critical building, engineering and infection prevention and control quality and safety standards.</li> </ul>
1.4	How does the Health Board ensure that there is a planned approach for the implementation of the Commissioning process, to ensure compliance with the design requirements and to provide a safe environment for the patient cohorts?	<ul style="list-style-type: none"> <li>• Evidence of the appointment of a specialist Commissioning company (or companies) with relevant healthcare experience and competency.</li> <li>• Evidence of a competence verification process by the Health Board.</li> <li>• Evidence that a competent independent validation organisation has been appointed by the Health Board for all disciplines covered under the KSAR.</li> <li>• Evidence of processes in place to deliver relevant training to those who do not have previous healthcare experience, prior to commencing work on site.</li> <li>• Evidence of processes for audits and ongoing reviews of the Commissioning companies.</li> <li>• Evidence of stakeholder input into Commissioning company selection process, including IPC / Estates / AE / AP.</li> </ul>
1.5	How does the Health Board assure itself that the Commissioning company and all personnel included in the Commissioning process	<ul style="list-style-type: none"> <li>• Evidence of competence verification process by the Health Board.</li> <li>• Evidence of similar, previous healthcare projects by the Commissioning company.</li> </ul>

No.	Areas to probe	Evidence expected
	<p>(including Commissioning managers and engineers) have the relevant competence, experience and training to carry out the commissioning of the following in a healthcare environment:</p> <ul style="list-style-type: none"> <li>• Domestic Water &amp; Above Ground Drainage</li> <li>• Ventilation</li> <li>• Electrical Systems</li> <li>• Medical Gas</li> <li>• Fire Safety Systems/Measures</li> </ul> <p>How does the Health Board assure itself that experience competency and training are relevant to the healthcare environment?</p>	<ul style="list-style-type: none"> <li>• Evidence of a vetted list of site Commissioning engineers which confirms qualifications and healthcare experience.</li> <li>• Where specialist systems are present, evidence that individuals are competent in working with these systems (e.g., RO plant, Medical IT Power Supplies, etc).</li> <li>• Where anyone does not have previous healthcare experience, evidence of the specific and relevant on-site training which is provided to them before they commence work on site (for example infection control and health and safety within the healthcare-built environment).</li> <li>• Evidence of site management structure.</li> </ul>
1.6	<p>How does the Health Board ensure that there is a planned approach towards determining the necessary design and Commissioning standards for this accommodation, including compliance with local Health Board policy requirements?</p>	<ul style="list-style-type: none"> <li>• Updated and current list of the relevant NHS and non-NHS guidance that is being used and adopted (see previous section of this workbook (Page 9 and 10) for examples of appropriate guidance).</li> <li>• Updated and current list of all proposed derogations from NHS guidance with a detailed technical narrative on each derogation and/or list of known gaps in guidance that will need to be resolved in order to meet the needs of the patient / user cohort.</li> <li>• Evidence of the processes in place to ensure that personnel from the Commissioning companies have been trained in the requirements of the local Health Board policy and procedures.</li> <li>• Knowledge of the role of infection prevention and control advisors (IPCN and ICD) to be used throughout the Commissioning stage, and details of the resource plan in place to ensure continuity into the Handover phase.</li> </ul>

No.	Areas to probe	Evidence expected
1.7	How does the Health Board ensure that there is a planned approach for managing the Commissioning process to ensure successful compliance with agreed and approved standards?	<ul style="list-style-type: none"> <li>• Evidence of how the Health Board assures themselves that relevant stakeholders (e.g., IPC / AE / AP) are available for pre-commissioning and commissioning activities as required.</li> <li>• Evidence of the processes in place to demonstrate how gaps in commissioning expertise are being filled.</li> <li>• Details of how compliance with the appropriate guidance, design brief, Commissioning brief and other standards are being agreed, signed-off, monitored, reported against and if necessary escalated / adjudicated throughout the Construction, Commissioning and Handover stages.</li> <li>• Evidence of a detailed Commissioning programme encompassing all pre-Commissioning and Commissioning activities for all systems.</li> <li>• Evidence of a roles and responsibilities document for all individuals involved in Commissioning, including independent validators/verifiers.</li> <li>• Details of stakeholder engagement in the pre-commissioning and commissioning process.</li> <li>• Evidence that there are processes in place to allow stakeholders to review Commissioning documentation and that these are kept up to date.</li> </ul>
1.8	How does the Health Board ensure that Commissioning results are witnessed and agreed as acceptable including independent validation where required?	<ul style="list-style-type: none"> <li>• Evidence of the activities to be witnessed and by whom.</li> <li>• Evidence that a body, independent of the Contractor, has witnessed the results of the final Commissioning readings.</li> <li>• Evidence that the design consultant has signed-off that the results achieved are within the limits of deviation from design, as agreed with the Health Board / Contractor.</li> <li>• Evidence that the validation processes have been undertaken in line with the</li> </ul>



No.	Areas to probe	Evidence expected
		<p>requirements of relevant guidance, considering the additional requirements for specialist tests (e.g., UCV theatres, isolation rooms, aseptic facilities, IAP rooms, and labs etc).</p> <ul style="list-style-type: none"> <li>• Evidence of a validation report for each system detailing the findings, for review by stakeholders (Clinical head of dept. / IPC / Estates etc).</li> </ul>
1.9	<p>How does the Health Board ensure that the safety and performance of all commissioned systems will not be compromised in the period between Commissioning and Handover of the facility?</p>	<ul style="list-style-type: none"> <li>• Evidence of processes for undertaking risk assessments.</li> <li>• Evidence of roles and responsibilities.</li> <li>• Evidence of stakeholder review of strategies, including the local safety groups e.g., Water Safety Group, Ventilation Safety Group etc.</li> <li>• Evidence of consideration of PPM activities to be undertaken in the period between commissioning and handover.</li> <li>• Evidence of adequate/appropriate numbers of APs and CPs.</li> </ul>
1.10	<p>How does the Health Board ensure that all relevant information from the Commissioning phase will be collated and reviewed prior to Handover, including training records, Commissioning results and O&amp;M information?</p>	<ul style="list-style-type: none"> <li>• Evidence of programme for completing O&amp;M information.</li> <li>• Evidence of training programme for all relevant stakeholder groups, including service users, IPC, AE, AP etc.</li> <li>• Evidence of all factory tests and / or type test results.</li> <li>• Evidence that apparatus used during Testing and Commissioning has been appropriately calibrated.</li> <li>• Evidence of activities undertaken.</li> <li>• Evidence of the completed, final Commissioning records which demonstrate design conditions and actual commissioned conditions.</li> <li>• Evidence of final Commissioning schematics.</li> </ul>

## IPC Built Environment

No.	Areas to probe	Evidence expected
2.1	How does the Health Board assure itself that there is an effective infection prevention and control management structure in place and how does it relate to the development of the project?	<ul style="list-style-type: none"> <li>Evidence IPC and clinical teams have been integrated into all decisions regarding any derogations through the design, Construction and Commissioning processes and are satisfied this will not impact on patient safety.</li> </ul>
2.2	How does the Health Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place and how does it relate to the Commissioning process?	<ul style="list-style-type: none"> <li>Evidence may include specific sign-off documentation, meeting minutes, risk assessments, risk registers relating to IPC, with evidence of escalation through the agreed NHS Health Board governance process.</li> </ul>
2.3	How does the Health Board ensure that there is an effective Infection Prevention and Control strategy in place, including evidence of how evidence-based infection prevention and control measures will be implemented?	<ul style="list-style-type: none"> <li>Evidence that IPC are fully embedded in the project team and the Commissioning programme takes cognisance of any actual or perceived risks identified.</li> <li>Evidence that the Health Boards approach ensures that all IPC related matters are integrated into the design, Construction and Commissioning processes, (e.g., HAI-SCRIBE etc.).</li> <li>Evidence that the Health Board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this.</li> </ul>



No.	Areas to probe	Evidence expected
2.4	How does the Health Board assure itself that specialists in Infection Prevention and Control (IPC) have been fully involved in the Commissioning process?	<ul style="list-style-type: none"> <li>• Evidence of the Executive Health Board reports.</li> <li>• Evidence of minutes and actions from Governance and Operational Groups relevant to the project, including IPC.</li> </ul>
2.5	How does the Health Board assure itself that those IPC specialists involved in the Commissioning process are appropriately qualified and experienced?	<ul style="list-style-type: none"> <li>• Evidence of the structure of the IPCT with details of qualifications held and previous experience in commissioning new builds, refurbishments or special projects.</li> <li>• Evidence that this has been reviewed and approved by the Health Board.</li> </ul>
2.6	How has the Health Board ensured that the IPC specialists engaged in the Commissioning process have access to all relevant information, including the results of Commissioning tests on water and ventilation systems and any decontamination equipment?	<ul style="list-style-type: none"> <li>• Evidence of a process in place for reporting the results of Commissioning tests to IPC stakeholders.</li> <li>• Evidence of minutes and actions from governance and operational groups relevant to the project, including IPC and Water/Venilation Safety Groups.</li> </ul>
2.7	What are the Health Board's processes in the event that the results of any Commissioning tests are unsatisfactory?	<ul style="list-style-type: none"> <li>• Evidence of processes for approving and responding to Commissioning test results.</li> </ul>
2.8	How has the Health Board assured itself that staff in the new/refurbished unit will be able to comply with the requirements of the National Infection Prevention and Control Manual?	<ul style="list-style-type: none"> <li>• Evidence of HAI-SCRIBE documentation.</li> <li>• Evidence of minutes and actions from governance and operational groups relevant to the project, including IPCC.</li> </ul>



No.	Areas to probe	Evidence expected
2.9	How has the Health Board assured itself that all new equipment (for example furniture, fixtures & equipment (FF&E)) meets required standards for IPC?	<ul style="list-style-type: none"> <li>• Details of IPC involvement in procurement process.</li> <li>• Minutes and actions from governance and operational groups relevant to the project, including IPCC.</li> </ul>
2.10	How has the Health Board assured itself that proposed cleaning schedules will be implemented to meet the requirements of the National Cleaning Specification?	<ul style="list-style-type: none"> <li>• Evidence of demarcation of responsibilities for cleaning activities, including programme of activities (e.g., “builders clean”, “sparkle clean”, “clinical clean” and any subsequent ongoing activities).</li> <li>• Evidence that proposed cleaning schedules have been matched against the National Cleaning Specification.</li> <li>• Details of facilities, clinical and IPC teams’ involvement in drawing up proposed cleaning schedules.</li> </ul>

## Water and Internal Plumbing / Drainage Systems

No.	Areas to probe	Evidence expected
3.1	How does the Health Board assure itself that the domestic water and above ground drainage systems are commissioned in accordance with local Health Board policy requirements?	<ul style="list-style-type: none"> <li>• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local water policy and procedures.</li> <li>• Evidence that the Health Board are engaging with the Water Safety Group.</li> <li>• Evidence that the site induction, with respect to working on domestic water services and above ground drainage systems, has been agreed with all stakeholders, including the water safety group.</li> <li>• Evidence that the written scheme(s) has been reviewed and updated to reflect the works and that the revised scheme is being implemented.</li> </ul>
3.2	How does the Health Board ensure that the domestic water and above ground drainage systems are being commissioned to the correct standard and in accordance with relevant guidance?	<ul style="list-style-type: none"> <li>• Evidence of a Commissioning brief in line with SHTM 04-01 Part A which confirms the processes which are to be applied (including reference to relevant British Standards and manufacturers guidelines).</li> <li>• Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP).</li> <li>• List of all Commissioning documentation and records that will be produced.</li> <li>• Evidence that there are relevant manufacturers reassurance letters, confirming that the disinfection methods proposed won't adversely affect their components (outlets and pipework) and will not impact on component warranty.</li> </ul>
3.3	How does the Health Board ensure that the relevant stakeholders are involved in reviewing the Commissioning processes?	<ul style="list-style-type: none"> <li>• Evidence that the Commissioning documents and processes as noted in 3.2 have been reviewed by all relevant stakeholders.</li> <li>• Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-</li> </ul>

No.	Areas to probe	Evidence expected
		<p>Commissioning, mapped to each Commissioning exercise.</p> <ul style="list-style-type: none"> <li>• Evidence of the roles and responsibilities of all stakeholders involved in the process.</li> <li>• Evidence of the attendance of the relevant stakeholders during the Commissioning process, including pre-Commissioning.</li> <li>• Evidence of Action Plans, with responsibilities defined.</li> <li>• Evidence that there are processes in place for stakeholders to review all findings, including out of specification findings.</li> <li>• Evidence that IPC have been engaged during the Construction and Commissioning stages.</li> </ul>
3.4	<p>How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?</p>	<ul style="list-style-type: none"> <li>• Evidence of the design information, validated against the as-installed condition, to confirm the flow rates, pressures, temperatures, etc., to be used for Commissioning.</li> <li>• Evidence of a written agreement from the Health Board representatives to confirm that they have checked this list of the criteria before Commissioning commences.</li> <li>• Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions.</li> <li>• Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.</li> </ul>

No.	Areas to probe	Evidence expected
3.5	How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?	<ul style="list-style-type: none"> <li>• Evidence that adequate pre-Commissioning check sheets, in line with the recommendations in SHTM 04-01 Part A, (including reference to British Standards for above ground drainage checks) have been prepared and reviewed / accepted by the Health Board prior to commencing works.</li> <li>• Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives.</li> <li>• Evidence of stakeholder engagement in pre-Commissioning processes (IPC / WSG / AE / AP etc.)</li> <li>• Evidence of ongoing review of protection measures installed in relation to above ground drainage systems, including verification that all drains were appropriately capped during Construction until final connection.</li> <li>• Evidence of a strategy to ensure drains flow freely and are free from any debris or obstructions (e.g., pre-Commissioning CCTV surveys).</li> </ul>

## Ventilation

No.	Areas to probe	Evidence expected
4.1	How does the Health Board assure itself that the ventilation systems are commissioned in accordance with local Health Board policy requirements?	<ul style="list-style-type: none"> <li>• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local ventilation policy and procedures.</li> <li>• Evidence that the Health Board are engaging with the Ventilation Safety Group (VSG).</li> <li>• Evidence that the site induction, with respect to working on ventilation and heating / chilled water systems has been agreed with all stakeholders, including the ventilation safety group.</li> </ul>
4.2	How does the Health Board ensure that the ventilation systems are being commissioned to the correct standard and in accordance with relevant guidance?	<ul style="list-style-type: none"> <li>• Evidence of a Commissioning brief in line with SHTM 03-01 Part A which confirms the processes which are to be applied (including reference to relevant British Standards, CIBSE/BSRIA guides and manufacturers guidelines).</li> <li>• Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP).</li> <li>• List of all Commissioning documentation and records that will be produced.</li> </ul>
4.3	How does the Health Board ensure that the relevant representatives are involved in reviewing the Commissioning processes?	<ul style="list-style-type: none"> <li>• Evidence that the Commissioning documents and processes as noted in 4.2 have been reviewed by all relevant stakeholders.</li> <li>• Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-Commissioning, mapped to each Commissioning exercise.</li> <li>• Evidence of the roles and responsibilities of all stakeholders involved in the process.</li> <li>• Records of the parties who will need to support the Commissioning engineers to make those adjustments and facilitate all results to be recorded (e.g., BMS Specialists).</li> <li>• Evidence of the attendance of the relevant stakeholders during the</li> </ul>

No.	Areas to probe	Evidence expected
		<p>Commissioning process, including pre-Commissioning.</p> <ul style="list-style-type: none"> <li>• Evidence of Action Plans, with responsibilities defined.</li> <li>• Evidence that there are processes in place to review all commissioning documents, including out of specification findings.</li> <li>• Evidence that IPC have been engaged during the Construction and Commissioning stages.</li> </ul>
4.4	<p>How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?</p>	<ul style="list-style-type: none"> <li>• Evidence of the design information, validated against the as-installed condition, to confirm the pressure cascades, air flow rates, temperatures, etc. to be used for Commissioning.</li> <li>• Evidence of a written agreement from the Health Board representatives to confirm that they have checked this list of the criteria before Commissioning commences.</li> <li>• Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions.</li> <li>• Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.</li> </ul>
4.5	<p>How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?</p>	<ul style="list-style-type: none"> <li>• Evidence that adequate pre-Commissioning check sheets, in line with recommendations in SHTM 03-01 Part A, (including reference to British Standards / CIBSE / BSRIA guides) checks have been prepared and reviewed / accepted by the Health Board prior to commencing works.</li> <li>• Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives.</li> </ul>

No.	Areas to probe	Evidence expected
		<ul style="list-style-type: none"> <li>• Evidence of stakeholder engagement in pre-Commissioning processes (IPC / VSG / AE / AP etc.)</li> <li>• Evidence that inspections by the independent validator have been carried out during and on completion of the installation of the ventilation systems, in line with the requirements of SHTM 03-01 Part A.</li> <li>• Evidence of air permeability tests, where applicable, in line with the requirements of SHTM 03-01 Part A.</li> <li>• Evidence of ongoing review of protection measures installed in relation to the ventilation systems, including verification that all ductwork, fans, air handling units, etc were appropriately protected during Construction until final connection.</li> </ul>



## Electrical

No.	Areas to probe	Evidence expected
5.1	How does the Health Board assure itself that the electrical systems are commissioned in accordance with local Health Board policy requirements?	<ul style="list-style-type: none"> <li>• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local electrical policy and procedures.</li> <li>• Evidence that the Health Board and Contractor team, including the Commissioning company, are engaging in Electrical Safety Group meetings.</li> <li>• Where interfaces to existing Health Board electrical systems are present, evidence that the site induction with respect to working on electrical services has been agreed with the Health Board, including confirmation of the Duty Holder.</li> <li>• Confirmation which safe system of work will be in force, naming the AE and AP's.</li> <li>• Evidence that safe systems of work have been documented and reviewed in accordance with SHTM 06-02 and 06-03.</li> </ul>
5.2	How does the Health Board ensure that the electrical systems are being commissioned to the correct standard and in accordance with relevant guidance?	<ul style="list-style-type: none"> <li>• Evidence of a detailed method statement for the electrical system Commissioning process, which confirms the national standards which are to be applied, including but not limited to process for validating instrumentation calibration, "lock off", safety/hazard/warning signage protocols and PPE requirements.</li> <li>• Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP).</li> <li>• List of all Commissioning documentation and records that will be produced.</li> </ul>

No.	Areas to probe	Evidence expected
5.3	How does the Health Board ensure that the relevant stakeholders are involved in reviewing the Commissioning processes?	<ul style="list-style-type: none"> <li>• Evidence that the Commissioning documents and processes as noted in 5.2 have been reviewed by all relevant stakeholders.</li> <li>• Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-Commissioning, mapped to each Commissioning exercise.</li> <li>• Evidence of the roles and responsibilities of all stakeholders involved in the process.</li> <li>• Records of the parties who will need to support the Commissioning engineers to make those adjustments and facilitate all results to be recorded (e.g., electrical testers).</li> <li>• Evidence of the attendance of the relevant stakeholders during the Commissioning process, including pre-Commissioning.</li> <li>• Evidence of Action Plans, with responsibilities defined.</li> <li>• Evidence that there are processes in place to review all commissioning documents, including out of specification findings.</li> <li>• Evidence that IPC have been engagement during the Construction and Commissioning stages.</li> </ul>
5.4	How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?	<ul style="list-style-type: none"> <li>• Evidence of the design information, validated against the as-installed condition, to confirm the characteristics of the system to be used for Commissioning.</li> <li>• A written agreement from the Health Board representatives that they have checked this information before Commissioning commences.</li> <li>• Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions.</li> </ul>

No.	Areas to probe	Evidence expected
		<ul style="list-style-type: none"> <li>• Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.</li> <li>• A copy of test results, signed by a qualified competent electrical tester and designer.</li> </ul>
5.5	How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?	<ul style="list-style-type: none"> <li>• Evidence that adequate pre-Commissioning checks and documentation, in line with SHTM 06-01 and BS 7671 have been prepared and reviewed / accepted by the Health Board prior to commencing works.</li> <li>• Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives.</li> <li>• Evidence that test schedules and “dead” test sheets relating to the installation are available, along with live testing results in accordance with BS7671.</li> <li>• Evidence of stakeholder engagement in pre-Commissioning processes (IPC / Electrical Safety Group / AE / AP etc.).</li> </ul>
5.6	How does the Health Board ensure that all emergency power systems have been appropriately commissioned, tested and the results agreed as acceptable?	<ul style="list-style-type: none"> <li>• Evidence of generator dynamic test results in accordance with SHTM 06-01 and manufacturers recommendations, including but not limited to: <ul style="list-style-type: none"> <li>- Full load run, not less than four hours.</li> <li>- Start up within specified times.</li> <li>- Voltage regulation.</li> </ul> </li> <li>• Evidence that generator synchronisation has been tested and proved: <ul style="list-style-type: none"> <li>- Where multiple generators are used, confirmation of whether they share the load equally, and that this has been confirmed through site testing.</li> <li>- Confirmation of the start-up sequence validation.</li> </ul> </li> <li>• Evidence of the validation of operational switching philosophy,</li> </ul>

No.	Areas to probe	Evidence expected
		<p>cause-and-effect scenarios and local operational procedures; including details of load shedding requirements to change from the distribution for power supplied from the primary electrical source and any secondary power supplies, generators or tertiary power supplies within the installation.</p> <ul style="list-style-type: none"> <li>• Evidence of the validation of changeover times in accordance with BS7671 and SHTM 06-01.</li> <li>• For UPS Systems: <ul style="list-style-type: none"> <li>- Evidence that all UPS systems have been confirmed as no break supply and battery endurance tested.</li> <li>- Confirmation that the environmental conditions of the battery locations have been documented and validated as per the manufacturer's requirements.</li> </ul> </li> </ul>

## Medical Gases

No.	Areas to probe	Evidence expected
6.1	How does the Health Board assure itself that the medical gas pipeline systems are commissioned in accordance with local Health Board policy requirements?	<ul style="list-style-type: none"> <li>• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local medical gas pipeline systems policy and procedures.</li> <li>• Evidence that the Health Board are engaging with the Medical Gas Safety Committee.</li> <li>• Evidence that the site induction, with respect to working on medical gas pipeline systems has been agreed with all stakeholders, including the Medical Gas Safety Committee.</li> </ul>
6.2	How does the Health Board ensure that the medical gas pipeline systems are being commissioned to the correct standard and in accordance with relevant guidance?	<ul style="list-style-type: none"> <li>• A detailed method statement of the medical gas pipeline systems Commissioning process, which confirms the national standards which are to be applied.</li> <li>• Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP).</li> <li>• List of all Commissioning documentation and records that will be produced, with reference to the relevant forms required by SHTM 02-01 Part A.</li> </ul>
6.3	How does the Health Board ensure that the relevant representatives are involved in reviewing the Commissioning processes?	<ul style="list-style-type: none"> <li>• Evidence that the Commissioning documents and processes as noted in 6.2 have been reviewed by all relevant stakeholders.</li> <li>• Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-Commissioning, mapped to each Commissioning exercise.</li> <li>• Evidence of the roles and responsibilities of all stakeholders involved in the process.</li> <li>• Evidence of the attendance of the relevant stakeholders during the Commissioning process, including pre-Commissioning.</li> </ul>

No.	Areas to probe	Evidence expected
		<ul style="list-style-type: none"> <li>• Evidence of Action Plans, with responsibilities defined.</li> <li>• Evidence that IPC and NHS Health Board Pharmacists have been engaged during the Construction and Commissioning stages.</li> <li>• Evidence that there are processes in place to review Commissioning documentation and that these are kept up to date.</li> </ul>
6.4	<p>How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?</p>	<ul style="list-style-type: none"> <li>• Evidence of the design information, validated against the as-installed condition, to confirm the flow rates, pressures etc. to be used for Commissioning.</li> <li>• Evidence of a written agreement from the Health Board representatives that they have checked this list of the criteria before Commissioning commences.</li> <li>• Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions.</li> <li>• Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.</li> </ul>
6.5	<p>How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?</p>	<ul style="list-style-type: none"> <li>• Evidence that adequate pre-Commissioning check sheets, in line with recommendations in SHTM 02-01 have been prepared and reviewed / accepted by the Health Board prior to commencing works.</li> <li>• Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives.</li> <li>• Evidence of stakeholder engagement in pre-Commissioning processes (IPC / MGPS Safety Committee / AE / AP etc.).</li> </ul>

No.	Areas to probe	Evidence expected
6.6	How does the Health Board ensure that all validation is carried out on the relevant systems?	<ul style="list-style-type: none"><li>• Evidence that the validation process has been undertaken in line with the requirements of SHTM 02-01.</li><li>• Records of the validation, with all readings signed-off by an agency which is independent of the Contractor.</li></ul>



## Fire Safety

No.	Areas to probe	Evidence expected
7.1	<p>Has the Fire Strategy been changed since the last KSAR?</p> <p>Has the Health Board made any design, or on-site changes, concerning active or passive fire precaution measures?</p> <p>How does the Health Board monitor and agree any such changes?</p> <p>Do any of the changes result in a variation or derogation from technical guidance?</p>	<ul style="list-style-type: none"> <li>• Evidence of Health Board change control mechanisms e.g., change control log.</li> <li>• Evidence of updated design information, including evidence of review and approval by Health Board specialists e.g., Local Fire Safety Advisor etc.</li> <li>• Evidence of reviews of the impact of any changes on statutory approvals.</li> <li>• Evidence that standards are achieved by alternative means.</li> <li>• Evidence that any changes comply with Firecode and the technical standards.</li> <li>• Amended and updated fire strategy.</li> </ul>
7.2	<p>How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?</p>	<ul style="list-style-type: none"> <li>• Evidence of the documented pre-Commissioning process / check sheets being used for fire safety systems, which confirms the technical standards that are to be applied.</li> <li>• Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives.</li> <li>• Evidence of stakeholder engagement in pre-Commissioning processes (Local Fire Safety Advisors etc.).</li> </ul>
7.3	<p>Have all fire safety systems been individually tested to ensure that the final installation conforms to the agreed design specification, is functioning correctly and is ready for acceptance testing?</p> <p>Have the fire safety systems been tested collectively to ensure that they are fully integrated and compatible with other life safety systems?</p>	<ul style="list-style-type: none"> <li>• Evidence of a detailed method statement of the fire systems Commissioning which confirms the technical standards that are to be applied.</li> <li>• Evidence of the Testing &amp; Commissioning documents for all fire safety systems, including but not limited to: <ul style="list-style-type: none"> <li>- Certificates of conformity,</li> <li>- O&amp;M manuals</li> <li>- Commissioning schematics</li> <li>- Test records for each individual component</li> <li>- Testing &amp; Commissioning certificates</li> </ul> </li> </ul>



No.	Areas to probe	Evidence expected
		<ul style="list-style-type: none"> <li>• Fire detection &amp; alarm system commissioned and function tested in accordance with BS 5839, including a completed 'cause and effect' ratified by the Board.</li> <li>• Evidence of Fire Stopping Certificates and Evidence Labels.</li> <li>• Evidence of a written agreement from the design consultant that they have checked the list of Commissioning criteria before Commissioning commenced.</li> <li>• Evidence of the Commissioning sheets which confirm all of the smoke venting performance criteria to be achieved during Commissioning.</li> <li>• Evidence of Action Plans which identify the adjustments (for simulation of conditions) which need to be made to systems during Commissioning to enable results to be recorded and witnessed.</li> <li>• Records of the parties who will need to support the Commissioning engineers to make those adjustments and facilitate all results to be recorded (e.g., BMS specialists).</li> <li>• Records of adjustments to the systems which were made, recorded against the relevant set of results.</li> <li>• Breaches in compartmentation have been repaired with evidence of conformity i.e. Fire Stopping Certificates and Labels.</li> <li>• Emergency lighting tested, commissioned &amp; certified in accordance with BS5266</li> <li>• Fire doors including hold open devices</li> <li>• Emergency door release mechanisms (green break glass units)</li> <li>• Fire and smoke dampers</li> <li>• Firefighting equipment</li> </ul>



No.	Areas to probe	Evidence expected
		<ul style="list-style-type: none"> <li>• Passenger lifts fail safe measures in the event of fire</li> <li>• Refuge area communication equipment</li> <li>• Rising mains</li> <li>• Fire hydrants and water pressure.</li> </ul>
7.4	Have fire safety procedures and training been relayed to all NHS Staff and others who work within the premises prior to full occupation.	<ul style="list-style-type: none"> <li>• A written Emergency fire action plan</li> <li>• Training records</li> </ul>
7.5	<p>Has the Board carried out a pre-occupation fire safety assessment*.</p> <p>Note* a pre-occupation fire safety assessment is not to be confused with the fire risk assessment required by fire safety legislation, which can only properly be carried out after a building has been handed over to the end user</p>	<ul style="list-style-type: none"> <li>• A written fire safety assessment and action plan</li> </ul>
7.6	How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?	<ul style="list-style-type: none"> <li>• Evidence of the design information, validated against the as-installed condition.</li> <li>• A written agreement from the Health Board representatives that they have checked this list of the criteria before Commissioning commences.</li> <li>• Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.</li> </ul>

No.	Areas to probe	Evidence expected
7.7	How does the Board ensure that ongoing snagging works do not impact on occupant safety?	<ul style="list-style-type: none"> <li>• Evidence of the snags/defects inspected and by whom.</li> <li>• Written evidence of safe systems of works.</li> <li>• Evidence of defect/snagging review and mitigation.</li> <li>• Evidence that remedial works are undertaken in accordance with the relevant standards and certified where applicable.</li> </ul>



## 4. Appendix

### KSAR Master Glossary

Please refer to NHS Scotland Assure – Assurance Service Master Glossary document.





# NHS Scotland Assure Lessons Learned



**Overview for the  
Interim Review  
Service – Ian Storrar**

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## Introduction

Health Facilities Scotland (HFS) and Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland as part of National Services Scotland (NSS), have undertaken assurance audits and investigations into outbreaks of infections and operational issues in a number of significant healthcare construction projects. NSS reviewed healthcare buildings at different stages of their development, including those at detailed design, those where construction is almost complete and those in a live operational phase.

A number of common themes were found where lessons need to be learned across NHS Scotland and its construction supply chain to reduce the potential for a repeat divergence from guidance. This document will showcase topics where more consideration and effort is required (from project briefing, to project handovers and into the operational phase) and how these topics can be identified and discussed.

Areas noted for improvement are governance, auditing, stakeholder interaction, application of guidance and procedures before and after the facility becomes operational. Further refinements of this information will be developed for future release. This will target different participants in the life cycle of the healthcare facility with appropriate focus to allow them to fully understand their role and its impact on patient and staff wellbeing.

The headlines of the overarching recurring themes are outlined in this document. The discussions should be seen as a prompt to consider these factors as they relate to current projects.

The Interim Review Service was the precursor to the reviews being carried out by NHS Scotland Assure. The lessons learned from the Interim Review Service have been used to inform in the Key Stage Assurance Review Workbooks.

## Roles and responsibilities

Clarity on roles and responsibilities is often an issue, especially for clinical teams whose contribution can be piecemeal. Late requests often result in significant design changes with associated risks. Lack of appreciation of the need for early decision making and guidance from clinical teams can also be a factor.

Early resolution of the roles and responsibilities would help to ensure that the stakeholders understood who was a part of each group and how to interact.



## Brief development

The foundations of a successful project begins with establishing a clear brief which is understood and agreed by all stakeholders. A common theme which has contributed to problems is that important stakeholders are either not consulted or only involved at a particular stage. The engagement of stakeholders may be too late and result in decisions being postponed to a later stage (sometimes due to a failure to recognise the correct participants) or not taken at all.

From an engineering perspective, together with the Health Board Construction Requirements (BCR) another critical document is the health board's Environmental Matrix. This forms the basis of any Mechanical, Engineering and Plumbing (MEP) design and must be completed at the earliest possible date. It must have input from the full range of stakeholders and in particular reflect the clinicians' views of patients requirements and service on a room-by-room basis.

The starting point for the development of the matrix should be a record of the patient cohort and the forms of treatment for each space. This should also help to identify where these criteria need to be developed from the base principles (such as those shown in Scottish Healthcare Technical Memorandum (SHTM) 03-01 Part A: Appendices) or to suit the needs of specialist medical equipment.

It would:

- identify the degree of temperature control and air cleanliness which are appropriate
- determine the medical gas provision required
- select the risk to patient from electrical devices
- assist with the development of room air pressures or air flows in relation to risks to patients/staff/visitors and assess the required resilience

The activities in the room will also allow the designers to provide a suitable lighting scheme, assess the appropriate type of electrical installation and determine cooling requirements.

NHS Scotland Assure have a template for the Environmental Matrix which is available for health board use. This is a result of the Interim Review Service lessons learned activity.

It may prove necessary to amend the brief as the process develops and the impact of any changes can then be tracked against the original brief. The Environmental Matrix should at least include the criteria set out in the NHS Scotland Assure template or technical equivalent.

The brief should also set out the plans for how the building works might be phased. This has a large impact on the design and installation of the MEP installations. It may also outline the format in which record information must be delivered (and its minimum content) plus any provision for soft landings.

## Auditing of the design process

It is critical to audit the designs, particularly at key stage reviews. Health boards must have the correct team with sufficient, competent resource in place to look after their interests.



Where the health board doesn't have a Chartered Engineer to review the engineering proposals and an infection control specialist with knowledge of environmental impacts, they should look to procure those professional services. This process must have a robust method of recording findings and a mechanism to ensure that any item raised is closed out to the health board's satisfaction. Early consideration of Statutory Compliance Audit and Risk Tool (SCART) questions will help to ensure the design includes all elements needed to facilitate the processes covered in SCART.

Health boards may also wish to consider the NHS Scotland Assure Key Stage Assurance Review (KSAR) workbooks to assist in establishing the correct detail of design at particular gateways.

## System compatibility

Once room environment requirements are agreed, it's essential the concept design for each room includes appropriate technology with sufficient capacity and control in order to produce the criteria. For example, a room which must be capable of being maintained at 18°C is unlikely to achieve this if no cooling is provided. **The form of control must reflect whether the temperature is to be allowed to float within a range or to be controlled to specific points within a range.** It should be possible to meet the environmental criteria at any time when the external air is between the winter and summer design conditions that have been agreed to suit the local conditions and resilience.



Sizing and control of the system must acknowledge the need to retain percentage relative humidity (% RH) in the room no higher than the maximum values recommended by the Scottish Health Technical Memorandum (SHTM) (or any other value, which is set and agreed as part of the health board's brief) or where specialist equipment and processes have specific requirements. The addition of moisture to the air (humidification) would only be considered in special circumstances.

Summer and winter external design conditions must be agreed and recorded in the environmental matrix.

The criteria should be agreed for:

1. the building load calculations
2. individual plant items (which may be different to point 1)

Design of the wholesome water systems must combat slow, infrequent or stagnant water flows, high cold-water temperatures or low hot water temperatures. An in depth risk assessment should be prepared of all of the measures that will be taken to limit adverse cold water temperature rise.

To avoid impacting on the existing service, it's necessary to understand the interaction with patient services and the existing hospital infrastructure.

For example:

- the full impact on the safety of the electrical network when new loads are added

- the ability of existing medical gas pipeline systems and plant to serve additional supplies
- the performance of standby electrical generators after new loads are introduced
- the impact on existing room air changes or pressure regimen

Resilience of all systems must be compatible with the service need. Plant, for example Uninterruptible Power Supply (UPS) units or air source heat pumps (ASHP), should be selected for all operating conditions to which they may be exposed. For example ASHP operating in very low external ambient temperatures, UPS operating on by-pass.

## Risk assessments

SHTMs, Scottish Health Planning Note (SHPN), Health Building Note (HBN) and the National Infection Prevention Control Manual (NIPCM) indicate the minimum extent to which risk assessments are required.

The intention is to ensure that elements that affect infection control, resilience, safety, maintenance and the impact on the existing estate are fully considered. Similar to the brief, it's essential that all stakeholders are party to the assessments. It should be noted that there may be other risk assessments required by various legislation.

## Understanding the existing infrastructure and patient service

It's necessary to understand the interaction with patient services and the existing hospital infrastructure to mitigate the impact on the existing service. Planning for patient pathways plus fire evacuation needs concentrated input from all stakeholders.

The knowledge of the existing building services infrastructure often needs to be supplemented with tests and in some cases, studies, due to missing record information. For example; the full impact on the safety of the electrical network when new loads are added, the ability of existing medical gas pipeline systems and plant to serve additional supplies, the performance of standby electrical generators after new loads are introduced and impact on existing room air changes or pressure regimen.

## Detailed derogations process

It's important that the design begins with an in depth understanding of the extant guidance and not be limited to a review of reference tables within the guidance. As the design develops in conjunction with the stakeholders, it may be necessary to apply alternatives. In every occurrence, a derogation must be prepared.

All derogations must be subject to rigorous scrutiny by all stakeholders. They should include a fully developed argument as to why the change is necessary and an explanation as to how standards of patient care, safety, environmental control and energy conservation are as technically as good, if not better, than those achieved by compliance with guidance. Care

should be taken to ensure that terminology is clearly defined together with its context. An auditable record trail must be managed which clearly identifies that all stakeholders have understood and agreed with the derogation. The derogation process must be clear about which stakeholder has the authority to sign off on each derogation.

Derogations should not be a tool for 'value engineering' or cost reduction.

## Detailed schematics of key systems

Schematics of the key MEP systems are essential to the successful development of the respective systems through design, installation, commissioning and operational stages of a project. They are a concise way of demonstrating the correct inter-relationship between components.

Schematics must be produced, as a minimum, for the following services. This is not an exhaustive list:

- water services plant
- water services networks
- ventilation plant
- ventilation systems networks
- above ground drainage
- heating plant
- heating networks
- cooling plant
- cooling networks
- HV Distribution
- LV Distribution
- UPS and Medical IT Distribution Systems
- earthing and bonding
- fire detection and alarms
- nurse call
- fuel supply systems
- fire suppression systems
- medical gas plant and manifolds

## Space planning and service routing

Successful planning of the building layout will need to carefully include the provision for plant location and the routing of the services. It's also important to fully consider the ergonomic planning for spaces, including their associated medical equipment items.

The plant must be located where it can be easily accessed and safely maintained without creating disruption to clinical or patient services. Procedures that are contained in the Construction Design & Management (CDM) regulations should ensure that the finished product can be operated and maintained safely. The acoustic performance of the plant must also be considered to ensure no detrimental impact to the clinical or patient environment. Future access and replacement plans must also be clearly identified and form a part of the design.

The plant locations should also consider the suitability of routes from there to the point of use for the building service. Avoid arrangements which necessitate routing main building service routes through patient clinical spaces or which require access to components via a ceiling void or riser or from a patient room. Diverse routing and fire protection of essential building services must be factored in.



Planning of building service risers should not only consider the route on plan of any building service in the riser, but also how all building services enter and exit it. Routing of wholesome cold-water pipework in separate risers will reduce the temperature rise of cold water.

Minimising the heat gain to cold water systems must look at the entire installation where wholesome cold water pipes are kept away from hot water pipework, heat emitters, heat rejection equipment, high void temperatures and such like.

Inadequate planning of above ground drainage routes coupled with insufficient vertical drain stacks, can give rise to horizontal drains above clinical spaces, electrical or IT equipment or sensitive items. For example, ground floor drainage stacks, which are located to serve the ground floor sanitary ware, should not simply offset across and up through the building to pick up all drains in upper level rooms. The design should be planned such that access to clear blocked drains, in ceiling voids of sensitive spaces, should not be necessary. Drains should not dry out.

Consideration should also be given to the location and installation of fire and smoke dampers to ensure that they are fully accessible from both sides and can be installed in full compliance with the manufacturers certified installation details. Locations for medical IT systems and their associated EBBs, relative to the components that they serve, must be fully compliant with SHTM 06-01 and BS7671.

## Auditing of the contractor and their works

This process starts with selecting the contractor. It's essential to assess their competence for the size, complexity and programme for the work, as is their specific experience in the type and use of the building.

**Reference should be made to Health and Safety Executive (HSE) guidance (leaflet - Using Contractors - INDG 368 (rev 1) published 06/12) and the emerging standards on competency from British Standards Institution (BSi); BSI Flex 8670.**

Fully developed project specific Quality Assurance processes and

Quality Plans should form an integral part of the contractors' processes. These should incorporate all matters relating to sub-contractors including designers.

The health board should ensure that the contract includes the correct representation from the contractor to properly manage the works plus monitor and drive the specific healthcare needs of the project. The health board must also ensure that contractors have the correct skills, resource and time in the team that they assemble (to represent the interests of the health board) to audit the quality.

## Contractor design packages (CDP)

The health board should ensure that contractor design packages (CDP) are suitably recorded within the contract and that the level of detail provided in relation to these is reflective of the project stage. CDP can have an impact on other services including power, cooling and ventilation. They can also have an impact on spatial co-ordination for plant and services distribution routes.

Often the CDP are based upon a performance specification and it's vital that it is suitably developed to allow not only cost certainty, but also to ensure that compliance with appropriate standards can be audited. The anticipated space planning and builders' work needs for the CDP must be considered during the early design process as part of the complete solution. Co-ordination with other disciplines must also be monitored.

The main MEP designer should be retained to review the CDP meets the design brief and the designer's intent (technically and spatially). CDP should be included in the BIM model.

## Commissioning, demonstration and handover

Planning for commissioning should start during the design phase. As the design develops, a commissioning plan should be formed and recorded in parallel. Commissioning specialists, Authorising Engineers, Estates and Infection Prevention and Control must provide early, useful checks during the design. Designers must produce designers commissioning briefs in accordance with SHTM Guidance.

**Programmes for pre-commissioning and for commissioning must not be shortened to falsely save time on a project time line or hurry handover. All test and commissioning results should be witnessed by the health board or their representatives.**

The health board should consider the use of an independent commissioning manager to monitor and report on the process and its efficacy.

All record information must be made available in the format required by the contract before starting the client demonstrations. Record documentation that is given to the health board must include handover checklists, training records and SCART data that has been completed and signed off together with commissioning data.

## Summary

These discussions are not exhaustive, but are intended to highlight areas where it has been evidenced that more rigour is required. While the comments are relatively brief, they are intended to add emphasis to the significant guidance that is available.

Some projects will benefit from an independent assurance audit in the future via NHS Scotland Assure. Others will not. It's critical that the due diligence applied by each health board can stand alone from an independent audit perhaps using the Key Stage Reviews as a reference point.

It's hoped the reader can recognise the footprint of the discussions above in the headings. They reflect elements of governance around specific areas where the healthcare built environment would benefit from applying greater rigour. Even in processes which are well established, such as HAISCRIBE and other interfaces with IPC, gaps exist in their implementation which should be managed.

The key to improvement is unlikely to lie in only targeting the most common deviations from guidance, but recognising that any of these points could cause a problem for patients and staff.

## Contact details

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Website: [Assurance | National Services Scotland \(nhs.scot\)](https://www.nhs.uk/assuranceservices)

**If you require an alternative format please contact**

[NSS.EqualityDiversity@nhs.scot](mailto:NSS.EqualityDiversity@nhs.scot)

**Telephone 0131 375 6000**

**BSL ContactScotlandBSL ContactScotland ([contactscotland-bis.org](https://www.contactscotland-bis.org))**



## Examples of lessons learned

This section includes brief notes around problem issues. It is not an exhaustive explanation of each finding but aims to include enough detail to generate a future awareness of elements which should be considered by health boards and their advisors.



## FIRE

- absence of combined fire and smoke dampers between corridors and patient sleeping accommodation
- self-closing devices missing from half leaf doors
- self-closing devices missing from doors between corridors (which access patient sleeping accommodation) and offices, stores (which are not kept locked)
- inadequate justification for omission of smoke detection in ceiling voids
- inadequate justification for omission of automatic detection from spaces such as toilets in accordance with BS5839
- absence of certification for fire curtains
- charging of electrical devices in corridors
- damaged fire seals at doors
- unprotected gaps in fire resisting materials



## VENTILATION

- inadequate design air change rates
- inadequate/unclear room pressure differentials
- inadequate number of combined fire and smoke dampers
- filters incorrectly seated on frames in the AHUs
- isolation room ventilation not separated from the general system
- incorrect or unclear location for air pressure stabilisers (APS)
- inadequate separation between air intakes and discharges
- roof mounted AHUs without maintenance protection from the elements
- inadequate consideration of system performance creep associated with terminal HEPA filter fouling



## ELECTRICAL

- unclear allocation of clinical risk categories (SHTM 06-01) and medical grouping (BS7671)
- excessive distance to Medical impedance terra earthed (IT) panels from outlets
- absence of or inappropriate siting of equipotential bonding busbars

- site fabricated equipotential bonding busbars not in compliance with BS7671 requirements.
- discrepancies or uncertainty around selectivity
- inadequate provision of fire protection of cables and busbars
- no local changeover for Medical IT
- incorrect completion certificates
- unexplained errors in test sheets
- conflicting information on documents



## MEDICAL GAS SYSTEMS

- inappropriate location for safety valve
- inappropriate location of area valve service units (AVSUs)
- poor labelling and signage
- single point of failure on oxygen vacuum insulated evaporator (VIE) supply.
- difficult access to emergency isolation valve
- economiser difficulties
- missing/unclear derogations
- inadequate protection to oxygen incoming supply
- non-return valves missing
- inappropriate location of alarm panels



## WATER

- abnormally high gram negative bacteria and TVC
- high cold-water temperature
- low hot water temperature
- type of expansion vessels either no flow or not clear
- lack of maintenance on taps
- assessment of bulk storage unclear
- filtration issues
- low carbon steel pipework used
- over sizing pipework
- insufficient valves
- dead legs in pipework





## DRAINAGE

- use of air admittance valves (AAVs) in clinical areas with no evidence of hospital acquired infection (HAI) review or estates input regarding maintenance.
- lack of co-ordination of drainage pipework with other services, including stacks, falls and vents to atmosphere
- access to drainage manholes difficult and disruptive to “normal” operations
- lack of resilience in pumped systems



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**From:** Henderson C (Calum)  
**Sent:** 23 February 2022 08:32  
**To:** Morrison A (Alan)  
**Subject:** FW: QEUH Response - Submission to Cabinet Secretary - NHS GGC Wards 2A and B - Final - 22 February 2022  
**Attachments:** QEUH Response - Submission to Cabinet Secretary - NHS GGC Wards 2A and B - Final - 22 February 2022.docx  
**Categories:** For Action

Thanks

Calum Henderson  
Chief Nursing Officer Directorate  
Mobile: [REDACTED]

---

**From:** Raghavan S (Shalinay) [REDACTED]  
**Sent:** 22 February 2022 17:50  
**To:** Cabinet Secretary for Health and Social Care [REDACTED] Minister for Mental Wellbeing & Social Care [REDACTED] Minister for Public Health, Women's Health & Sport [REDACTED] DG Health & Social Care [REDACTED] Chief Nursing Officer [REDACTED] Chief Medical Officer [REDACTED] Leitch J (Jason) [REDACTED] Burns J (John) [REDACTED] Barkby I (Irene) [REDACTED] Ward C (Christine) [REDACTED] Communications Health & Social Care [REDACTED] Hutchison D (David) (Special Adviser) [REDACTED] Rafferty D (Donna) [REDACTED] Taylor M (Mark) [REDACTED] Henderson C (Calum) [REDACTED] FM Policy Team Mailbox [REDACTED]

**Subject:** QEUH Response - Submission to Cabinet Secretary - NHS GGC Wards 2A and B - Final - 22 February 2022

Dear Cabinet Secretary

Please find attached briefing with an update on the status and re-opening of NHS GGC Wards 2A and 2B at the QEUH/RHC.

Separate briefing will follow this week in respect of Mrs Slorance.

Regards

Shalinay

Miss Shalinay Raghavan  
Head of QEUH and Scottish Hospitals Inquiry Response Team  
Chief Nursing Officer's Directorate  
Scottish Government 2ER St Andrew's House Regent Road  
Edinburgh EH1 3DG  
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Chief Nursing Officer  
Chief Nursing Officer Directorate  
22 February 2022

Cabinet Secretary for Health and Social Care

## **QUEEN ELIZABETH UNIVERSITY HOSPITAL/ROYAL CHILDREN'S HOSPITAL UPDATE**

### **Purpose**

1. To update the Cabinet Secretary on the ongoing work within the Queen Elizabeth University Hospital (QEUH) and Royal Children's Hospital (RHC) in preparation for the re-opening of Wards 2A/2B.

### **Priority**

2. Immediate

### **Current Position**

3. At the meeting of the Advice Assurance and Review Group (AARG) in December 2021, it was confirmed that NHS Greater Glasgow and Clyde (NHS GGC) had implemented around 96% of the 108 recommendations identified across the three "Review Reports" (the Independent Review, the Oversight Board, the Case Note Review), with an ongoing internal assurance process established to ensure these recommendations are embedded as routine processes at the Health Board.
4. The outstanding actions were identified as:
  - recruitment of a new Director of Infection Prevention and Control (IPC); and
  - the completion of the refurbishment of Wards 2A/2B at the RHC and the re-opening of these wards.
5. As of February 2022, the Board have confirmed the recruitment of a new Director of IPC is underway; this individual will report directly to the newly appointed Executive Nursing Director, Professor Angela Wallace. This post will significantly strengthen the IPC leadership to ensure the provision of a safe and effective IPC service within NHS Greater Glasgow and Clyde.
6. The remaining action pertains to the opening of Wards 2A/2B, which this briefing provides further detail on.

### **Wards 2A/2B**

7. Throughout 2018, several and successive incidences of unusual bacteraemia were identified in the water sources feeding the RHC Wards 2A/2B resulting in the closure of these two wards in September 2018. Health Protection Scotland (HPS) and Health Facilities Scotland (HFS) undertook a technical review of the facilities and made several recommendations on remedial work to be undertaken in the

wards. Since 2018 refurbishment of both wards has been ongoing and as of February 2022 NHS GGC have reported the works are now complete.

8. On 2 February 2022, the Cabinet Secretary met with Jane Grant NHS GGC Chief Exec and John Brown NHS GGC Chairman with Caroline Lamb NHS Scotland Chief Executive where the opening of Wards 2A/2B was discussed and a proposed re-opening date of the 2 March 2022 being worked towards.
9. NHS Greater Glasgow and Clyde engaged with NHS Assure and SG officials in December 2021 to ensure that the Board have the necessary evidence to provide assurance that the wards can re-open.
10. SG Officials met with NHS GGC and NHS Assure on Monday 21 February. NHS GGC have provided the information that allowed NHS Assure to complete their review. From this, NHS Assure have identified a Pathway consisting of a moderate number of actions that still need to be undertaken. **The explicit priority actions are:**
  - **The External Authorising Engineer for NHS GGC needs to formally sign off that they are content with the water safety work/reports – NHS GGC need to provide this to NHS Assure;**
  - **NHS GGC need to have an IPC risk assessment that sets out that the IPC team are content to manage any risks that may arise when the wards re-open;**
  - **That NHS GGC provide NHS Assure with their overarching risk assessment.**
11. The outcome will be that as of close today (22 February), NHS GGC will create an Action Plan addressing the issues detailed in the NHS Assure Pathway and more specifically will take into account the relevant IPC risk assessments.
12. Given the discussions between NHS GGC and NHS Assure - which to date have agreed that there are no showstoppers - Jane Grant has announced to the NHS GGC Board today the intention for Wards 2A/2B to re-open in early March 2022.
13. **To meet the Terms of Reference of the AARG and provide SG with the necessary assurance that all actions in relation to the 108 recommendations have been completed, the AARG will convene on Monday 28 February to record that the necessary documentation is available and that the Scottish Government has the relevant assurances in respect of the ongoing risk management required from NHS Greater Glasgow and Clyde regarding the opening of Wards 2A and 2B.**

The Cabinet Secretary will continue to be updated on the latest position following the AARG meeting.

### **Conclusion**

14. The Cabinet Secretary is invited to note the content of this briefing.

Copy List:	For Action	For Comments	For Information		
			Portfolio Interest	Constit Interest	General Awareness
Cabinet Secretary for Health and Social Care			X		
Minister for Public Health, Women's Health & Sport			X		
Minister for Mental Wellbeing & Social Care			X		

Caroline Lamb , DG Health and Social Care  
 Chief Executive, NHSScotland  
 John Burns, COO  
 Alex McMahon, CNO  
 Christine Ward, CNOD, Deputy Director  
 Shalinay Raghavan, CNOD, Unit Head  
 Calum Henderson, Team Leader  
 Donna Rafferty, SG Comms  
 Mark Taylor, SG Comms  
 Davie Hutchison, SPADS  
 CommsHealthandSocialCare  
 FMPolicyTeam Mailbox

**From:** Nicholson R (Rachel) on behalf of Cabinet Secretary for Health and Social Care  
**Sent:** 28 February 2022 18:42  
**To:** First Minister; Henderson C (Calum); Cabinet Secretary for Health and Social Care  
**Cc:** DG Health & Social Care; Burns J (John); McMahon A (Alex); Chief Nursing Officer; Ward C (Christine); Raghavan S (Shalinay); Morrison A (Alan); Raghavan S (Shalinay); Rafferty D (Donna); Taylor M (Mark); Hutchison D (David) (Special Adviser); Communications Health & Social Care  
**Subject:** RE: QEUH Response - Submission to First Minister and Cabinet Secretary - NHS GGC Wards 2A and B - Final - 28 February 2022  
**Attachments:** QEUH Response - Submission to First Minister and Cabinet Secretary - NHS GGC Wards 2A and B - Final - 28 February 2022.docx  
**Categories:** For Info

Hi Calum

Mr Yousaf has noted. He's commented that he's already come back on this to say he's supportive of the reopening of Wards 2A/B, and asked if reactive lines can be prepared as there is likely to be press pick up. He would like the lines to reiterate that the recommendations of the review group have been met and highlight the positive progress made by the Board. He's also asked if the appropriate FMQ can be updated.

Thanks,

Rachel

Rachel Nicholson  
 Deputy Private Secretary to the Cabinet Secretary for Health and Social Care – Humza Yousaf  
 Scottish Government  
 E: [CabSecHSC@scotland.nhs.uk](mailto:CabSecHSC@scotland.nhs.uk)  
 T: [REDACTED]  
 M: [REDACTED]

---

**From:** McGhee G (Gary) [REDACTED] **On Behalf Of** First Minister  
**Sent:** 28 February 2022 18:21  
**To:** Henderson C (Calum) [REDACTED] First Minister [REDACTED] Cabinet Secretary for Health and Social Care [REDACTED]  
**Cc:** DG Health & Social Care [REDACTED] Burns J (John) [REDACTED] McMahon A (Alex) [REDACTED] Chief Nursing Officer [REDACTED] Ward C (Christine) [REDACTED] Raghavan S (Shalinay) [REDACTED] Morrison A (Alan) [REDACTED] Raghavan S (Shalinay) [REDACTED] Rafferty D (Donna) [REDACTED] Taylor M (Mark) [REDACTED] Hutchison D (David) (Special Adviser) [REDACTED] Communications Health & Social Care [REDACTED]  
**Subject:** RE: QEUH Response - Submission to First Minister and Cabinet Secretary - NHS GGC Wards 2A and B - Final - 28 February 2022

Thanks Calum – FM has noted.

---

**From:** Henderson C (Calum) [REDACTED]  
**Sent:** 28 February 2022 16:51  
**To:** First Minister [REDACTED] Cabinet Secretary for Health and Social Care [REDACTED]

Cc: DG Health & Social Care [redacted] Burns J (John) [redacted] McMahon A (Alex)  
[redacted] Chief Nursing Officer [redacted] Ward C (Christine)  
[redacted] Raghavan S (Shalinay) [redacted] Morrison A (Alan)  
[redacted] Raghavan S (Shalinay) [redacted] Henderson C (Calum)  
[redacted] Rafferty D (Donna) [redacted] Taylor M (Mark)  
[redacted] Hutchison D (David) (Special Adviser) [redacted] Communications  
Health & Social Care [redacted]

**Subject:** QEUH Response - Submission to First Minister and Cabinet Secretary - NHS GGC Wards 2A and B - Final - 28 February 2022

First Minister  
Cabinet Secretary for Health and Social Care

Please find attached briefing with an update on the re-opening of NHS GGC Wards 2A and 2B at the QEUH/RHC.

Kind regards

Calum Henderson  
Chief Nursing Officer Directorate  
E: [calum.henderson](mailto:calum.henderson) [redacted]  
Mobile: [redacted]



Calum Henderson  
Chief Nursing Officer Directorate  
28 February 2022

First Minister  
Cabinet Secretary for Health and Social Care

## **QUEEN ELIZABETH UNIVERSITY HOSPITAL/ROYAL CHILDREN'S HOSPITAL UPDATE – PLANS FOR RE-OPENING OF WARDS 2A/2B**

### **Purpose**

1. To update the First Minister and Cabinet Secretary on the planning for the re-opening of Wards 2A/2B.

### **Priority**

2. Immediate

### **Background**

3. Since the initial Advice Assurance and Review Group(AARG) meeting in June 2021, NHS Greater Glasgow and Clyde(GGC) has undertaken a detailed and highly complex programme to implement and evidence action against the 108 recommendations outlined in the Independent Review, Oversight Board report and Case Note Review.
4. This represents a substantial GGC wide programme of work, with clinical, managerial and support staff all contributing to the successful completion of the recommendations. An audit process has been established, with audit actions being monitored and tracked and a portfolio of evidence being maintained.

### **Update – 28 February 2022**

5. The AARG met today, 28 February 2022, chaired by the Chief Nursing Officer with the Chief Operating Officer of NHS Scotland and Scottish Government officials in attendance.
6. Of the 108 recommendations identified, 104 have already been completed as reported at the last meeting. The remaining four, detailed below, were recommended and accepted by the AARG for closure.
7. These four recommendations relate to the completion of the Wards 2A/B refurbishment and the future structure of Infection prevention and control:
  - Independent Review: Action 42
  - Oversight Board: Final 3, Final 4 and Final 16
  - Case Note Review: None outstanding

### **Oversight Board Action Final 16: Completion of Wards 2A / 2B**

8. Following the recent discussions with, and review by, Scottish Government colleagues, including the Chief Nursing Officer, and NHS Assure, both parties have confirmed their support for a move back into Wards 2A/B.
9. There are a number of further recommendations that NHS Assure have identified which will be incorporated into the overall review process. NHS Assure have also confirmed that none of these actions would prevent an imminent move back to the wards.
10. Following internal dialogue with GGC leaders and their clinical team it is now planned to re-open the wards on 9<sup>th</sup> March 2022. This date was accepted and agreed by the AARG following the review of the evidence and assurance provided by both NHS GGC and NHS Assure.
11. GGC are planning to issue communication with the families tomorrow morning (1 March) , to confirm the opening of Wards 2A/2B; this communication will be supported by a video orientation of the ward as well as a frequently asked questions document. The communication with families will be the priority for the Board. There will be a coordinated news release issued in the afternoon from NHS GGC, SG and NHS Assure.
12. Elected Representatives will also be informed of the opening of the Wards through the weekly briefings that are already provided from GGC.

**Oversight Board Action Final 3, Final 4 and Independent Review Action 42:  
Future arrangements for infection prevention and control**

13. Following agreement between the Chief Nursing Officer and the NHS GGC, Chief Executive, the structure and recruitment of a substantive Director of Infection Prevention and Control is now underway with the post currently being advertised, closing on the 11 March. This post will report directly to the GGC Nurse Director.
14. This concludes all of the outstanding actions against recommendations.

**Conclusion**

15. The First Minister and Cabinet Secretary are invited to note the content of this briefing.

Calum Henderson  
Chief Nursing Officer Directorate  
28 February 2022

<b>Copy List:</b>			
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	For Action	For Comments	Portfolio Interest	Constituent Interest	General Awareness
First Minister Cabinet Secretary for Health and Social Care			X		X

Caroline Lamb , DG Health and Social Care  
 Chief Executive, NHSScotland  
 John Burns, COO  
 Alex McMahon, CNO  
 Christine Ward, CNOD, Deputy Director  
 Alan Morrison, Deputy Director, Health  
 Infrastructure, Investment and PPE  
 Shalinay Raghavan, CNOD, Unit Head  
 Calum Henderson, CNOD, Team Leader  
 Donna Rafferty, SG Comms  
 Mark Taylor, SG Comms  
 Davie Hutchison, SPADS  
 CommsHealthandSocialCare  
 FMPolicyTeam Mailbox

# NHS Scotland Assure Strategy

2023 -  
2026

A50258433



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# Introduction

## Our vision – the future we will create

To be the recognised national technical and clinical leaders in the healthcare environment for NHS Scotland.

## Our purpose – how we will shape the future

To provide expertise and evidence-based advice that contributes to reducing risk, delivering a sustainable healthcare service, and improving the healthcare experience for Scotland.

## Our role

NHS Scotland Assure has been designed with users to deliver a coordinated approach to the improvement of risk management and quality in the healthcare environment across NHS Scotland.

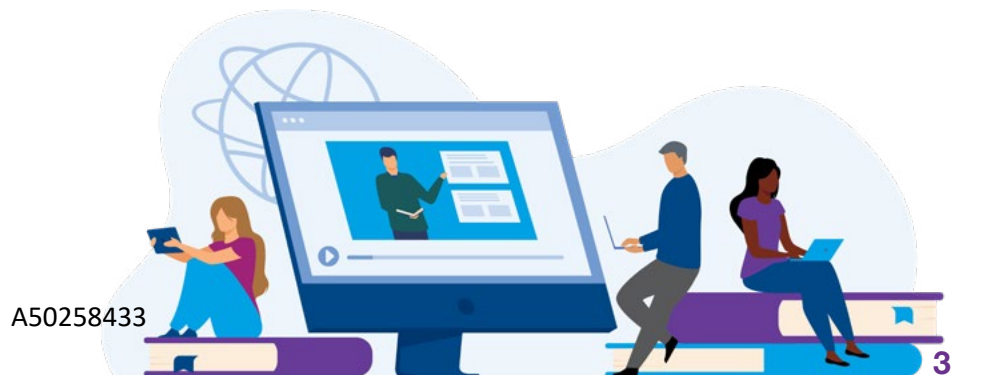
We underpin a transformation in the approach to promoting excellence, protecting patients from the risk of infection, and supporting better outcomes for the population.

We provide clinical and technical expertise to minimise risk and improve quality, practice and sustainability in the healthcare environment.

Established in 2021, NHS Scotland Assure has introduced new, and where appropriate enhanced existing services. We encompass services provided by Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland and Health Facilities Scotland.

## Our approach

Our strategic objectives and core themes inform our service delivery. We will continuously improve how we deliver our services. We will focus on quality to ensure our services are safe, efficient, effective and facilitate best practice. We will further integrate our services by collaborating with our stakeholders to ensure we meet their needs.



# Our core themes

We will focus on five core themes over the next three years:

**National leadership and strategy** – we will have an overarching leadership role in NHS Scotland’s work to manage environmental and clinical Infection Prevention and Control risk in the built environment, and we will influence the development of new policy.

**Planned life cycle support** – we will collaborate with health boards to ensure the best healthcare environment and services for patients and staff.

**Capacity and capability** – we will support the development of workforce requirements across Scotland as it relates to the healthcare environment. We will collaborate in the national drive to develop a sustainable, skilled workforce.

**Response** – as well as our planned activities, we will work with stakeholders to respond to specific emerging issues or risks.

**Intelligence and knowledge sharing** - We will deliver a coordinated research portfolio to support the development of evidence-based guidance. We will coordinate national data sets and use this intelligence to support improved outcomes and decision making for the benefit of NHS Scotland.

# Our strategic objectives

## Service excellence



### To deliver service excellence we will:

- support the delivery of a safer healthcare environment across multiple disciplines, ensuring that infection prevention and control is embedded in all stages of the healthcare build lifecycle
- use data and intelligence to inform stakeholders, empower staff and enable health boards to identify, monitor and manage built environment risk factors
- provide health boards with clear and streamlined services by aligning and integrating our service offerings and underpinning them with digital solutions
- identify and address gaps in practice by leading, producing, and commissioning quality research, guidance, and advice
- provide tailored national leadership and expertise in response to outbreaks and incidents, enabling and informing local capability and developing epidemiological and evidence-based intelligence.



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## Climate Sustainability



### To deliver climate sustainability we will:

- embed climate sustainability in everything that we do. For more information read the [NSS Environmental and Sustainability strategy](#).
- support NHS Scotland boards to reduce their greenhouse gas emissions and impact on the environment, adapt to climate change and better contribute to the UN Sustainable Development goals
- support NHS Scotland in its ambition to become a net zero and environmentally sustainable healthcare service as described in the NHS Scotland Strategy on Climate Emergency and Sustainability. For more information read the [NHS Scotland strategy](#).
- provide expertise and advice to stakeholders, including evidence-based guidance for net zero healthcare environment.







## Workforce sustainability

### To deliver workforce sustainability we will:

- have a diverse, knowledgeable and skilled workforce
- work with stakeholders to create a sustainable and resilient workforce model by developing in-house, competent, qualified subject matter experts that meets their identified needs
- work with stakeholders to establish career pathways across multidisciplinary teams, and provide appropriate pathways for professional development
- support the development of NHS Scotland's workforce in collaboration with NHS Education for Scotland (NES), to ensure staff have the appropriate skills and knowledge for their role.



## Financial sustainability

### To deliver financial sustainability we will:

- deliver services in a financially sustainable way, using opportunities to work collaboratively
- support NHS Scotland to develop a financially sustainable healthcare environment
- develop a financial plan that supports improvement, innovation and collaboration
- build clear structures that reduce waste while increasing resilience
- put in place a National Services Scotland (NSS) wide asset register with clear lifecycle plans
- use innovative tools and techniques to present knowledge and information to stakeholders that will aid financially sustainable decision making.



## Collaboration and engagement

Collaboration is at the heart of our services. We do this through stakeholder networks and look for opportunities for new engagement.

We work with health boards, other public sector organisations, academia and the private sector to deliver our strategic objectives. We are committed to open and transparent working relationships with our stakeholders in line with NHS Scotland values. We recognise how important a supportive environment is to deliver services successfully.

NHS Scotland Assure is commissioned by the Scottish Government. We work closely with the Chief Nursing Officer and Health Finance Directorates. We advise on and contribute to policy as required. Our strategy is informed by the needs, priorities, and policy of Scottish Government.

NHS Scotland Assure has processes in place to respond to and prioritise requests from stakeholders. This ensures that new work is transparently managed in line with our capacity and aligned to our strategy.



# Our services

## Engineering and Assurance

We provide comprehensive, proactive and reactive engineering services to assist health boards gain assurance that their engineering services are safe for patients and staff. Our goal is to support health boards to reduce risks in the healthcare environment underpinned by industry-leading guidance, robust processes and procedures.



## Research, Innovation and Intelligence

### Research and innovation

The guidance and advice we produce helps ensure that patients, their carers, and those delivering healthcare are in an environment which is safe, effective and person centred. Research plays a pivotal part in supporting this as it ensures that guidance and advice are based on best practice and best evidence.



### Intelligence

We support health boards to identify, monitor and manage their healthcare environment risks. Our data and intelligence supports informed decision-making and risk management.

## Workforce Development

NHS Scotland has a diverse workforce in the healthcare environment with many experts in their field. In partnership with NHS Education for Scotland (NES) we provide opportunities for staff to develop their interdisciplinary awareness and knowledge. For more information read the [NES Healthcare environment resources](#).



This supports an integrated workforce with the knowledge and skills needed to reduce risk and improve safety and quality in the healthcare environment.

## ARHAI Scotland

We provide expert intelligence, support, advice, evidence based guidance, clinical assurance and clinical leadership to local and national government, health and care professionals, the public and other national bodies. Our aim is to protect the people of Scotland from the burden of infection and antimicrobial resistance (AMR). As the national organisation responsible for IPC and AMR, we liaise with other UK countries and international counterparts to develop and deliver Scotland's IPC and AMR programmes of work.



Find out more about ARHAI Scotland at [www.nss.nhs.scot/media/3401/arhai-scotlands-operating-model-strategy.pdf](http://www.nss.nhs.scot/media/3401/arhai-scotlands-operating-model-strategy.pdf)

## Facilities



We provide national support services for health boards including support and guidance for service improvement and innovation in healthcare facilities services. We support the planning of health board decontamination services and commission the national home oxygen service for patients. Our medical physics service supports the Scottish Breast Screening Programme with safety advice and training.

We support NHS National Services Scotland with all aspects of property management. This is to ensure the safety and compliance of our buildings and workspaces, delivering an environmentally sustainable and effective working environment for all our staff.



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## Property and Capital Planning



We provide expert services covering the full range of property and capital planning activity. For capital build projects, we provide a range of construction and professional services frameworks, an advisory service, a design assessment and assurance service, and an end-to-end equipping service. For the existing estate, we provide a range of systems and processes, advice and guidance, and national survey programmes. We also provide a response service to significant building failure events. The Digital Estate service aims to improve the performance, effectiveness and efficiency of the existing NHS Scotland estate by adopting digital technologies. We also support health boards with operational Public Private Partnership, Non-Profit Distribution and Hub contracts.

These services improve quality, reduce risk, encourage shared learning, and provide a consistent best practice approach to property and capital planning.

For more information read the [NHS Scotland Assure case study - NHS Scotland Assure Information Management System \(AIMS\)](#) and the [NHS Scotland Assure case study - equipping Badenoch and Strathspey Community Hospital](#).

## Climate change, Sustainability and Environment

We provide advice and guidance to Scottish Government and health boards to support NHS Scotland's climate and environmental sustainability commitments.

# How to engage with us

Find out more about us:

**NHS Scotland Assure** - [nss.nhs.scot/browse/nhs-scotland-assure](https://nss.nhs.scot/browse/nhs-scotland-assure)

**ARHAI Scotland** - [Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland \(nhs.scot\)](#)

**Health Facilities** - [Health facilities | National Services Scotland \(nhs.scot\)](#)

**Email:** [nss.NHSScotlandAssure@nhs.scot](mailto:nss.NHSScotlandAssure@nhs.scot)

**Ask us a question via our enquiry form:**

<https://www.nss.nhs.scot/nhs-scotland-assure/contact-assure/contact-nhs-scotland-assure>

If you work in an NHS Scotland board, sign up to our Learning Network: <https://forms.office.com/r/jhhSiqfS0j>





<b>Customer</b>	NHS GG&C	<b>Site Address</b>	Queen Elizabeth University Hospital
<b>Works Requested by</b>	Colin Purdon Karen Connelly	<b>Area of Works</b>	Fouling works
<b>Date</b>	28.01.2019	<b>Site Contact</b>	Colin Purdon Karen Connelly
<b>Email</b>	colin.purdon [REDACTED]	<b>GP Surveyor</b>	Allan Bryden

**Ref: - Plantroom Cleans and Associated Feral Pigeon Control Works Timetable – QEUH, Glasgow.**

Hi Both,

Further to our Progress Review Meeting this morning I confirm our Service Timetable for Plantroom Cleans.

**Plantroom Clean Timetable and Priority Listing**

<b><u>Plantroom</u></b>	<b><u>Prioritised Listing</u></b>	<b><u>Timescale</u></b>
41 (RCH)	I.	28/01/2019-31/01/2019
122	II.	31/01/2019-02/02/2019
124	III.	03/02/2019-05/02/2019
121	IV.	04/02/2019-05/02/2019
123	V.	06/02/2019-07/02/2019

Completion of the Cleaning Process-

- a) High Level
- b) Floors
- c) Sanitise

by 5pm on Friday 8th February 2019 giving a day available for unforeseeable issues.

All other Feral Pigeon Fouling Clearance/Bird Repellent Works on going from 28/01/2019.

Updates on Plantroom Cleans and Feral Pigeon Control Works delivered on a Daily Basis each Morning.

I hope the above meets with your requirements, however should you need any further information please do not hesitate to contact me on [REDACTED].

Best regards,

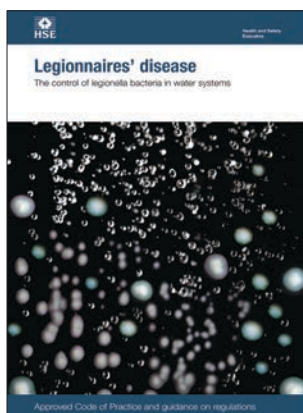
Allan Bryden B.Sc.  
Operations Director  
GP Environmental Ltd



# Legionnaires' disease

The control of legionella bacteria in water systems

## Approved Code of Practice and guidance on regulations



**L8 (Fourth edition)**  
**Published 2013**

This book is aimed at dutyholders, including employers, those in control of premises and those with health and safety responsibilities for others, to help them comply with their legal duties in relation to legionella. These include identifying and assessing sources of risk, preparing a scheme to prevent or control risk, implementing, managing and monitoring precautions, keeping records of precautions and appointing a manager to be responsible for others.

This fourth edition of the ACOP and guidance on regulations contains revisions to simplify and clarify the text. The main changes are removing Part 2, the technical guidance, which is published separately as HSG274 at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm), and giving the following issues ACOP status:

- risk assessment;
- the specific role of an appointed competent person, known as the 'responsible person';
- the control scheme;
- review of control measures;
- duties and responsibilities of those involved in the supply of water systems.



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Fourth edition 2013

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## Approved Code of Practice

This Code has been approved by the Health and Safety Executive, with the consent of the Secretary of State. It gives practical advice on how to comply with the law. If you follow the advice you will be doing enough to comply with the law in respect of those specific matters on which the Code gives advice. You may use alternative methods to those set out in the Code in order to comply with the law.

However, the Code has a special legal status. If you are prosecuted for breach of health and safety law, and it is proved that you did not follow the relevant provisions of the Code, you will need to show that you have complied with the law in some other way or a Court will find you at fault.

## Guidance

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

Cover photograph by kind permission of Public Health England.

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## Introduction

### About this book

1 This Approved Code of Practice (ACOP) gives advice on the requirements of the Health and Safety at Work etc Act 1974 (the HSW Act)<sup>1</sup> and the Control of Substances Hazardous to Health Regulations 2002 (COSHH)<sup>2</sup> and applies to the risk from exposure to legionella bacteria (the causative agent of legionellosis, including Legionnaires' disease). In particular it gives guidance on sections 2, 3, 4 and 6 of the HSW Act and regulations 6, 7, 8, 9 and 12 of COSHH. The Code also gives guidance on compliance with the relevant parts of the Management of Health and Safety at Work Regulations 1999 (the Management Regulations).<sup>3</sup>

2 This book is for dutyholders, which includes employers and those with responsibilities for the control of premises, eg landlords. To comply with their legal duties, dutyholders should:

- (a) identify and assess sources of risk. This includes checking whether conditions will encourage bacteria to multiply. For example, if the water temperature is between 20–45 °C, if there is a means of creating and disseminating breathable droplets, such as the aerosol created, eg by cooling towers, showers and spa pools; and if there are 'at risk' susceptible people who may be exposed to the contaminated aerosols (see paragraphs 28–47);
- (b) if appropriate, prepare a written scheme for preventing or controlling the risk (see paragraphs 58–64);
- (c) implement, manage and monitor precautions – if control measures are to remain effective, regular monitoring of the systems and control measures is essential (see paragraphs 65–69). Monitoring general bacterial numbers can indicate whether you are achieving microbiological control and sampling for legionella is another means of checking that a system is under control (see paragraph 68);
- (d) keep records of the precautions (see paragraphs 70–74);
- (e) appoint a competent person with sufficient authority and knowledge of the installation to help take the measures needed to comply with the law (see paragraphs 48–51).

3 The Code and guidance also set out the responsibilities of suppliers of services such as water treatment and maintenance; and designers, manufacturers, importers, suppliers and installers of systems (see paragraphs 75–85).

4 This fourth edition of the ACOP and guidance on regulations contains revisions to simplify and clarify the text. The main changes are:

- (a) removing Part 2, the technical guidance, which is now published separately at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm) and has three parts: *Part 1: Evaporative cooling systems*; *Part 2: Hot and cold water systems* and *Part 3: Other risk systems*;
- (b) guidance on the following issues now has ACOP status:

- (i) risk assessment;
- (ii) the specific role of the appointed competent person, known as the 'responsible person';
- (iii) the control scheme and what it should include;
- (iv) review of control measures;
- (v) duties and responsibilities of those involved in the supply of water systems including suppliers of services, designers, manufacturers, importers, suppliers and installers of water systems.

## About ACOPs

5 ACOPs are approved by the HSE Board with the consent of the Secretary of State (see 'Appendix 1: Notice of Approval' for details).

6 The ACOP describes preferred or recommended methods that can be used (or standards to be met) to comply with the Regulations and the duties imposed by the Health and Safety at Work etc Act 1974. The guidance also provides advice on achieving compliance, or it may give general information, including explaining the requirements of the law, more specific technical information or references to further sources of information.

7 The legal status of the ACOP and guidance text is clearly outlined on page 2.

## Presentation

8 The ACOP text is set out in **bold**, and guidance is in normal type and the reference to the regulation(s) is in *italics*. Coloured borders indicate each section clearly.

9 Each regulation reference is followed by a short summary of the main duties imposed by that regulation and aims to help the reader navigate the document. This text is for information and does not have ACOP or guidance status.

## Legionnaires' disease

10 Legionellosis is a collective term for diseases caused by legionella bacteria including the most serious legionnaires' disease, as well as the similar but less serious conditions of Pontiac fever and Lochgoilhead fever. Legionnaires' disease is a potentially fatal form of pneumonia and everyone is susceptible to infection. The risk increases with age, but some people are at higher risk, eg people over 45, smokers and heavy drinkers, people suffering from chronic respiratory or kidney disease, diabetes, lung and heart disease or anyone with an impaired immune system.

11 The bacterium *Legionella pneumophila* and related bacteria are common in natural water sources such as rivers, lakes and reservoirs, but usually in low numbers. They may also be found in purpose-built water systems, such as cooling towers, evaporative condensers, hot and cold water systems and spa pools. If conditions are favourable, the bacteria may multiply, increasing the risks of legionnaires' disease, and it is therefore important to control the risks by introducing appropriate measures.

12 Legionella bacteria are widespread in natural water systems, eg rivers and ponds. However, the conditions are rarely conducive for people to catch the disease from these sources. Outbreaks of the illness occur from exposure to legionella growing in purpose-built systems where water is maintained at a temperature high enough to encourage growth, eg cooling towers, evaporative

condensers, hot and cold water systems and spa pools used in all sorts of premises (work and domestic).

13 Legionnaires' disease is normally contracted by inhaling small droplets of water (aerosols), suspended in the air, containing the bacteria. Certain conditions increase the risk from legionella if:

- (a) the water temperature in all or some parts of the system may be between 20–45 °C, which is suitable for growth;
- (b) it is possible for water droplets to be produced and if so, they can be dispersed;
- (c) water is stored and/or re-circulated;
- (d) there are deposits that can support bacterial growth, such as rust, sludge, scale, organic matter and biofilms.

14 It is important to control the risks by introducing measures which do not allow proliferation of the organisms in the water systems and reduce, so far as is reasonably practicable, exposure to water droplets and aerosol. This will reduce the possibility of creating conditions in which the risk from exposure to legionella bacteria is increased.

## Health and safety law

15 Duties under the HSW Act apply to the risks from exposure to legionella bacteria that may arise from work activities. The Management Regulations provide a broad framework for controlling health and safety at work. As well as requiring risk assessments, they also require employers to have access to competent help in applying the provisions of health and safety law; to establish procedures for workers if there are situations presenting serious, imminent danger; and for co-operation and co-ordination where two or more employers or self-employed people share a workplace. More specifically, COSHH provides a framework of actions designed to control the risk from a range of hazardous substances, including biological agents.

### Information box: Summary of the HSW Act, sections 2, 3 and 4

**Section 2** places a duty on employers to ensure the health, safety and welfare of employees so far as reasonably practicable (SFARP). More guidance on the principles of SFARP may be found on the HSE website ([www.hse.gov.uk/risk/theory/alarp1.htm](http://www.hse.gov.uk/risk/theory/alarp1.htm)). Section 2 also requires employers to consult with trade union safety representatives on matters affecting health and safety in the workplace. Employers of more than five people must also prepare a written health and safety policy and bring it to the attention of employees.

**Section 3** requires employers to ensure that non-employees who may be affected by work activities are not exposed to risks to their health and safety.

**Section 4** places a duty on anyone responsible for the workplace to ensure that the premises, plant and machinery do not endanger the people using them.

16 Only the courts can give an authoritative interpretation of law on the application of these Regulations and guidance to people working under another's direction. If people working under the control and direction of others are treated as self-employed for tax and national insurance purposes, they may nevertheless be treated as employees for health and safety purposes. So, it may be necessary to take appropriate action to protect them. If there is any doubt about who is

responsible for the health and safety of a worker, clarify this and include it in the terms of a contract. However, a legal duty under section 3 of the HSW Act cannot be passed on by means of a contract. You will still have duties towards others under section 3 of the HSW Act. If you employ workers on the understanding that they are responsible for their own health and safety, seek legal advice before doing so. For section 3 to apply:

- (a) there must be a dutyholder – either an employer or a self-employed person; and
- (b) there must be a risk to the health or safety of a person who is not an employee of the dutyholder or the self-employed dutyholder themselves; and
- (c) that risk must arise from the conduct of the dutyholder's undertaking. 'Undertaking' means 'enterprise' or 'business'.

Section 3 does not apply to:

- (d) welfare issues (such as the provision of toilets or washing facilities);
- (e) nuisance or amenity issues that have no health or safety implications (such as unpleasant smells arising from work activities);
- (f) poor workmanship, where trading standards or contractual remedies may exist, unless they have demonstrably compromised health and safety.

17 COSHH provides a framework of actions designed to control the risk from a range of hazardous substances, including biological agents. The essential elements of COSHH are:

- (a) risk assessment;
- (b) where reasonably practicable, prevention of exposure or substitution with a less hazardous substance, or substitution of a process or method with a less hazardous one;
- (c) control of exposure, where prevention or substitution is not reasonably practicable;
- (d) maintenance, examination and testing of control measures;
- (e) provision of information, instruction and training for employees;
- (f) health surveillance of employees (where appropriate, and if there are valid techniques for detecting indications of disease) where exposure may result in an identifiable disease or adverse health effect.

18 The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)<sup>4</sup> require employers and others, eg someone who has control of work premises, to report to HSE, accidents and some diseases that arise out of or in connection with work. Cases of legionellosis are reportable under RIDDOR if:

- (a) a doctor notifies the employer; and
- (b) the employee's current job involves work on or near cooling systems which are located in the workplace and use water; or work on water service systems located in the workplace which are likely to be a source of contamination.

For more guidance on RIDDOR, see [www.hse.gov.uk/riddor/index.htm](http://www.hse.gov.uk/riddor/index.htm).

19 Those who have, to any extent, control of premises, have a duty under the Notification of Cooling Towers and Evaporative Condensers Regulations 1992<sup>5</sup> to notify the local authority in writing with details of 'notifiable devices'. These are cooling towers and evaporative condensers, except when they contain water that is not exposed to the air and the water and electricity supply are not connected. If a tower becomes redundant and decommissioned or dismantled, it should also be notified. Although the requirement is to notify the local authority, the relevant

authority (ie HSE or the local authority) for the premises concerned enforces the Regulations. Notification forms are available from the local authority or local environmental health department. The main purpose of these Regulations is to help investigate outbreaks.

20 The Safety Representatives and Safety Committees Regulations 1977 and the Health and Safety (Consultation with Employees) Regulations 1996<sup>6</sup> require employers to consult trade union safety representatives, other employee representatives, or employees where there are no representatives, about health and safety matters. This includes changes to work that may affect their health and safety at work, arrangements for getting competent help, information on the risks and controls, and planning of health and safety training.

21 You can find more information in the HSE leaflet *Legionnaires' disease: A brief guide for dutyholders*<sup>7</sup> and at [www.hse.gov.uk/legionnaires/index.htm](http://www.hse.gov.uk/legionnaires/index.htm).



## Scope and application

### Guidance

22 This Approved Code of Practice applies to the control of legionella bacteria, in any undertaking involving a work activity managed by you or on your behalf. It applies to premises controlled in connection with a trade, business or other undertaking where water is used or stored; and where there is a means of creating and transmitting water droplets (aerosols) which may be inhaled, causing a reasonably foreseeable risk of exposure to legionella bacteria.

23 There is a reasonably foreseeable risk of exposure to legionella bacteria in:

- (a) cooling systems with cooling towers, evaporative condensers or dry/wet cooling systems;
- (b) hot and cold water systems;
- (c) spa pools (see paragraph 24);
- (d) other plant and systems containing water that can create and increase the risk from legionella during operation or when being maintained (see paragraphs 13, 14 and 27).

24 These systems present a risk of exposure to legionella bacteria. There is further technical guidance on these systems in *Part 1: Evaporative cooling systems*; *Part 2: Hot and cold water systems* and *Part 3: Other risk systems* at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm). Specific guidance on managing spa pools is available at [www.hse.gov.uk/legionnaires/spa-pools.htm](http://www.hse.gov.uk/legionnaires/spa-pools.htm).

25 All systems require a risk assessment, however not all systems will require elaborate control measures. A simple risk assessment may show that the risks are low and being properly managed to comply with the law. In such cases, you may not need to take further action, but it is important to review your assessment regularly in case of any changes in your system, and specifically if there is reason to suspect it is no longer valid. There is more information specifically for those in control of premises, eg landlords, in *Part 2: Hot and cold water systems* at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm) and at [www.hse.gov.uk/legionnaires/what-you-must-do.htm](http://www.hse.gov.uk/legionnaires/what-you-must-do.htm).

#### Information box

An example of a low risk situation may be found:

- (a) in a small building without individuals especially 'at risk' from legionella bacteria;
- (b) where daily water usage is inevitable and sufficient to turn over the entire system;
- (c) where cold water is directly from a wholesome mains supply (no stored water tanks);
- (d) where hot water is fed from instantaneous heaters or low volume water heaters (supplying outlets at 50 °C);
- (e) where the only outlets are toilets and wash hand basins (no showers).

## Guidance

26 A water system includes all plant/equipment and components associated with that system, eg all associated pipework, pumps, feed tanks, valves, showers, heat exchangers, quench tanks, water softeners, chillers etc. It is important to consider the system as a whole and not, eg the cooling tower in isolation. Deadlegs and parts of the system used intermittently, eg test loops in engineering factories and injection moulding machines, also need to be included as part of the system, because they can create particular problems with microbial growth going unnoticed. Once brought back online they can cause heavy contamination, which could disrupt the efficacy of the water treatment regime.

27 For other risk systems, such as humidifiers and air washers, vehicle washes, wet scrubbers, indoor fountains and water features, see the advice on control measures in *Part 3: Other risk systems* at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm).

## Identification and assessment of the risk

### Regulation

*COSHH, regulation 6; Management Regulations, regulation 3; HSW Act, sections 2, 3 and 4.*

### Summary

These Regulations require employers to make a suitable and sufficient assessment of the risks from any work liable to expose employees to any substance hazardous to health, before that work is carried out. Employers are also required to make an assessment of the risks to other people not in their employment who may be affected by the work activity. They are also required to regularly review the risk assessment, and make any necessary changes as a result of the review.

## ACOP

**28 A suitable and sufficient assessment must be carried out to identify and assess the risk of exposure to legionella bacteria from work activities and water systems on the premises and any precautionary measures needed. The dutyholder is responsible for ensuring the risk assessment is carried out. The dutyholder is either:**

- (a) the employer, where the risk from their undertaking is to their employees or others; or
- (b) a self-employed person, where there is a risk from their undertaking to themselves or others; or
- (c) the person who is in control of premises or systems in connection with work, where there is a risk from systems in the building, eg where a building is let to tenants, but the landlord keeps responsibility for its maintenance.

**29 The dutyholder must ensure that the person who carries out the risk assessment and provides advice on prevention and control of exposure must be competent to do so.**

**30 The risk assessment should identify and evaluate potential sources of risk and:**

- (a) the particular means of preventing exposure to legionella bacteria; or
- (b) if prevention is not reasonably practicable, the particular means of controlling the risk from exposure to legionella bacteria.

## ACOP

**31 Where the assessment demonstrates there is no reasonably foreseeable risk or that risks are insignificant and unlikely to increase, and are properly managed, no further assessment or measures are needed. However, if the situation changes, the assessment should be reviewed and revised, if any changes are needed.**

**32 You need to review the assessment regularly and specifically when there is reason to believe that the original risk assessment may no longer be valid. You should also review management and communication procedures as appropriate.**

## Guidance

33 Before any formal health and safety management system for water systems is implemented, the dutyholder should carry out a risk assessment to identify the possible risks. The purpose of the assessment is to enable a decision on:

- (a) the risk to health, ie whether the potential for harm to health from exposure is reasonably foreseeable, unless adequate precautionary measures are taken;
- (b) the necessary measures to prevent, or adequately control, the risk from exposure to legionella bacteria.

34 The risk assessment also enables the dutyholder to show they have considered all the relevant factors, and the steps needed to prevent or control the risk.

35 The dutyholder may need access to competent help and advice when carrying out the risk assessment. For further guidance on this, see paragraphs 48–51. This source of advice may not necessarily be from within the person's organisation but may be from a consultancy, water treatment company or a person experienced in carrying out risk assessments. Employers are required to consult employees or their representatives about the arrangements for getting competent help and advice (see paragraph 20).

36 The dutyholder under paragraph 28 should, with the help of the appointed responsible person, make reasonable enquiries to ensure that organisations such as water treatment companies or consultants, and staff from the occupier's organisation, are competent and suitably trained and have the necessary equipment to carry out their duties in the written scheme safely and adequately.

37 Few workplaces stay the same, so it makes sense to review regularly what you are doing. Further guidance on risk assessment is at [www.hse.gov.uk/risk](http://www.hse.gov.uk/risk).

## ACOP

### Carrying out a risk assessment

**38 As part of the risk assessment, take into account the individual nature of each site and consider the system as a whole and not, eg the cooling tower in isolation. In complex systems, a site survey of all the water systems should be carried out, including an asset register of all associated plant, pumps, strainers and other relevant items. This should include an up-to-date schematic diagram showing the layout of the plant or system, including parts temporarily out of use.**

## Guidance

39 Consider the individual nature of the site and system as a whole, including deadlegs and parts of the system used intermittently. These should be included because they can create particular problems, as microbial growth can go unnoticed. When they are brought back online, they can cause heavy contamination, which could disrupt the efficacy of the water treatment regime.

**Guidance**

40 A schematic diagram is an important tool to show the layout of the plant or system, including parts temporarily out of use and should be made available to inform the risk assessment process. These are not formal technical drawings and are intended to be easy to read without specialised training or experience. While providing only an indication of the size and scale, they allow someone unfamiliar with the layout of a system to understand the relative positions and connections of the relevant components quickly. They also help the person who carries out the assessment in paragraphs 28–29 decide which parts of the water system, eg which specific equipment and services, may pose a risk to those at work or other people.

41 There are a number of factors that create a risk of someone acquiring legionellosis, such as:

- (a) the presence of legionella bacteria;
- (b) conditions suitable for growth of the organisms, eg suitable water temperature (20 °C–45 °C) and deposits that are a source of nutrients for the organism, such as sludge, scale, rust, algae, other organic matter and biofilms;
- (c) a means of creating and spreading breathable droplets, eg the aerosol generated by cooling towers, showers or spa pools;
- (d) the presence (and numbers) of people who may be exposed, especially in premises where occupants are particularly vulnerable, eg healthcare, residential and nursing homes.

42 The following list contains some of the factors to consider, as appropriate, when carrying out the risk assessment:

- (a) the source of system supply water, eg whether from a mains supply or not;
- (b) possible sources of contamination of the supply water in the premises before it reaches the cold water storage tank, calorifier, cooling tower or any other system using water that may present a risk of exposure to legionella bacteria;
- (c) the normal plant operating characteristics;
- (d) unusual, but reasonably foreseeable operating conditions, eg breakdowns;
- (e) any means of disinfection in use;
- (f) the review of any current control measures;
- (g) the local environment.

43 Where there are five or more employees, the significant findings of the assessment must be recorded (see paragraphs 70–74) but in any case, it may be necessary to record sufficient details of the assessment to be able to show that it has been done. Link the record of the assessment to other relevant health and safety records and, in particular, the written scheme referred to in paragraphs 58–64.

44 Employers must consult employees or their representatives on the identified risks of exposure to legionella bacteria and the measures and actions taken to control the risks (see paragraph 20). Employees should be given an opportunity to comment on the assessment and control measures and the employer should take account of these views, so it is important for employers to publicise to employees that a legionella risk assessment has been performed. Employers may wish to involve employees and/or safety representatives when carrying out and reviewing risk assessments as a good way of helping to manage health and safety risk.

45 It is essential to monitor the effectiveness of the control measures and make decisions about when and how monitoring should take place.

46 If the risks are considered insignificant and are being properly managed to comply with the law, the assessment is complete. It may not be necessary to take

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any further action, but it is important to review the assessment periodically, in case anything has changed.

47 The record of the assessment is a living document that must be reviewed to ensure it remains up-to-date. Arrange to review the assessment regularly and specifically whenever there is reason to suspect it is no longer valid. An indication of when to review the assessment and what to consider should be recorded. This may result from, eg:

- (a) changes to the water system or its use;
- (b) changes to the use of the building in which the water system is installed;
- (c) the availability of new information about risks or control measures;
- (d) the results of checks indicating that control measures are no longer effective;
- (e) changes to key personnel;
- (f) a case of legionnaires' disease/legionellosis associated with the system.

## Managing the risk: Management responsibilities, training and competence

### Regulation

*COSHH, regulations 8 and 12; Management Regulations, regulations 5, 7, 10 and 13; HSW Act, sections 2, 3 and 4.*

#### Summary

These Regulations require employers to take reasonable steps to ensure that any control measures are properly used and applied. They require employees to make full and proper use of those control measures. Employers are also required to have arrangements in place for the management of health and safety, to have access to competent health and safety advice and to provide employees with suitable and sufficient information, instruction, and training.

### ACOP

**48 If the assessment shows that there is a reasonably foreseeable risk and it is reasonably practicable to prevent exposure or control the risk from exposure, the dutyholder under paragraph 28 should appoint a competent person or persons to help undertake the measures needed to comply with the requirements in COSHH. The appointed competent person or persons should have sufficient authority, competence and knowledge of the installation to ensure that all operational procedures are carried out in a timely and effective manner. Where the dutyholder does not employ anyone with the necessary competence, they may need to appoint people from outside the organisation. In such circumstances, the dutyholder should take all reasonable steps to ensure the competence of those carrying out work who are not under their direct control and that responsibilities and lines of communication are properly established and clearly laid down.**

49 Those appointed under paragraph 48 to carry out the risk assessment and draw up and implement precautionary measures should have such ability, experience, instruction, information, training and resources to enable them to carry out their tasks competently and safely. In particular, they should know the:

- (a) potential sources of legionella bacteria and the risks they present;
- (b) measures to adopt, including the precautions to take to protect the people concerned, and their significance;

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**(c) measures to take to ensure that the control measures remain effective, and their significance.**

50 Inadequate management, lack of training and poor communication are all contributory factors in outbreaks of legionnaires' disease. It is therefore important that the people involved in assessing risk and applying precautions are competent, trained and aware of their responsibilities.

51 The dutyholder should specifically appoint a competent person or persons to take day-to-day responsibility for controlling any identified risk from legionella bacteria, known as the 'responsible person'. It is important for the appointed responsible person to have *sufficient authority, competence and knowledge of the installation* to ensure that all operational procedures are carried out effectively and in a timely way. Those specifically appointed to implement the control measures and strategies should be suitably informed, instructed and trained and their suitability assessed. They must be properly trained to a level that ensures tasks are carried out in a safe, technically competent manner; and receive regular refresher training. Keep records of all initial and refresher training. If a dutyholder is self-employed or a member of a partnership, and is competent, they may appoint themselves. The appointed responsible person should have a clear understanding of their role and the overall health and safety management structure and policy in the organisation. See *Managing for health and safety at work* for further guidance.<sup>8</sup>

**Competence**

52 The dutyholder should also ensure that all employees involved in work that may expose an employee or other person to legionella are given suitable and sufficient information, instruction and training. This includes information, instruction and training on the significant findings of the risk assessment and the appropriate precautions and actions they need to take to safeguard themselves and others. This should be reviewed and updated whenever significant changes are made to the type of work carried out or methods used. Training is an essential element of an employee's capability to carry out work safely, but it is not the only factor: instructions, experience, knowledge and other personal qualities are also relevant to perform a task safely.

**Implementation of the control scheme**

53 Monitor the implementation of the written scheme (detailed in paragraphs 58–64) for the prevention and control of the risk. Supervise everyone involved in any related operational procedure properly. Define staff responsibilities and lines of communication properly and document them clearly.

54 Make arrangements to ensure that appropriate staff levels are available during all hours the water system is operating. The precise requirements will depend on the nature and complexity of the water system. In some cases, eg where there is complex cooling plant, shift working and arrangements to cover for all absences from duty, for whatever reason, may be necessary. Appropriate arrangements should be made to ensure that the responsible person, or an authorised deputy, can be contacted at all times.

55 Also, make call-out arrangements for people engaged in the management of water systems which operate automatically. Details of the contact arrangements for emergency call-out personnel should be clearly displayed at access points to all automatically or remotely controlled water systems.



## Guidance

56 Communications and management procedures are particularly important where several people are responsible for different aspects of the operational procedures. For example, responsibility for applying control measures may change when shift work is involved, or when the person who monitors the efficacy of a water treatment regime may not be the person who applies it. In such circumstances, responsibilities should be well defined in writing and understood by all concerned. Lines of communication should be clear, unambiguous and audited regularly to ensure they are effective. This also applies to outside companies and consultants who may be responsible for certain parts of the control regime.

57 Employing contractors or consultants does not absolve the dutyholder of responsibility for ensuring that control procedures are carried out to the standard required to prevent the proliferation of legionella bacteria. Dutyholders should make reasonable enquiries to satisfy themselves of the competence of contractors in the area of work before they enter into contracts for the treatment, monitoring, and cleaning of the water system, and other aspects of water treatment and control. An illustration of the levels of service to expect from Service Providers can be found in the Code of Conduct administered by the Legionella Control Association (LCA).<sup>9</sup>

## Preventing or controlling the risk from exposure to legionella bacteria

### Regulation

*COSHH, regulations 7 and 9; HSW Act, sections 2, 3 and 4.*

#### Summary

These Regulations require employers to prevent, or where this is not reasonably practicable, adequately control, the exposure of any employees to substances hazardous to health. Employers are also required to maintain, examine and test control measures and, at suitable intervals review and, if necessary, revise those measures. They must also keep suitable records of examinations, tests and repairs of control measures.

### ACOP

58 **Where the assessment shows that there is a reasonably foreseeable risk of exposure to legionella bacteria, the use of water systems, parts of water systems or systems of work that lead to exposure must be avoided so far as is reasonably practicable. Where this is not reasonably practicable, there should be a written scheme for controlling the risk from exposure that should be properly implemented and managed. The written scheme should specify measures to take to ensure that it remains effective.**

59 The risk from exposure should normally be controlled by measures which do not allow the growth of legionella bacteria in the system and which reduce exposure to water droplets and aerosols. Precautions should, where appropriate, include the following:

- (a) avoiding water temperatures between 20 °C and 45 °C and conditions that favour the growth of legionella bacteria and other microorganisms;
- (b) avoiding water stagnation which may encourage the growth of biofilm;
- (c) avoiding the use of materials that harbour bacteria and other microorganisms, or provide nutrients for microbial growth. The *Water Fittings and Materials Directory*<sup>10</sup> references fittings, materials, and appliances approved for their compliance with the UK legal requirements for plumbing fittings and water using appliances;

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- (d) controlling the release of water spray;
- (e) maintaining the cleanliness of the system and water in it;
- (f) using water treatment techniques;
- (g) taking action to ensure the correct and safe operation and maintenance of the water system.

60 The written scheme should include, where appropriate, and with reference to the risk assessment:

- (a) an up-to-date plan showing the layout of the plant or water system, including parts temporarily out of use (a schematic diagram is sufficient);
- (b) a description of the correct and safe operation of the system;
- (c) the precautions to take;
- (d) checks to carry out to ensure the written scheme is effective and the frequency of such checks;
- (e) the remedial action to take if the written scheme is shown to be not effective.

## Guidance

61 Once the risk has been identified and assessed, a written scheme should be prepared for preventing or controlling it. In particular, the written scheme should contain the information about the water system needed to control the risk from exposure. However, if it is decided that the risks are insignificant and are being properly managed to comply with the law, you may not need to take any further action. But it is important to review the risk assessment regularly and specifically if there is reason to suspect it is no longer valid, for example changes in the water system or its use. The primary objective should be to avoid conditions that allow legionella bacteria to proliferate and to avoid creating a spray or aerosol. It may be possible to prevent the risk of exposure by, eg, using dry cooling plant. Where this is not reasonably practicable, the risk may be controlled by minimising the release of droplets and ensuring water conditions that prevent the proliferation of legionella bacteria. This might include engineering controls, cleaning protocols and other control strategies. Make decisions about the maintenance procedures and intervals, where relevant, on equipment used for implementing the control measures. Legionella bacteria may be present in low or very low numbers in many water systems, but careful control will prevent them from multiplying.

62 The written scheme should give details on how to use and carry out the various control measures and water treatment regimes, including:

- (a) the physical treatment programme – eg using temperature control for hot and cold water systems;
- (b) the chemical treatment programme, including a description of the manufacturer's data on effectiveness, the concentrations and contact time required;
- (c) health and safety information for storage, handling, use and disposal of chemicals;
- (d) system control parameters (together with allowable tolerances); physical, chemical and biological parameters, together with measurement methods and sampling locations, test frequencies and procedures for maintaining consistency;
- (e) remedial measures to take in case the control limits are exceeded, including lines of communication;
- (f) cleaning and disinfection procedures;
- (g) emergency procedures.

63 The written scheme should also describe the correct operation of the water system plant, including:



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- (a) commissioning and recommissioning procedures;
- (b) shutdown procedures;
- (c) checks of warning systems and diagnostic systems in case of system malfunctions;
- (d) maintenance requirements and frequencies;
- (e) operating cycles – including when the system plant is in use or idle.

64 See [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm) for detailed guidance on how to effectively prevent or control exposure.

## ACOP

### Review of control measures: Monitoring and routine inspection

**65 For precautions to remain effective, the condition and performance of the system will need to be monitored. The appointed responsible person should oversee and manage this. Or, where appropriate, an external contractor or an independent third party can do it. Management should involve:**

- (a) checking the performance and operation of the system and its component parts;**
- (b) inspecting the accessible parts of the system for damage and signs of contamination;**
- (c) monitoring to ensure that the treatment regime continues to control to the required standard.**

## Guidance

66 The frequency and extent of routine monitoring will depend on the operating characteristics of the water system.

67 Testing of water quality is an essential part of the treatment regime, particularly in cooling systems. It may be carried out by a service provider, such as a water treatment company or consultant, or by the operator, provided they have been trained to do so and are properly supervised. The type of tests required will depend on the nature of the water system. Further details are given at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm) for both cooling systems and hot and cold water systems.

68 The routine monitoring of general bacterial numbers (total viable count) is also appropriate as an indication of whether microbiological control is being achieved. This is generally only carried out for cooling tower systems, but it is also recommended for spa pools (see [www.hse.gov.uk/legionnaires/spa-pools.htm](http://www.hse.gov.uk/legionnaires/spa-pools.htm) for further guidance). The risk assessment will help identify if you need to conduct routine monitoring in the specific system. Periodic sampling and testing for the presence of legionella bacteria may also be relevant to show that adequate control is being achieved. However, reliably detecting the presence of legionella bacteria is technically difficult and requires specialist laboratory facilities. The interpretation of results is also difficult; a negative result is no guarantee that legionella bacteria are not present in the system. Conversely, a positive result may not indicate a failure of controls, as legionella are present in almost all natural water sources. Further guidance on bacteriological monitoring and interpretation of test results is at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm).

69 A suitably experienced and competent person should interpret the results of monitoring and testing. Carry out any remedial measures promptly, where needed.

## Record keeping

### Regulation

*COSHH, regulations 6 and 9; Management Regulations, regulations 3 and 5; HSW Act, sections 2, 3 and 4.*

### Summary

These Regulations require employers, where they have five or more employees, to record the significant findings of their risk assessment and the steps taken to prevent exposure to substances hazardous to health. Employers are also required to keep suitable records of examinations, tests and repairs of control measures.

### ACOP

**70 An assessment of the risk must be carried out and those appointed under paragraph 48 must record the significant findings and ensure appropriate records are kept. This should include any groups of employees identified as being particularly at risk and the steps taken to prevent or control risks. If the employer has less than five employees there is no statutory duty to write anything down, but it may be useful to keep a written record of what has been done.**

**71 Records should include details about:**

- (a) the appointed responsible person(s) for conducting the risk assessment, managing, and implementing the written scheme;
- (b) any significant findings of the risk assessment;
- (c) the written scheme and its implementation;
- (d) details about the state of operation of the water system, ie in use/not in use;
- (e) the results of any monitoring inspection, test or check carried out, and the dates.

**72 These records should be retained throughout the period they are current and for at least two years afterwards. Retain records of any monitoring inspection, test or check carried out, and the dates, for at least five years.**

### Guidance

73 To ensure that precautions continue to be applied and that adequate information is available, where there are five employees or more, you must keep a record of the assessment, the precautionary measures, and the treatments. All records should be signed, verified or authenticated by those people performing the various tasks assigned to them.

74 The following items should normally be recorded:

- (a) names and positions of people responsible, and their deputies, for carrying out the various tasks under the written scheme;
- (b) a risk assessment and a written scheme of actions and control measures;
- (c) schematic diagrams of the water systems;
- (d) details of precautionary measures that have been applied/implemented including enough detail to show that they were applied/implemented correctly, and the dates on which they were carried out;
- (e) remedial work required and carried out, and the date of completion;
- (f) a log detailing visits by contractors, consultants and other personnel;
- (g) cleaning and disinfection procedures and associated reports and certificates;
- (h) results of the chemical analysis of the water;
- (i) results of any biological monitoring;

## Guidance

- (j) information on other hazards, eg treatment chemicals;
- (k) cooling tower and evaporative condenser notification;
- (l) training records of personnel;
- (m) the name and position of the person or people who have responsibilities for implementing the written scheme, their respective responsibilities and their lines of communication;
- (n) records showing the current state of operation of the water system, eg when the system or plant is in use and, if not in use, whether it is drained down;
- (o) either the signature of the person carrying out the work, or other form of authentication where appropriate.

## Responsibilities of designers, manufacturers, importers, suppliers and installers

### Regulation

*HSW Act, sections 3 and 6.*

#### Summary

This places a duty on any person who designs, manufactures, imports or supplies articles or substances for use at work, to ensure that they are safe and without risks to health at work and that any information related to the article or substance is provided.

### ACOP

**75 Designers, manufacturers, importers, suppliers and installers of water systems that may create a risk of exposure to legionella bacteria, must:**

- (a) ensure, so far as is reasonably practicable, that the water system is so designed and constructed that it will be safe and without risks to health when used at work;
- (b) provide adequate information for the user about the risk and measures necessary to ensure that the water systems will be safe and without risks to health when used at work. This should be updated in the light of any new information about significant risks to health and safety that becomes available, so that dutyholders can ensure relevant changes are made to their risk assessment and controls.

### Regulation

*HSW Act, sections 3 and 6.*

#### Summary

This places general duties on employers and the self-employed to conduct their undertakings in such a way as to ensure, so far as is reasonably practicable, that people other than themselves or their employees are not exposed to risks to their health or safety. They should also provide adequate information regarding any aspects of their products or services that might affect their health and safety.

### ACOP

**76 Suppliers of products and services, including consultancy and water treatment services, aimed at preventing or controlling the risk of exposure to legionella bacteria, must, so far as is reasonably practicable ensure that:**

- (a) measures intended to control the risk of exposure to legionella bacteria are so designed and implemented that they will be effective, safe and without risks to health when used at work;

## ACOP

- (b) they provide adequate information on the correct and safe use of products, taking into account the circumstances and conditions of their use;
- (c) any limitations on their expertise or the products or services they offer are clearly defined and made known to the dutyholder or the appointed responsible person(s);
- (d) any deficiencies or limitations which they identify in the dutyholder's systems or written scheme to control the risk of exposure to legionella bacteria are made known to the dutyholder or the appointed responsible person(s);
- (e) their staff have the necessary ability, experience, instruction, information, training and resources to carry out their tasks competently and safely.

77 All water systems must be properly installed, and commissioned as appropriate.

78 Anyone involved in the supply of water systems (designers, manufacturers, importers, suppliers and installers) must, as far as is reasonably practicable, ensure that the equipment is designed and constructed so that it is safe when used at work and enable safe and easy operation, cleaning and maintenance.

79 Cooling systems should be designed and constructed so they:

- (a) control the release of drift (eg by fitting effective drift eliminators that do not eliminate but rather reduce drift); and spray from other parts of the system;
- (b) aid safe operation (eg water circuitry should be as simple as possible, ideally without deadlegs, or if this is not possible, limit the length of deadlegs);
- (c) aid cleaning and disinfection (eg those parts of the system which need regular cleaning should be easily accessible, readily removable and easily dismantled);
- (d) are made of materials which can be easily disinfected and which do not support microbial growth.

80 Hot and cold water systems should be designed and constructed so they:

- (a) take account of and comply with the Water Supply (Water Fittings) Regulations 1999<sup>11</sup> and the Scottish Water Byelaws (see [www.scottishwater.co.uk](http://www.scottishwater.co.uk));
- (b) aid safe operation (eg without deadlegs, or if this is not possible, limit the length of deadlegs limited and disconnect or remove redundant or non-essential standby plant);
- (c) reduce stored cold water to the minimum needed to meet peak needs;
- (d) aid cleaning and disinfection (eg by providing suitable access points in the system);
- (e) minimise heat gain/loss (eg hot and cold water pipes and storage tanks should be insulated).

81 Manufacturers and suppliers of water systems must provide adequate information and instructions on their safe use. This should include information about those aspects of operation and maintenance which have a bearing on the risk.

## Guidance

82 Those who supply services, such as water treatment or maintenance services should make clear to the responsible person any deficiencies in the water system or measures that may pose a significant risk of exposure to legionella bacteria. They should also make the dutyholder or the responsible person aware of any limitations in their own expertise, products or services so they can make arrangements to ensure that these deficiencies or limitations are addressed.

83 Service providers should also ensure that their staff and contractors are competent to carry out the task safely. They should be properly trained to a standard appropriate to the various tasks they perform, such as risk assessment, advising on water treatment measures, sampling or cleaning and maintaining water systems. The Legionella Control Association administers a Code of Conduct<sup>9</sup> for organisations providing services to occupiers/owners of water systems. This Code of Conduct does not have legal status but may give guidance to dutyholders about the standards of service they should expect to receive from service providers who abide by the Code.

84 All staff and contractors should be suitably trained, managed and supervised and given appropriate resources or support. In particular, they should be aware of the action to take in situations outside their knowledge or experience.

85 Cooling systems should also be designed and constructed so they comply with relevant British Standards or their European/International equivalents.

86 Further detailed technical guidance on how systems should be designed and constructed is available in *Part 1: Evaporative cooling systems* and *Part 2: Hot and cold water systems* at [www.hse.gov.uk/pubns/books/hsg274.htm](http://www.hse.gov.uk/pubns/books/hsg274.htm).

## Appendix 1 Notice of Approval

By virtue of section 16(4) of the Health and Safety at Work etc Act 1974, and with the consent of the Secretary of State for Work and Pensions, the Health and Safety Executive has on 30 October 2013 approved the revised Code of Practice entitled *Legionnaires' disease: The control of legionella bacteria in water systems*.

The revised Code of Practice gives practical guidance with respect to sections 2, 3, 4 and 6 of the Health and Safety at Work etc Act 1974, regulations 6, 7, 8, 9 and 12 of the Control of Substances Hazardous to Health Regulations 2002 and guidance on compliance with the relevant parts of the Management of Health and Safety at Work Regulations 1999.

By virtue of section 16(5) and with the consent of the Secretary of State for Work and Pensions under that paragraph, the Health and Safety Executive has withdrawn its approval of the Code of Practice entitled *Legionnaire's disease: The control of legionella bacteria in water systems* (L8), which came into effect on 8 January 2001 which shall cease to have effect on 25 November 2013.

The Code of Practice comes into effect on 25 November 2013.

Signed

**SUE JOHNS**  
Secretary to the Board of the Health and Safety Executive

7 November 2013

## Glossary

**aerosol** a suspension in a gaseous medium of solid particles, liquid particles, or solid and liquid particles having negligible falling velocity. In the context of this document, it is a suspension of particles which may contain legionella with a typical droplet size of  $<5\mu\text{m}$  that can be inhaled deep into the lungs.

**algae** a small, usually aquatic, plant which requires light to grow, often found on exposed areas of **cooling towers**.

**bacteria (singular bacterium)** a microscopic, unicellular (or more rarely multicellular) organism.

**biofilm** a community of **bacteria** and other **microorganisms**, embedded in a protective layer with entrained debris, attached to a surface.

**calorifier** an apparatus used for the transfer of heat to water in a vessel by indirect means, the source of heat being contained within a pipe or coil immersed in the water.

**cooling tower** an apparatus through which warm water is discharged against an air stream; in doing so part of the water is evaporated to saturate the air and this cools the water. The cooler water is usually pumped to a heat exchanger to be reheated and recycled through the tower.

**deadleg** pipes leading to a fitting through which water only passes infrequently when there is draw-off from the fitting, redundant or abandoned legs of pipework.

**drift** circulating water lost from the tower as liquid droplets entrained in the exhaust air stream; usually expressed as a percentage of circulating water flow, but for more precise work it is parts of water per million by weight of air for a given liquid to gas ratio.

**drift eliminator** more correctly referred to as drift reducers or minimisers – equipment containing a complex system of baffles designed to remove water droplets from **cooling tower** air passing through it.

**dry/wet cooling systems** dry coolers with the capacity to employ evaporative cooling when required either due to high ambient air temperature or when cooling demand is high.

**evaporative condenser** a heat exchanger in which refrigerant is condensed by a combination of air movement and water sprays over its surface.

**evaporative cooling** a process by which a small portion of a circulating body of water is caused to evaporate, taking the required latent heat of vaporisation from the remainder of the water and cooling it.

**fouling** organic growth or other deposits on heat transfer surfaces, causing loss in efficiency.

**legionnaires' disease** a form of pneumonia caused by bacteria of the genus *legionella*.

**legionella** a single bacterium of the genus **legionellae**.

**legionellae** the name of a genus of bacteria which includes over 50 species and belongs to the family *Legionellaceae*. They are ubiquitous in the environment and found in a wide spectrum of natural and artificial collections of water.

***Legionella pneumophila*** one of the causative organisms of **legionnaires' disease**.

**legionellosis** any illness caused by exposure to **legionella**.

**microorganism** an organism of microscopic size including **bacteria**, fungi and viruses.

**nutrient** a food source for **microorganisms**.

**Pontiac fever** a disease caused by a species of *legionella*, an upper respiratory illness less severe than **legionnaires' disease**.

**risk assessment** identifying and assessing the risk from exposure to *legionella* from work activities and water sources on premises and determining any necessary precautionary measures.

**service provider** companies or individuals or their sub-contractors who are involved with providing advice, consultancy, operating, maintenance and management services or the supply of equipment or chemicals to the owner or occupier of premises.

**sludge** a general term for soft mud-like deposits found on heat transfer surfaces or other important sections of a cooling system. Also found at the base of calorifiers and cold water storage tanks.

**stagnation** the condition where water ceases to flow and is therefore liable to microbiological growth.

**strainers** a coarse filter usually positioned upstream of a sensitive component such as a pump control valve or heat exchanger to protect it from debris.



## References and further reading

### References

- 1 *Health and Safety at Work etc Act 1974 (c.37)* The Stationery Office 1974  
ISBN 978 0 10 543774 1
- 2 *Control of substances hazardous to health (COSHH). The Control of Substances Hazardous to Health Regulations 2002 (as amended). Approved Code of Practice and guidance L5 (Sixth edition)* HSE Books 2013  
ISBN 978 0 7176 6582 2 [www.hse.gov.uk/pubns/books/l5.htm](http://www.hse.gov.uk/pubns/books/l5.htm)
- 3 *The Management of Health and Safety at Work Regulations 1999*  
SI 3242/1999 The Stationery Office
- 4 *Reporting accidents and incidents at work: A brief guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)* Leaflet INDG453(rev1) HSE Books 2013 [www.hse.gov.uk/pubns/indg453.htm](http://www.hse.gov.uk/pubns/indg453.htm)
- 5 *The Notification of Cooling Towers and Evaporative Condensers Regulations 1992* SI 1992/2225 The Stationery Office
- 6 *Consulting employees on health and safety: A brief guide to the law* Leaflet INDG232(rev2) HSE Books 2013 [www.hse.gov.uk/pubns/indg232.htm](http://www.hse.gov.uk/pubns/indg232.htm)
- 7 *Legionnaires' disease: A guide for dutyholders* Leaflet INDG458 HSE Books 2012 [www.hse.gov.uk/pubns/indg458.htm](http://www.hse.gov.uk/pubns/indg458.htm)
- 8 *Managing for health and safety* HSG65 (Third edition) HSE Books 2013  
ISBN 978 0 7176 6456 6 [www.hse.gov.uk/pubns/books/hsg65.htm](http://www.hse.gov.uk/pubns/books/hsg65.htm)
- 9 *The control of legionella: A recommended Code of Conduct for service providers* The Legionella Control Association 2013 [www.legionellacontrol.org.uk](http://www.legionellacontrol.org.uk)
- 10 *Water fittings and materials directory* Water Regulations Advisory Scheme  
[www.wras.co.uk/Directory](http://www.wras.co.uk/Directory)
- 11 *Water Supply (Water Fitting) Regulations 1999* SI 1148/1999 The Stationery Office

### Further reading

BS 8580:2010 *Water quality. Risk assessments for Legionella control. Code of practice* British Standards Institution

BS 8558:2011 *Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages* British Standards Institution

BS EN 806 (Parts 1-5) *Specifications for installations inside buildings conveying water for human consumption* British Standards Institution

*Water systems: Health Technical Memorandum 04-01: The control of Legionella, hygiene, 'safe' hot water, cold water and drinking water systems* Department of Health 2006

*Code of Practice: Cooling water treatment* Water Management Society 2007  
[www.wmsoc.org.uk](http://www.wmsoc.org.uk)

*Getting specialist help with health and safety* Leaflet INDG420(rev1) HSE Books 2011 [www.hse.gov.uk/pubns/indg420.htm](http://www.hse.gov.uk/pubns/indg420.htm)

*Minimising the risk of Legionnaires' disease* TM13 The Chartered Institution of Building Services Engineers 2013

## Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit [www.hse.gov.uk](http://www.hse.gov.uk). You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

British Standards can be obtained in PDF or hard copy formats from BSI: <http://shop.bsigroup.com> or by contacting BSI Customer Services for hard copies only Tel: 0845 086 9001 email: [cservices@bsigroup.com](mailto:cservices@bsigroup.com).

The Stationery Office publications are available from The Stationery Office, PO Box 29, Norwich NR3 1GN Tel: 0870 600 5522 Fax: 0870 600 5533 email: [customer.services@tso.co.uk](mailto:customer.services@tso.co.uk) Website: [www.tsoshop.co.uk/](http://www.tsoshop.co.uk/). They are also available from bookshops. Statutory Instruments can be viewed free of charge at [www.legislation.gov.uk/](http://www.legislation.gov.uk/) where you can also search for changes to legislation.

EXHIBIT – Maureen Dynes  
MD/001 - Aspergillus PCR test result

# Aspergillus PCR View Cumulative Results

Collected 24-Sep-2020 13:15 Received 24-Sep-2020 21:49  
Reported 26-Sep-2020 15:02 Order Number V,20.0757312.K  
Status Final Source System Telepath  
Comments For clinical advice please telephone Microbiology.  
This is a PLASMA sample.  
REQUESTOR\*\*As per medics

Test	Result	Ref. Range (Units)	Abnormality
Aspergillus PCR	Not detected		
Asp. fumigatus PCR	DETECTED		

\* Abnormal \*\* Critically Abnormal

EXHIBIT– Maureen Dynes  
MD/002 - Progress summary from  
medical records

Dynes Anthony

CHI: [REDACTED]

DoB: [REDACTED] 1958

SCT date (d0): 16/09/2020  
Neut>0.5/Neut>1: d+12/d+12  
plt>20/plt>50: d+15/ NA

#### PROGRESS SUMMARY

##### 1. Infection:

Anthony was started on Teicoplanin immediately after admission despite being afebrile due to a gram positive growth (Staphylococcus epidermidis and Staphylococcus hominis) detected from his Hickman line detected at the time of stem cell collection. He completed 7 days of this, during which time he became febrile and required additional broad-spectrum cover with Tazocin (completed 5 days).

Following improvement from his first episode of infection he became febrile once more in the context of undetectable neutrophils. He was treated with Meropenem and Vancomycin during this episode, and a CT of thorax, abdomen and pelvis carried out which showed right-sided colitis but nil else. Blood cultures on 08/9/2020 grew Staph epidermidis sensitive to Vancomycin.

Due to on-going pyrexia despite broad spectrum anti-microbials, and Hickman line removal on 22/9/20, Caspofungin was started on 24/9/20 to cover for possible fungal infection. He received a 5 day course of this by which time his fevers had resolved and Neutrophil count recovered.

Aspergillus PCR was carried out on 26/9/20 which detected a low level of Aspergillus fumigatus. He was treated empirically with Voriconazole which was stopped when repeat PCR was negative. There was no clinical suspicion of Aspergillosis.

He was Rhinovirus positive on 23/9/20 during his period of neutropenia, no specific treatment was given for this and his coryzal symptoms resolved.

PICC line was inserted on 24/9/20, this was removed immediately prior to discharge.

##### 2. Mucositis

EXHIBIT– Maureen Dynes  
MD/003 - test result: 6 April 2021



GLASGOW MICROBIOLOGY SERVICES

NHS GREATER GLASGOW & CLYDE

NORTH SECTOR MICROBIOLOGY  
Enquiries [REDACTED]

Patient / Specimen details

DYNES ANTHONY ✓

D.O.B. [REDACTED] 1958

Cons/GP Dr Christine Peters

Sex M

Loc. Microbiology QEUH

CHI/Hosp. No. [REDACTED] ✓

Coll'd 06.04.2021 NK 02.04.21

Rec'd 08.04.2021 14:11

Mycology Invest.

Order No.

Isolate Sputum

Senders ref. No.

21.5652823.P ✓

Copy to:

Microbiology QEUH

\* FINAL REPORT \*

CULTURE RESULT:

a) *Aspergillus fumigatus*

GROWTH:

Isolated

ANTIFUNGAL a) b) c) d) e) f)

Voriconazole

S

b)

c)

d)

e)

f)

GG&C Mycology is a Non Reference Laboratory Service.

Tests included in UKAS Accreditation (8078) Scope.

Initial tasks when performed on  
Reference Lab reports

PORTAL	[REDACTED]
DART	
CHECKED by MEDIC	

19 APR 2021

Authorised by Dr. Raje Dhillon

Date/Time authorised 14.04.2021 15:24

Lab No. [REDACTED]

EXHIBIT– Maureen Dynes MD/004-  
test result - delay to treatment as a  
result of aspergillus: test performed 9  
April 2021

## XR Chest

Performed	09-Apr-2021 02:25	Received	20-Apr-2021 12:28
Reported	20-Apr-2021 12:26	Order Number	G405H37133012
Status	Final	Source System	MiSys

### XR Chest

**Anthony Francis Dynes**

#### Clinical History :

63M. haematology patient. finished chemo awaiting transplant but delayed as ?aspergillus in sputum, underwent bronchoscopy. Temp spike 38.1 with 4L oxygen requirement post bronchoscopy. ABX adjusted. Haem reg on call advise CXR for workup

Final

#### XR Chest :

Right-sided line tip in SVC as before. An AP film therefore heart and mediastinum cannot be accurately assessed. Subtle areas of increased density in both lungs corresponding to the patchy ground-glass opacity demonstrated on the subsequent CT. No frank areas of consolidation.

Examination superseded by CT.

**Reported by:** Dr John Sheridan

**Verified by:** Dr John Sheridan

EXHIBIT– Maureen Dynes MD/005-  
Stenotrophomonas maltophilia PCR  
test result 16 May 2021

## B.cult-Hickman line

Performed	16-May-2021 17:07	Received	17-May-2021 09:08
Reported	07-Jun-2021 16:32	Order Number \	M,21.5509153.K
Status	Final	Source System	Telepath

### Microbiology

Final

Report issued by NHS GG&C Microbiology South Sector  
Enquiries [REDACTED] [REDACTED]

\*\* ADDITIONAL REPORT \*\*

INVESTIGATION: Blood Culture  
SPECIMEN TYPE: B.cult-Hickman line  
Red lumen

CONS/GP: Dr Andrew D Clark      Order No:L1BHNLB  
LOCATION: Bone Marr Transplant QEUH

-----  
Aerobic    Bottle: POSITIVE  
Anaerobic Bottle: No growth 2 days

CULTURE RESULTS:	FROM BOTTLE:
a) Stenotrophomonas maltophilia	Aerobic
b)	
c)	
d)	
e)	
f)	

Clinical microbiology advice can be obtained by calling  
[REDACTED] [REDACTED] or the on-call Microbiologist  
Specimen sent for testing to PHE/HPA, Colindale  
Ref Lab report received on 02/06/21. Viewable on portal

-----  
Senders ref. no.

Authorised by: Eoghan Farmer MIC QEUH  
Date/Time authorised: 07.06.2021 16:28  
\*\* END OF REPORT \*\*

EXHIBIT– Maureen Dynes MD/006-  
Public Health England  
stenotrophomonas test result 16  
May 2021



Public Health  
England

**PHE Colindale**  
61 Colindale Avenue, London NW9 5HT

Switchboard: 020 8200 4400

Website: <https://www.gov.uk/specialist-and-reference-microbiology-laboratory-tests-and-services>

CONSULTANT MICROBIOLOGIST  
MICROBIOLOGY DEPARTMENT  
LEVEL 4 LAB MEDICINE BUILDING  
QUEEN ELIZABETH UNI HOSPITAL  
1345 GOVAN ROAD  
GLASGOW SCOTLAND

G51 4TF

Sender's ref. No. 21.5509153.K ✓  
PHE ref. No. H2 1208 0544  
Date received 21.05.2021

Billing reference  
Outbreak/Investig. No  
Ilog number  
Project code

Hospital No.

Sex **M** Date of birth [REDACTED].1958

Age **63 y.**

NHS number [REDACTED]

Patient postcode [REDACTED]

Name **DYNES, ANTHONY**

Date of collection **16.05.2021 17:07**

Isolation site

Blood culture

## Laboratory report

Initial tasks when performed on  
Reference Lab reports

PORTAL	[REDACTED]
DART	
CHECKED by MEDIC	

### Opportunistic Pathogens Section

1. *Stenotrophomonas maltophilia* (Sender's identification)

PFGE Result: Unique

### Result comment:

Comparison by pulsed-field gel electrophoresis has shown that this isolate is currently unique among reported isolates from your hospital.

Authorised by Dr. Jane Turton. Clinical Scientist, Antimicrobial Resistance and Healthcare

Associated Infections Reference Unit (AMRHAI). Tel: [REDACTED]

email: amrhai@phe.gov.uk

Date reported: 01.06.2021 13:14

Date printed: 01.06.2021 13:14

**02 JUN 2021**

Page 1/1

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**From:** Raines P (Philip)  
**Sent:** 26 March 2021 08:33  
**To:** Scottish Hospitals Inquiry  
**Subject:** FW: QEUH IPC and Governance Subgroup meeting  
**Attachments:** QEUH IPCG Sub Group.pptx Draft Presentation.pptx Version 9.pptx

---

**From:** Raines P (Philip)  
**Sent:** 25 March 2021 20:19  
**To:** Raines P (Philip)  
**Subject:** FW: QEUH IPC and Governance Subgroup meeting

---

**From:** Raines P (Philip)  
**Sent:** 16 December 2020 13:58  
**To:** Murray D (Diane) [REDACTED] Borland, Hazel [REDACTED] 'BUCHANAN, Helen (NHS FIFE)' [REDACTED] CONNOR, Martin (NHS DUMFRIES AND GALLOWAY) [REDACTED] 'Christina.Coulombe' [REDACTED] 'WALLACE, Angela (NHS FORTH VALLEY)' [REDACTED]; Bain MB (Marion) [REDACTED] Shepherd L (Lesley) [REDACTED] White C (Craig) [REDACTED] Campariol-Scott C (Carole) [REDACTED] Dryden J (Jim) [REDACTED] Miller, Debbie [REDACTED] Claire Peacock (NHS Forth Valley) [REDACTED] Ferula, Pauline [REDACTED]  
**Cc:** Angela Wallace (NHS Forth Valley) [REDACTED]  
**Subject:** RE: QEUH IPC and Governance Subgroup meeting

Colleagues

For agenda item 3, I attach the slidepack that Angela shared with several of us last week.

Regards

Phil

---

**From:** Raines P (Philip)  
**Sent:** 15 December 2020 09:49  
**To:** Murray D (Diane) ; 'Borland, Hazel' ; 'BUCHANAN, Helen (NHS FIFE)' ; 'CONNOR, Martin (NHS DUMFRIES AND GALLOWAY)' ; 'Christina.Coulombe' [REDACTED] ; 'WALLACE, Angela (NHS FORTH VALLEY)' ; Bain MB (Marion) ; Shepherd L (Lesley) ; White C (Craig) ; Campariol-Scott C (Carole) ; Dryden J (Jim) ; Miller, Debbie ; Claire Peacock (NHS Forth Valley) ; 'Ferula, Pauline'  
**Cc:** Angela Wallace (NHS Forth Valley)  
**Subject:** RE: QEUH IPC and Governance Subgroup meeting  
**Importance:** High

Hello

With apologies for putting these around now, but please see the attached paper and agenda for this Thursday's meeting.



**Agenda**

1	Oversight Board: Interim and Final Reports	Diane/Phil
2	Draft paper on IPC Governance and Assurance	Phil
3	Summary of Key Recent IPC Reforms in NHS GGC	Angela
4	Final considerations	Diane

Regards  
Phil

-----Original Appointment-----

**From:** Raines P (Philip)

**Sent:** 30 November 2020 19:43

**To:** Raines P (Philip); Murray D (Diane); Borland, Hazel; 'BUCHANAN, Helen (NHS FIFE)'; CONNOR, Martin (NHS DUMFRIES AND GALLOWAY); 'Christina.Coulombe [REDACTED]'; 'WALLACE, Angela (NHS FORTH VALLEY)'; Bain MB (Marion); Shepherd L (Lesley); White C (Craig); Campariol-Scott C (Carole); Dryden J (Jim); Miller, Debbie; Claire Peacock (NHS Forth Valley); Ferula, Pauline

**Cc:** Angela Wallace (NHS Forth Valley)

**Subject:** QEUH IPC and Governance Subgroup meeting

**When:** 17 December 2020 15:00-16:00 (UTC+00:00) Dublin, Edinburgh, Lisbon, London.

**Where:** Microsoft Teams Meeting

All

Many thanks for sending me your availability for a meeting. This seems to be the best date for a meeting to consider a draft of comments on the IPC assurance framework for NHS GGC, and reflect any final findings/recommendations for the Oversight Board's final report. An agenda and papers will be presented closer to the time.

Regards  
Phil

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## Microsoft Teams meeting

**Join on your computer or mobile app**

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SCOTS Connect

[Learn More](#) | [Help](#) | [Meeting options](#)

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# QEUH IPCG Sub Group Assurance Meeting

**Thursday 10<sup>th</sup> December 2020**

**Professor Angela Wallace, IDIPC**

# **Update: Interim Director of Infection Prevention Control and HAI Executive Lead**

**December 2020**

Key areas of focus	Progress
<b>Leadership Capacity and establishing Interim Director of Infection Control Role</b>	<ul style="list-style-type: none"> <li>Operational Director Role continues to be in place and developed</li> <li>Additional leadership capacity in the IDIPC role continues</li> <li>As reported within the silver command update the IPC leadership, capacity building, influence and impact of the ICM and her team has been significant over the past 8 months</li> </ul>
<b>Understand the current system and performance across IPC</b>	<ul style="list-style-type: none"> <li>As highlighted in the silver command work the creation of an IPC community with significant collective leadership under the banner of “Infection Control is Everybody’s Business” has created a joint vision builds on the foundations within the SWOT and incorporates discovery themes, the teams ambitions for the future and has ensured and further developed the new ways of working in GGC</li> <li>One of the key strands of the improvement collaborative is to increase improvement capacity within IPCT and across the organisation.</li> <li>Two of the ICD have assumed additional sessions within their work plan and now function as Deputy LICD and ICD with specific responsibility for the built environment</li> </ul>
<b>Planning to Change</b>	<ul style="list-style-type: none"> <li>Gold and silver command approach in place and progressing</li> <li>Timescales being met despite pandemic and emergency footing (see silver command for detailed progress)</li> <li>IPC whole system break through collaborative, architecture designed, resources secured and internal organisational integration complete to ensure coherent and hard wiring for sustainability</li> <li>Collaborative focus on SIPs, SABs, QI and includes a dedicated workstream for the RHC</li> </ul>
<b>Future direction whole system transformational and OD plan</b>	<ul style="list-style-type: none"> <li>Gold and silver command approach in place</li> <li>The independent review action plan and the pending interim oversight board report recommendations will be delivered as a key element</li> <li>The OD plan in place, on track</li> <li>The OD work is demonstrating significant impact on supporting change and learning</li> <li>Considerable and ongoing engagement and buy in from key leaders and staff</li> <li>Shift of leadership to the IPCT community leaders evident as they design and deliver the actions and approach across the silver command</li> </ul>

# **Future Direction and whole system transformation approach**

## **Gold and Silver Command Progress**

**December 2020**

# Gold Command

- Gold Command designed, developed and in place
- Chaired by Chief Executive – Jane Grant
- Programme management support in place
- Silver command workstreams in place and progress monitored and supported by the CMT, GGC governance and reporting demonstrating additionality of gold command work
- Progress against deliverables on a monthly basis
- Independent review, action plan monitored as standing agenda item, progress on track
- This integrated programme management approach through the CEO systematically integrates, connects and ensures delivery at pace and organisational coherence with Boards with business objectives and priorities

# Gold Command Progress

Delivery Actions	Progress and Results
<b>Better Performance</b>	<ul style="list-style-type: none"> <li>- Agreed Pro forma with SMT</li> <li>- Agreed reporting schedule</li> <li>- Agreed highlight dates and sessions</li> <li>- Programme of work signed off</li> </ul>
<b>Better Care &amp; Experience (Quality Strategy)</b>	<ul style="list-style-type: none"> <li>- QI training delivered to cohort in south</li> <li>- Repository of QI qualified personnel established</li> <li>- Quality data integrated into monthly performance scorecard</li> <li>- Meeting rhythm and structured performance analysis to leadership team meetings at SLT &amp; Service               <ul style="list-style-type: none"> <li>Agreed for 3 areas -DME, Medicine &amp; Surgery</li> <li>Data is discussed in a performance and improvement manner</li> </ul> </li> <li>- Caught in Act of Care boards established and program of data/events to be showcased is in discussion</li> <li>- Clinical successes for sharing fed to Comms team; increasing the number of responders on Care Opinion</li> <li>- Annual programme of events – initial plans need to be revised in light of covid and social distancing requirements</li> <li>- Representative from patient experience co opted to STEP projects to ensure patient and public agenda is included eg. Proposal for improved signage at QEUH</li> <li>-</li> </ul>
<b>Better Together</b>	<ul style="list-style-type: none"> <li>- A Stakeholder Communications and Engagement Strategy has been developed. This includes QEUH specific activity and has been shared with relevant stakeholders, including SG and the NHSGGC Board and has received positive feedback.</li> <li>- A programme of monthly MP/MSP briefings has been scheduled and will commence early next month.</li> <li>- The stakeholder mapping work is underway.</li> <li>- A PR forward plan is in development. This includes a series of programme, people and site based opportunities. This plan will detail PR prospects and calendar events (i.e. Remobilisation, the Public Inquiry, etc.).</li> <li>- The Atrium design has progressed with Caught in the Act of Care imagery now on display</li> </ul>
<b>Infection Control is everybody's business</b>	<ul style="list-style-type: none"> <li>- Discovery feedback delivered to IPCC Executive (Sliver Command) team and IPCC Purpose and Vision created.</li> <li>- IPCC achievements and strategic priorities collated</li> <li>- Discovery delivered to IPCT Senior team and two cohorts of leadership team.</li> <li>- IPCT achievements and strategic priorities collated</li> <li>- Meeting arranged to clear historic outstanding updates</li> <li>- Infection Control Whole Systems Improvement collaborative progressing and presented for approval to CMT in Nov as planned.</li> <li>- Estates and Facilities first impressions count work progressing</li> <li>- Infection Control continue whole team vision and redesign being developed</li> </ul>

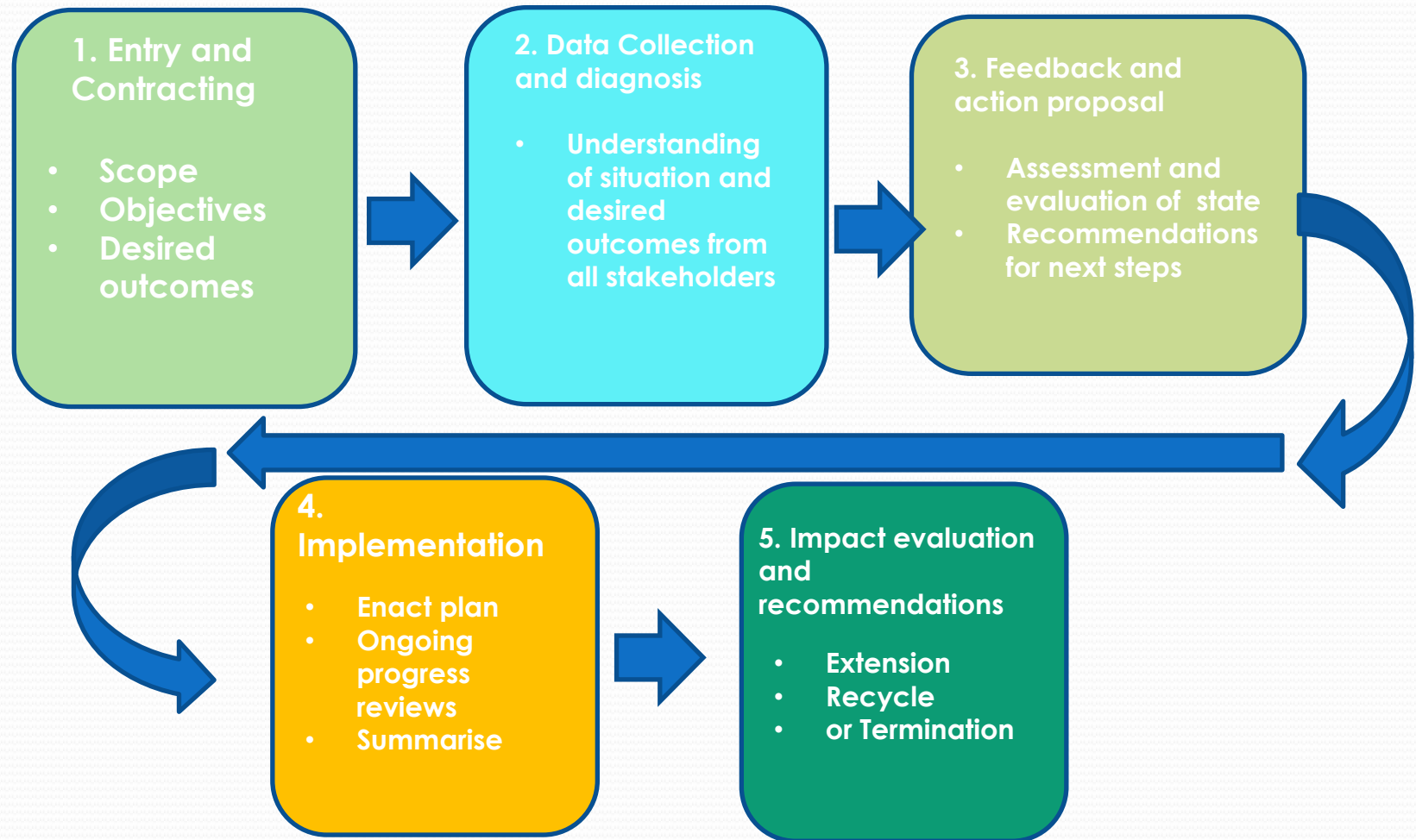
# Silver Command “Everybody’s Business”

## GGC IPCT and Microbiology OD Discovery & OD Plan Progress

December 2020



# 5 Stages of OD Plan



# 1. Decide

**Facilitate a series of interventions with a view to ensuring that we work in:**

- A positive working environment that promotes staff wellbeing for all
- A quality operational environment that ensures service effectiveness and patient safety
- A clear governance framework that facilitates clinical reviews and debate allowing differing clinical opinions to be heard and acknowledged and provides clear accountability for decisions made
- A team ethos of continuous learning and improvement ensuring sustainable change where beneficial

## 2. Discovery: Data Collection and diagnosis

- **40 interviews**
  - **10 stakeholders**
  - **30 staff all grades all disciplines**
- **Sample process reviews**
- **Data triangulation**

## 2: Themes and recommendations

### Leadership and Culture

Vision, Purpose, Values, Strategy, Planning, Performance, Collaborative leadership, Psychological Safety, Trust, Relationships, Risk appetite, Behaviours, Celebrating success, Learning organisation, Candour

### Role and Responsibilities Structure, capacity

Function, Form, Capacity and resources, North vs South Equity: workload and OOH rota, Service based Job Planning

### Governance and Assurance

Systems and processes, Risk Appetite, Delegation, Escalation, SMT, PAG, IMT, Clinical Governance, Estates: - SCRIBES; SG / ARHAI – trust – better partnering

### Communications

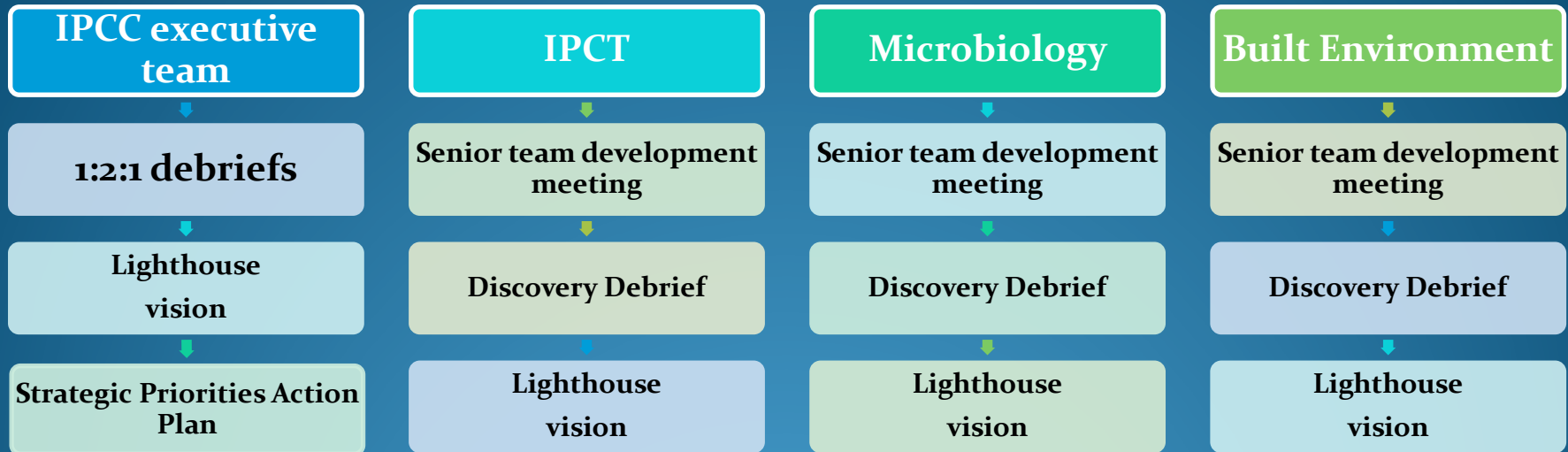
Formal, Clarity of terms and meaning , Informal, Pan GGC, Pan Service, IC and Microbiology, Handovers, Feedback loops, National: - IC Network, Stakeholder management

### Training

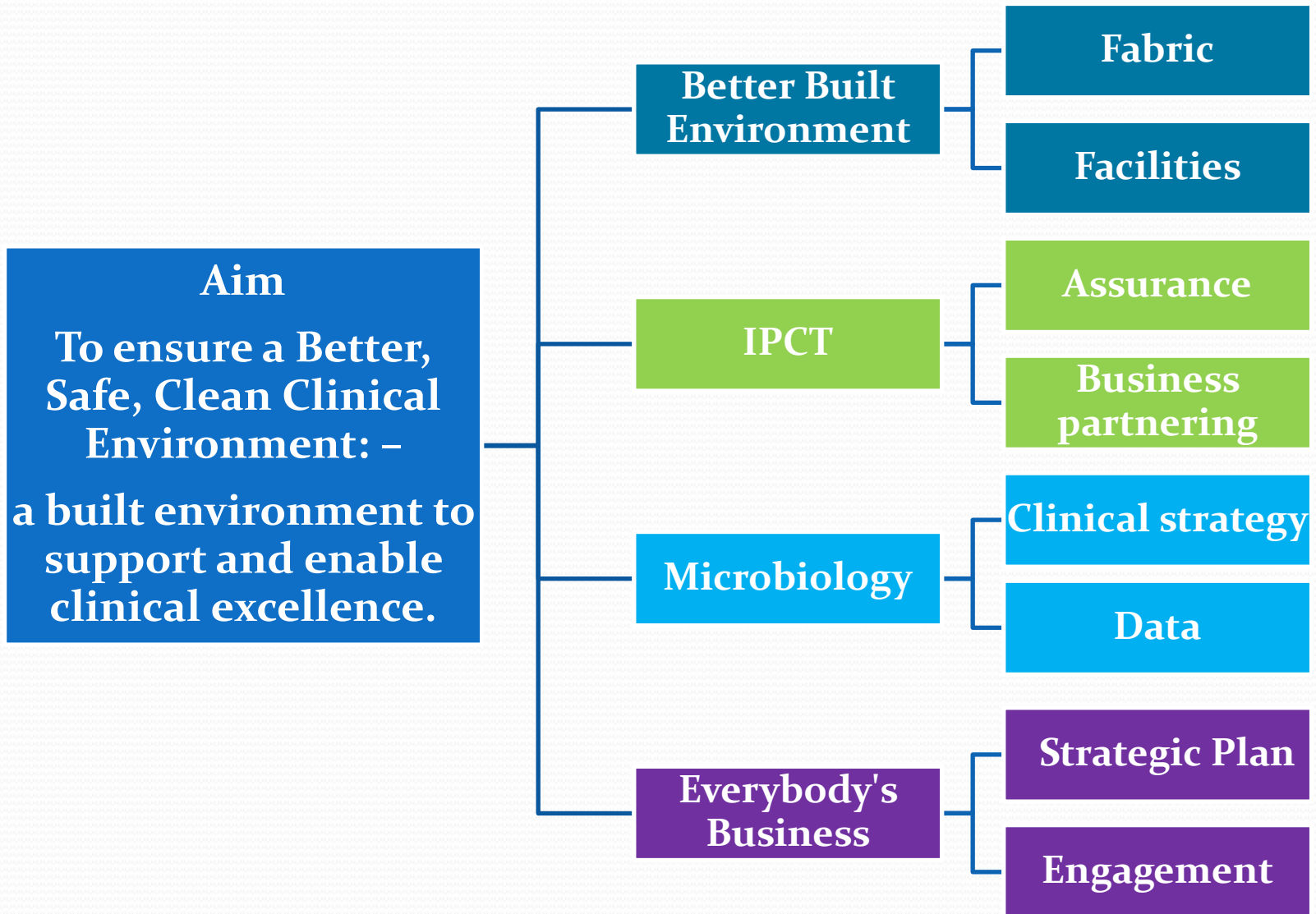
IC confidence, Access to training, Media training, Succession planning, Quality Improvement methodology, Leadership / management

A50258433

# 3: Better Everyday Discovery Debriefs and Engagement Events



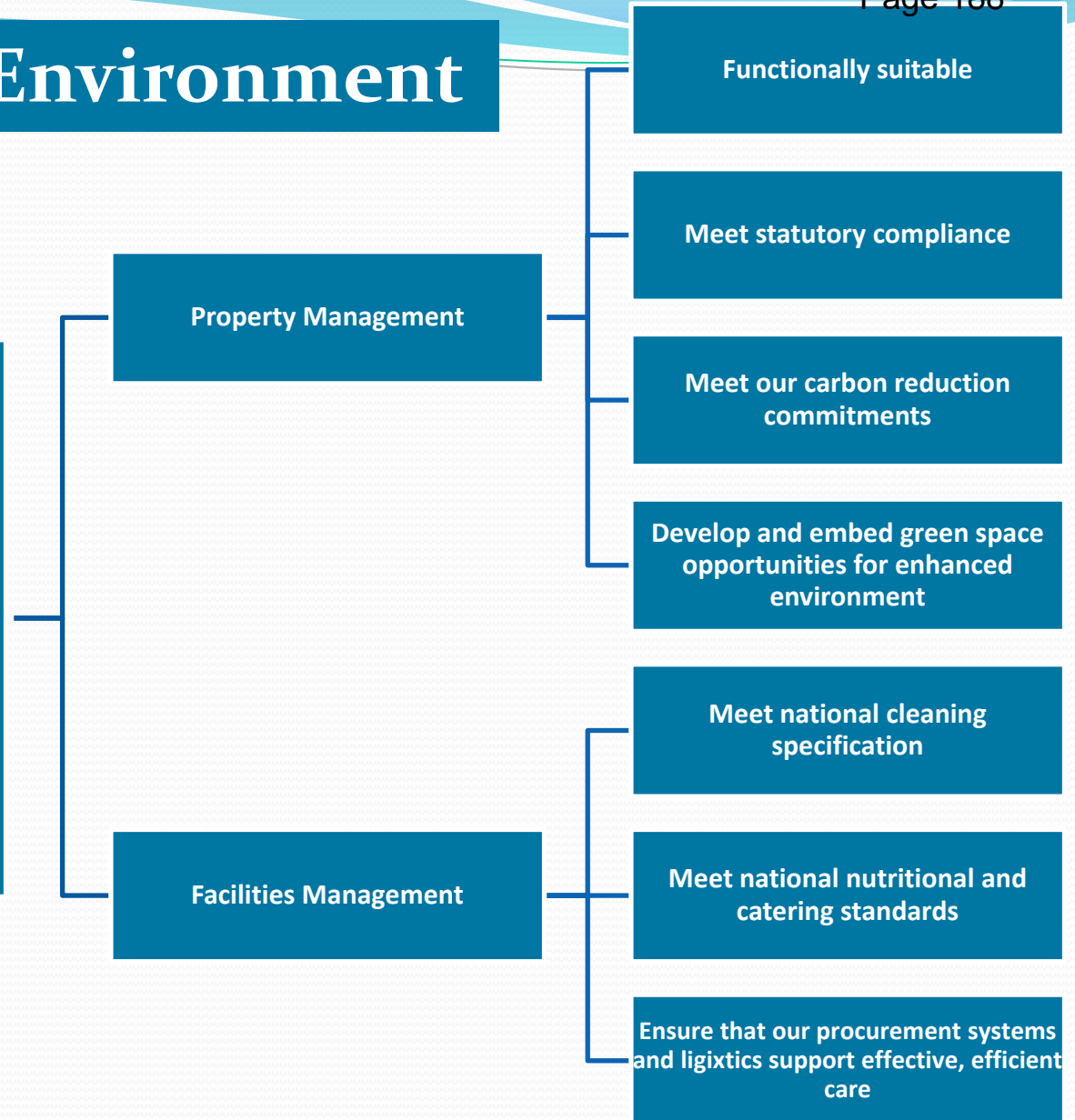
Theme	Change / Improvement/ Achievement / Celebration of success to date Nov 2020
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# Better Built Environment

## Aim

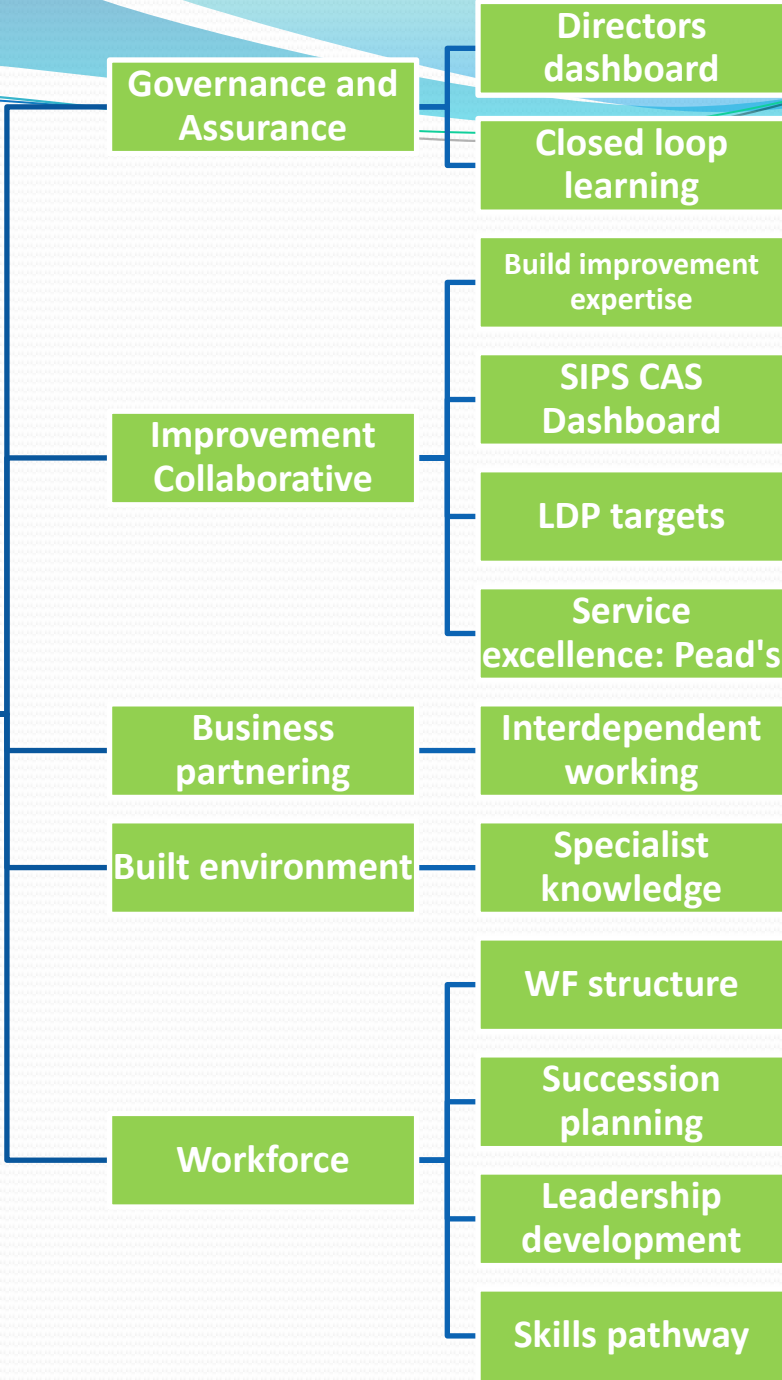
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# Microbiology

## Aim

To provide excellence in prevention, diagnosis and management of infection for every patient, every time.

Clinically led

Workforce

Data

Communication

Training

Clinical and technical Strategies

Synergies

Specification

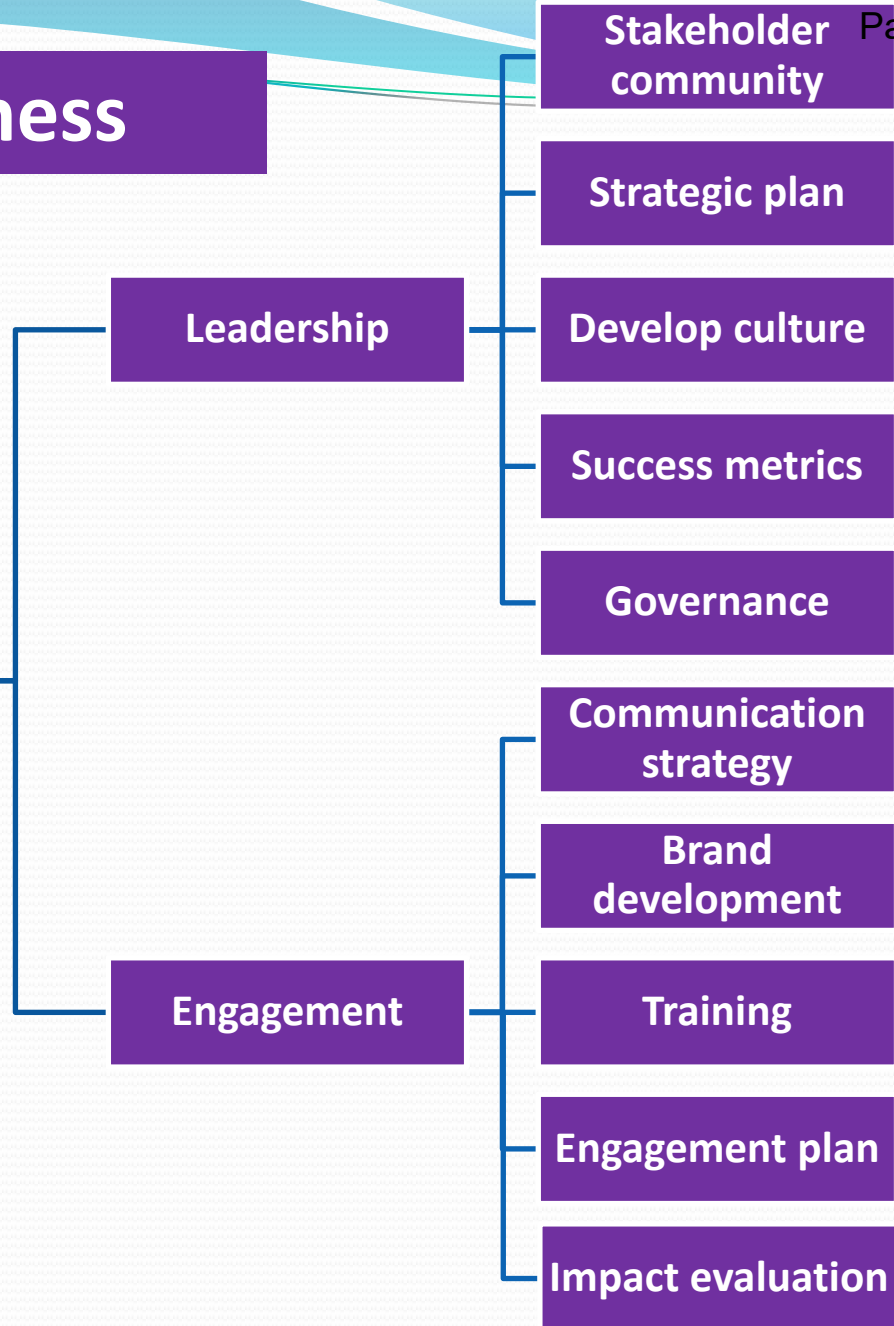
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Establish

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Create

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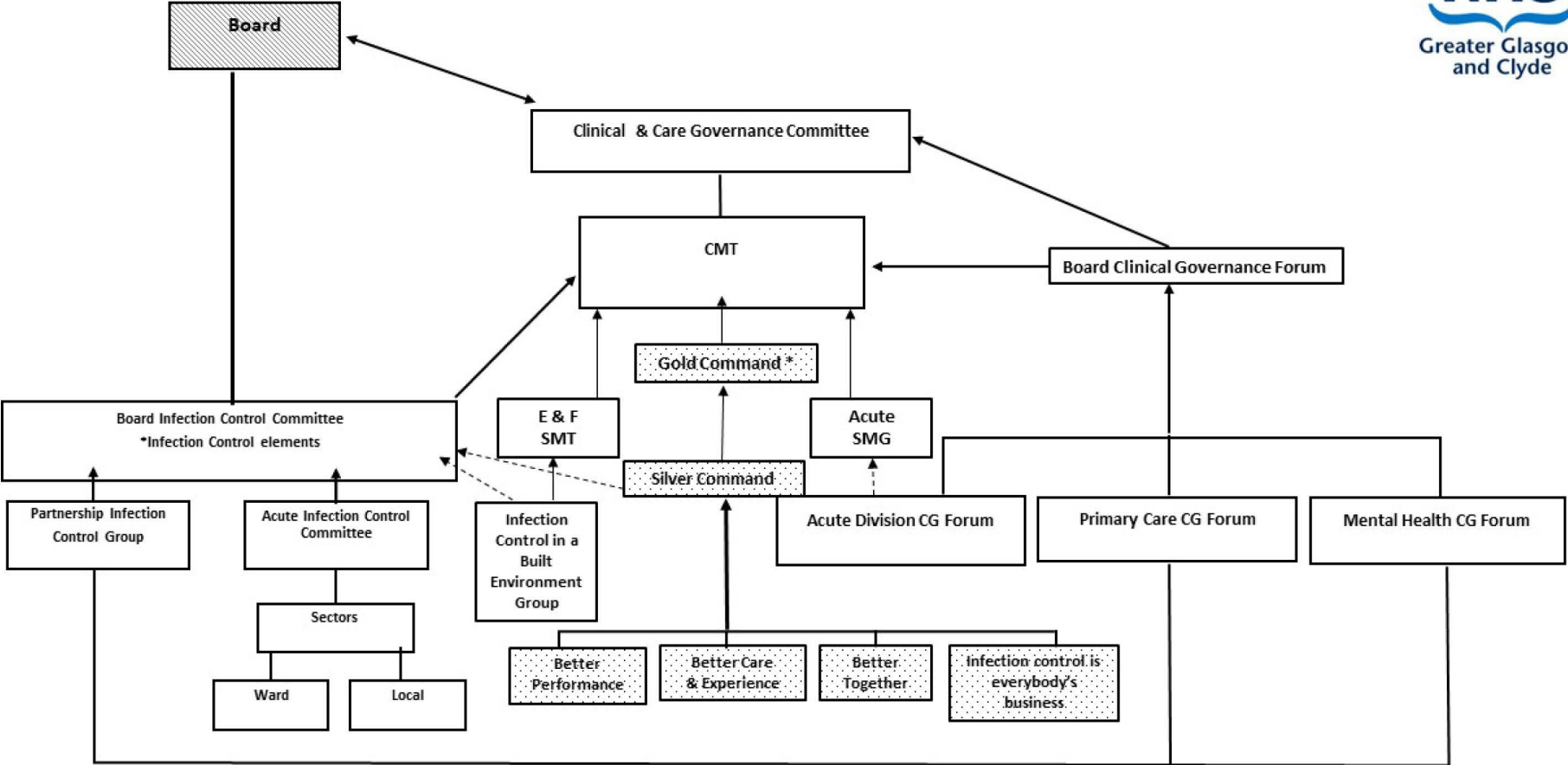


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NHS GGC Assurance Framework

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Care & Compassion ↔ Dignity & Respect ↔ Openness, Honesty & Responsibility ↔ Quality & Teamwork

Aims

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Improving the health & wellbeing of the population

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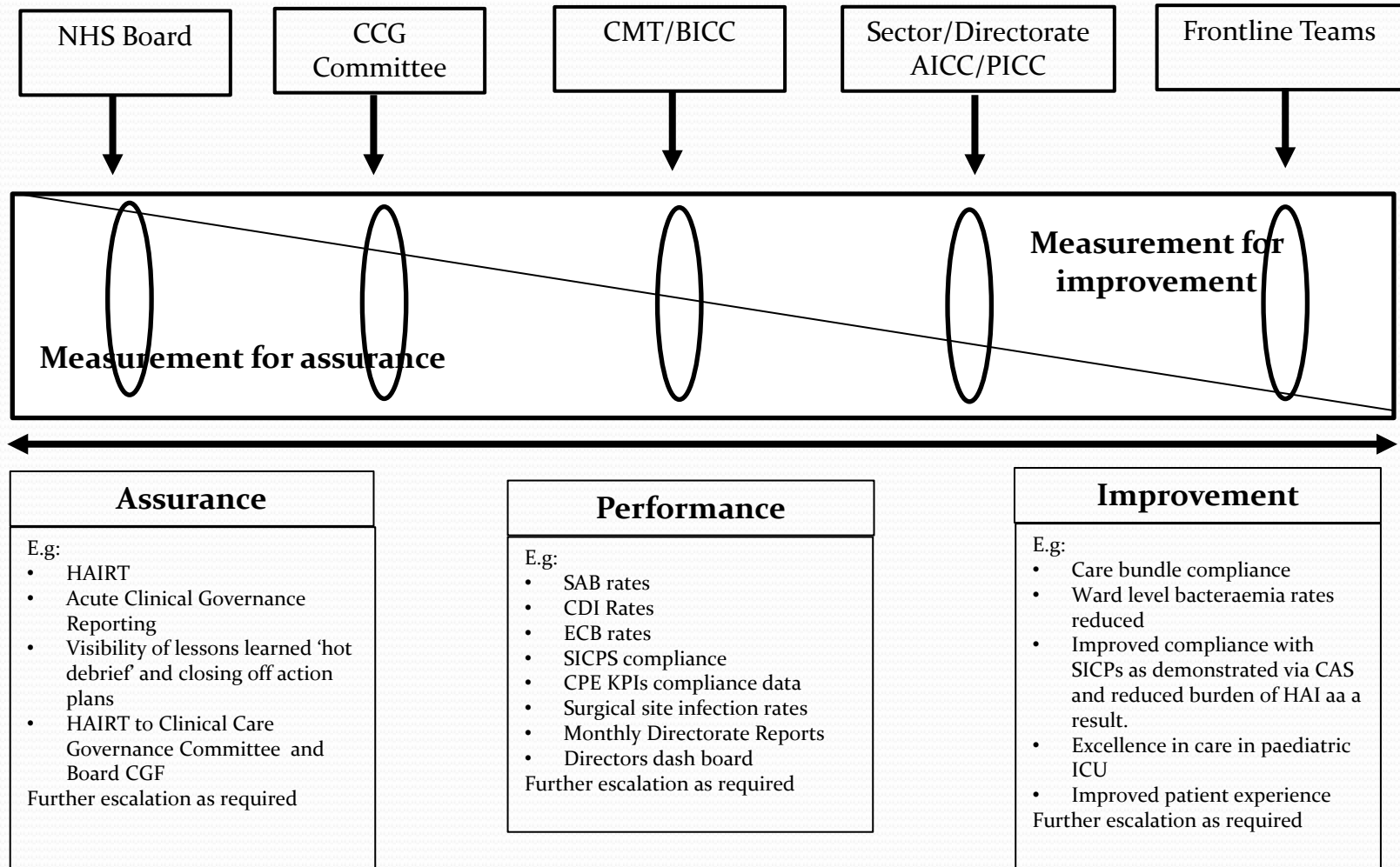
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Targets And KPIs	<ul style="list-style-type: none"> <li>SAB</li> <li>CPEKPI</li> <li>CDI</li> <li>ECB</li> <li>Surgical site infection</li> </ul>	<ul style="list-style-type: none"> <li>Improved patient outcomes</li> <li>Reduced complaints</li> </ul>	<ul style="list-style-type: none"> <li>Reduced economic burden of HAI in Greater Glasgow &amp; Clyde</li> </ul>	<ul style="list-style-type: none"> <li>Workforce ready to deliver future challenges</li> </ul>

# Draft Developing Approach

## Performance Management Framework Balanced Approach to Measurement - IPC



## **Rationale**

The SWOT and PESTLE analysis was used by the DIPIC in the early stages to inform a potential way forward for the organisation in terms of Infection Prevention and Control.

It was key to highlight the organisational advantages (SWOT figure 1) and prepare the ground work that will support the planned changes (PESTLE figure 2.)

This approach worked together with the detailed and dynamic Organisational Development (OD) plan, and staff across the IPC community readily shared their assessment.

The following areas were identified and at the centre of the approaches detailed in the DIPIC report to the Oversight Board (attached).

- To analyse the areas of future focus to invest in (staff and systems)
- To ensure a strategic response to deliver implementation plans (Gold Command)
- To manage today (Safe Today) whilst creating tomorrow
- To gain insight across the Organisational Environment
- To ensure Strategic Thinking (Promotes Innovation)
- To develop planning for change
- To reduces risk to any imprlemenation of new approaches
- To identify opportuinites
- To ingenders team collaboration
- To ensure the design identifies and reduces furture threats

There has been a process of continual assessment, review and adaptations to the work during the period from February – September 2020.

Please find below the SWOT and PESTLE analysis (figure 1 and 2).

Figure1



Figure 2





# QEUH IPCG Sub Group Assurance Meeting

**Thursday 10<sup>th</sup> December 2020**

**Professor Angela Wallace, IDIPC**

# **Update: Interim Director of Infection Prevention Control and HAI Executive Lead**

**December 2020**

Key areas of focus	Progress
<b>Leadership Capacity and establishing Interim Director of Infection Control Role</b>	<ul style="list-style-type: none"> <li>Operational Director Role continues to be in place and developed</li> <li>Additional leadership capacity in the IDIPC role continues</li> <li>As reported within the silver command update the IPC leadership, capacity building, influence and impact of the ICM and her team has been significant over the past 8 months</li> </ul>
<b>Understand the current system and performance across IPC</b>	<ul style="list-style-type: none"> <li>As highlighted in the silver command work the creation of an IPC community with significant collective leadership under the banner of “Infection Control is Everybody’s Business” has created a joint vision builds on the foundations within the SWOT and incorporates discovery themes, the teams ambitions for the future and has ensured and further developed the new ways of working in GGC</li> <li>One of the key strands of the improvement collaborative is to increase improvement capacity within IPCT and across the organisation.</li> <li>Two of the ICD have assumed additional sessions within their work plan and now function as Deputy LICD and ICD with specific responsibility for the built environment</li> </ul>
<b>Planning to Change</b>	<ul style="list-style-type: none"> <li>Gold and silver command approach in place and progressing</li> <li>Timescales being met despite pandemic and emergency footing (see silver command for detailed progress)</li> <li>IPC whole system break through collaborative, architecture designed, resources secured and internal organisational integration complete to ensure coherent and hard wiring for sustainability</li> <li>Collaborative focus on SIPs, SABs, QI and includes a dedicated workstream for the RHC</li> </ul>
<b>Future direction whole system transformational and OD plan</b>	<ul style="list-style-type: none"> <li>Gold and silver command approach in place</li> <li>The independent review action plan and the pending interim oversight board report recommendations will be delivered as a key element</li> <li>The OD plan in place, on track</li> <li>The OD work is demonstrating significant impact on supporting change and learning</li> <li>Considerable and ongoing engagement and buy in from key leaders and staff</li> <li>Shift of leadership to the IPCT community leaders evident as they design and deliver the actions and approach across the silver command</li> </ul>

# **Future Direction and whole system transformation approach**

## **Gold and Silver Command Progress**

**December 2020**

# Gold Command

- Gold Command designed, developed and in place
- Chaired by Chief Executive – Jane Grant
- Programme management support in place
- Silver command workstreams in place and progress monitored and supported by the CMT, GGC governance and reporting demonstrating additionality of gold command work
- Progress against deliverables on a monthly basis
- Independent review, action plan monitored as standing agenda item, progress on track
- This integrated programme management approach through the CEO systematically integrates, connects and ensures delivery at pace and organisational coherence with Boards with business objectives and priorities

# Gold Command Progress

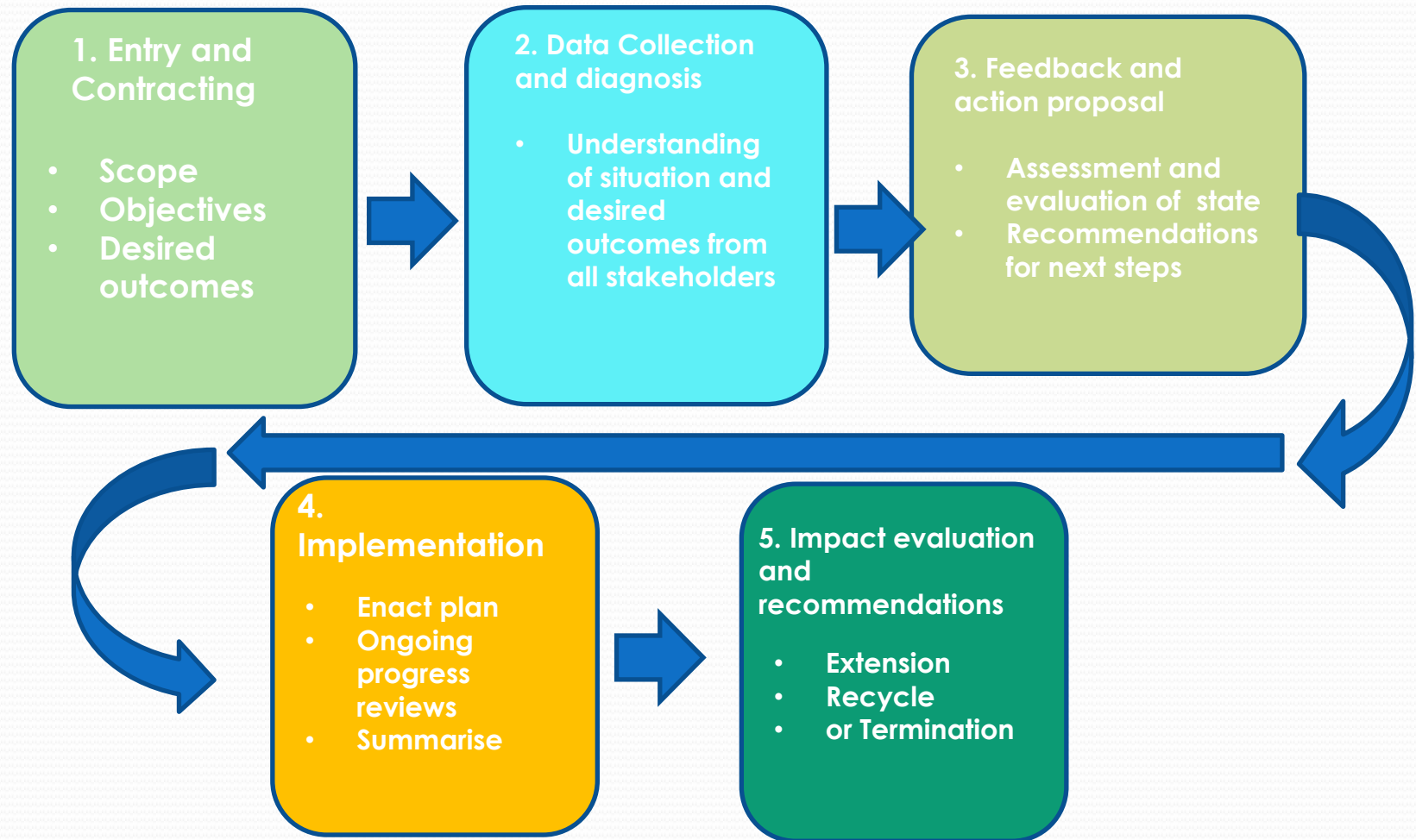
Delivery Actions	Progress and Results
<b>Better Performance</b>	<ul style="list-style-type: none"> <li>- Agreed Pro forma with SMT</li> <li>- Agreed reporting schedule</li> <li>- Agreed highlight dates and sessions</li> <li>- Programme of work signed off</li> </ul>
<b>Better Care &amp; Experience (Quality Strategy)</b>	<ul style="list-style-type: none"> <li>- QI training delivered to cohort in south</li> <li>- Repository of QI qualified personnel established</li> <li>- Quality data integrated into monthly performance scorecard</li> <li>- Meeting rhythm and structured performance analysis to leadership team meetings at SLT &amp; Service               <ul style="list-style-type: none"> <li>Agreed for 3 areas -DME, Medicine &amp; Surgery</li> <li>Data is discussed in a performance and improvement manner</li> </ul> </li> <li>- Caught in Act of Care boards established and program of data/events to be showcased is in discussion</li> <li>- Clinical successes for sharing fed to Comms team; increasing the number of responders on Care Opinion</li> <li>- Annual programme of events – initial plans need to be revised in light of covid and social distancing requirements</li> <li>- Representative from patient experience co opted to STEP projects to ensure patient and public agenda is included eg. Proposal for improved signage at QEUH</li> <li>-</li> </ul>
<b>Better Together</b>	<ul style="list-style-type: none"> <li>- A Stakeholder Communications and Engagement Strategy has been developed. This includes QEUH specific activity and has been shared with relevant stakeholders, including SG and the NHSGGC Board and has received positive feedback.</li> <li>- A programme of monthly MP/MSP briefings has been scheduled and will commence early next month.</li> <li>- The stakeholder mapping work is underway.</li> <li>- A PR forward plan is in development. This includes a series of programme, people and site based opportunities. This plan will detail PR prospects and calendar events (i.e. Remobilisation, the Public Inquiry, etc.).</li> <li>- The Atrium design has progressed with Caught in the Act of Care imagery now on display</li> </ul>
<b>Infection Control is everybody's business</b>	<ul style="list-style-type: none"> <li>- Discovery feedback delivered to IPCC Executive (Sliver Command) team and IPCC Purpose and Vision created.</li> <li>- IPCC achievements and strategic priorities collated</li> <li>- Discovery delivered to IPCT Senior team and two cohorts of leadership team.</li> <li>- IPCT achievements and strategic priorities collated</li> <li>- Meeting arranged to clear historic outstanding updates</li> <li>- Infection Control Whole Systems Improvement collaborative progressing and presented for approval to CMT in Nov as planned.</li> <li>- Estates and Facilities first impressions count work progressing</li> <li>- Infection Control continue whole team vision and redesign being developed</li> </ul>

# Silver Command “Everybody’s Business”

## GGC IPCT and Microbiology OD Discovery & OD Plan Progress

December 2020

# 5 Stages of OD Plan





# 1. Decide

**Facilitate a series of interventions with a view to ensuring that we work in:**

- A positive working environment that promotes staff wellbeing for all
- A quality operational environment that ensures service effectiveness and patient safety
- A clear governance framework that facilitates clinical reviews and debate allowing differing clinical opinions to be heard and acknowledged and provides clear accountability for decisions made
- A team ethos of continuous learning and improvement ensuring sustainable change where beneficial

## 2. Discovery: Data Collection and diagnosis

- **40 interviews**
  - **10 stakeholders**
  - **30 staff all grades all disciplines**
- **Sample process reviews**
- **Data triangulation**

## 2: Themes and recommendations

### Leadership and Culture

Vision, Purpose, Values, Strategy, Planning, Performance, Collaborative leadership, Psychological Safety, Trust, Relationships, Risk appetite, Behaviours, Celebrating success, Learning organisation, Candour

### Role and Responsibilities Structure, capacity

Function, Form, Capacity and resources, North vs South Equity: workload and OOH rota, Service based Job Planning

### Governance and Assurance

Systems and processes, Risk Appetite, Delegation, Escalation, SMT, PAG, IMT, Clinical Governance, Estates: - SCRIBES; SG / ARHAI – trust – better partnering

### Communications

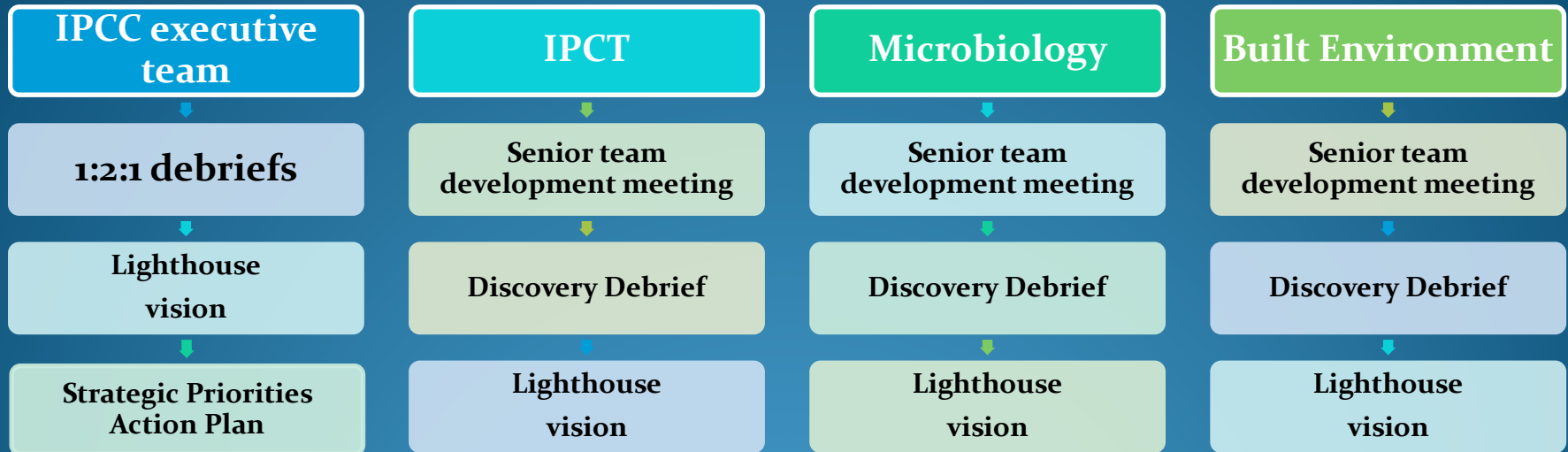
Formal, Clarity of terms and meaning , Informal, Pan GGC, Pan Service, IC and Microbiology, Handovers, Feedback loops, National: - IC Network, Stakeholder management

### Training

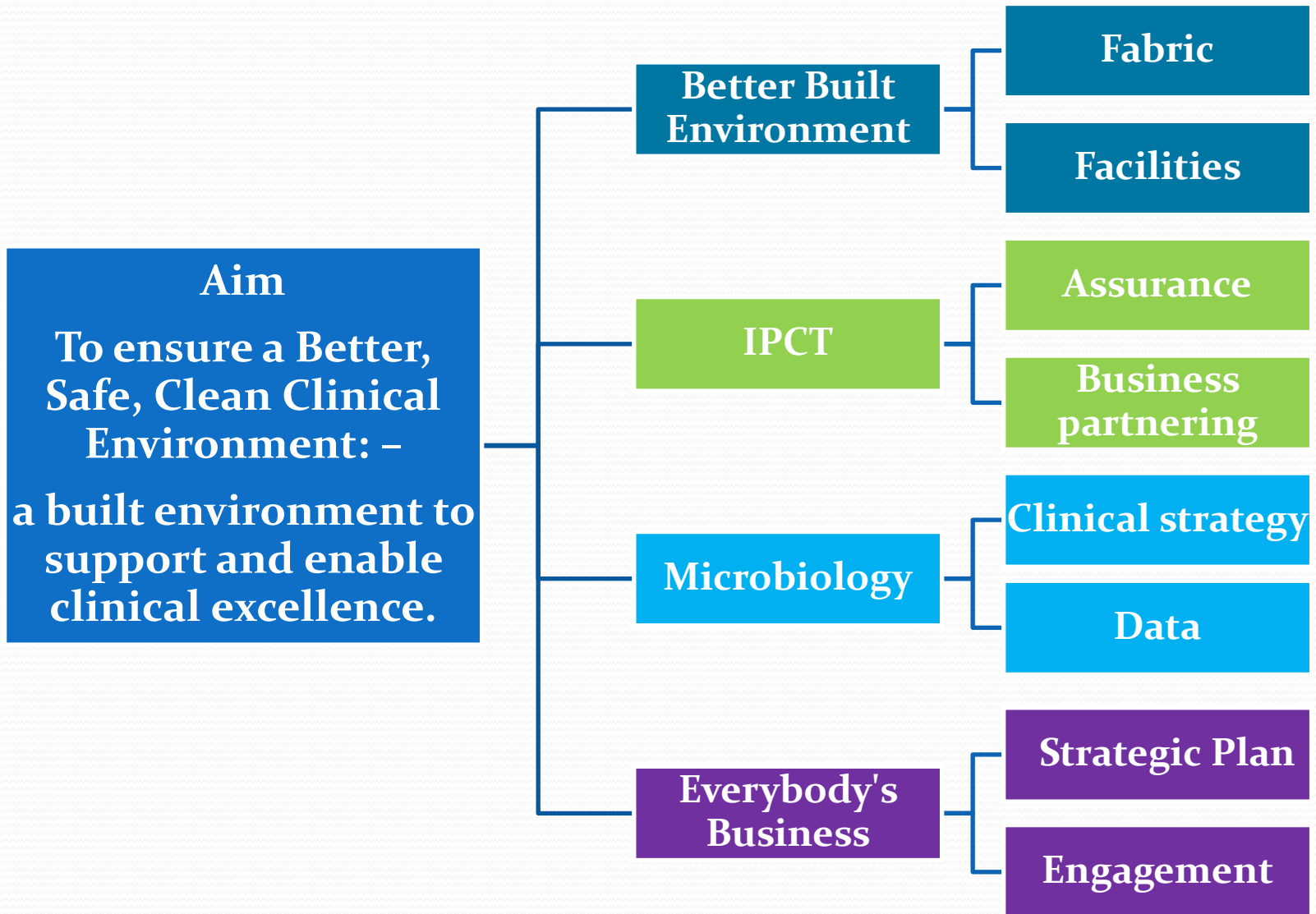
IC confidence, Access to training, Media training, Succession planning, Quality Improvement methodology, Leadership / management

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# 3: Better Everyday Discovery Debriefs and Engagement Events



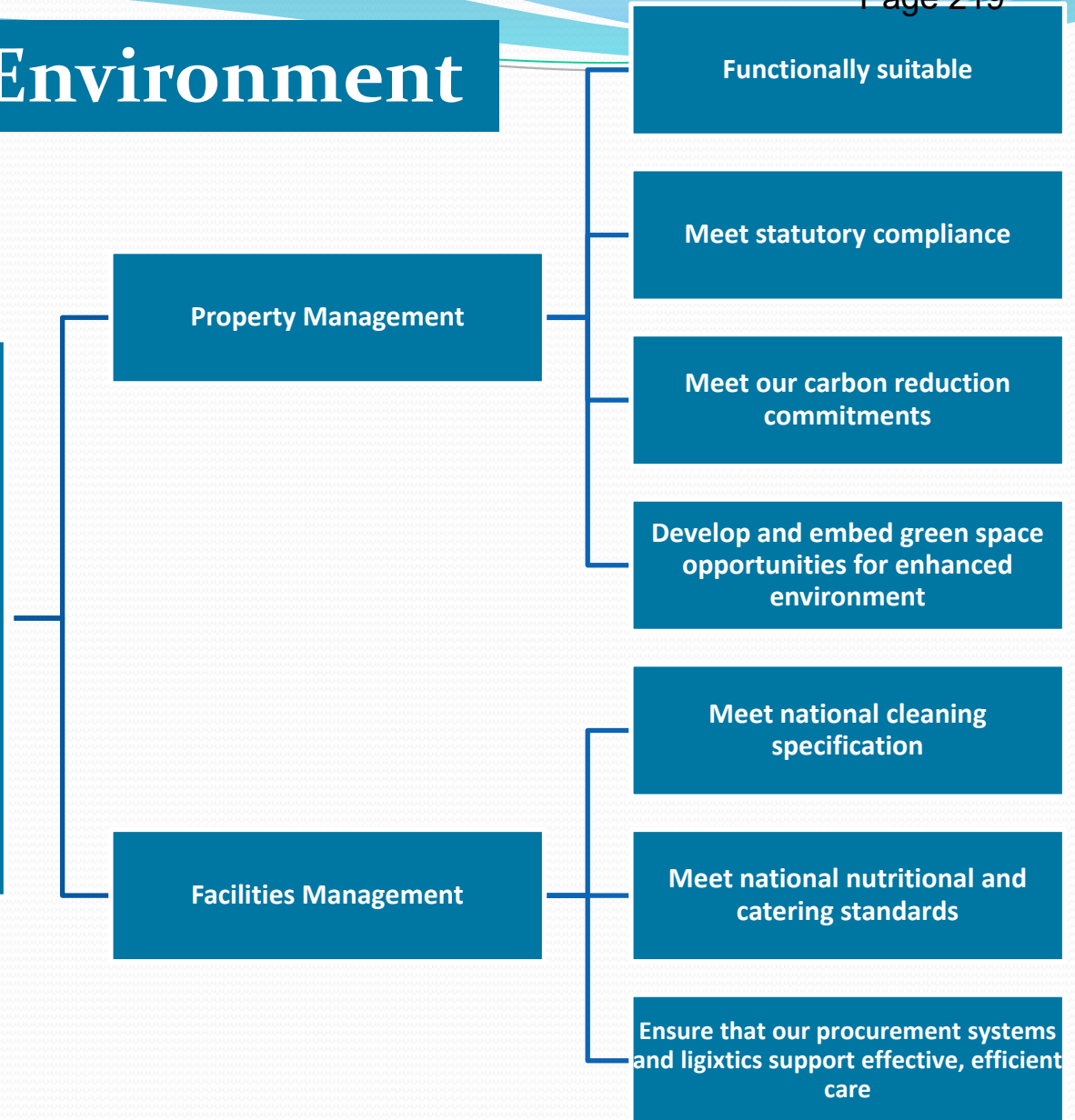
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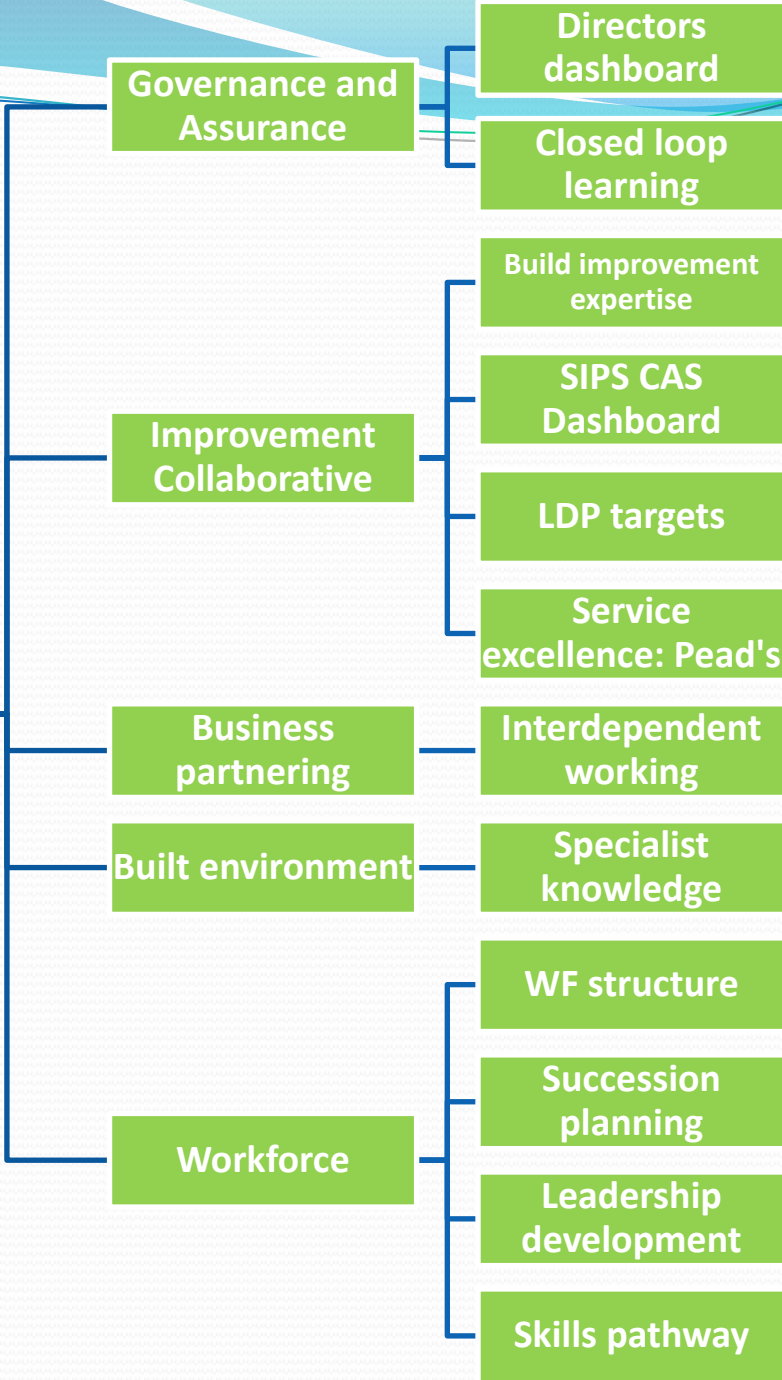
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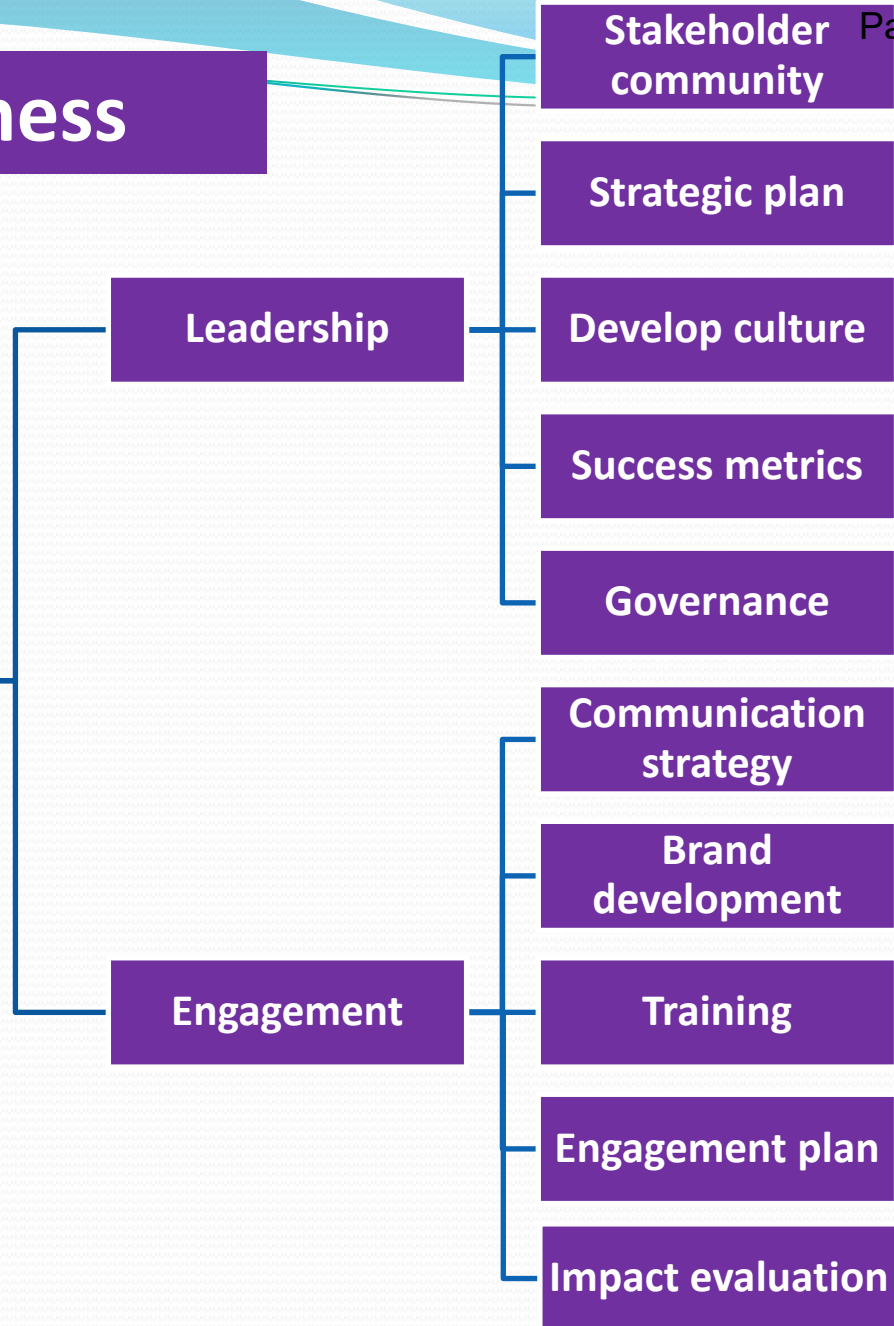
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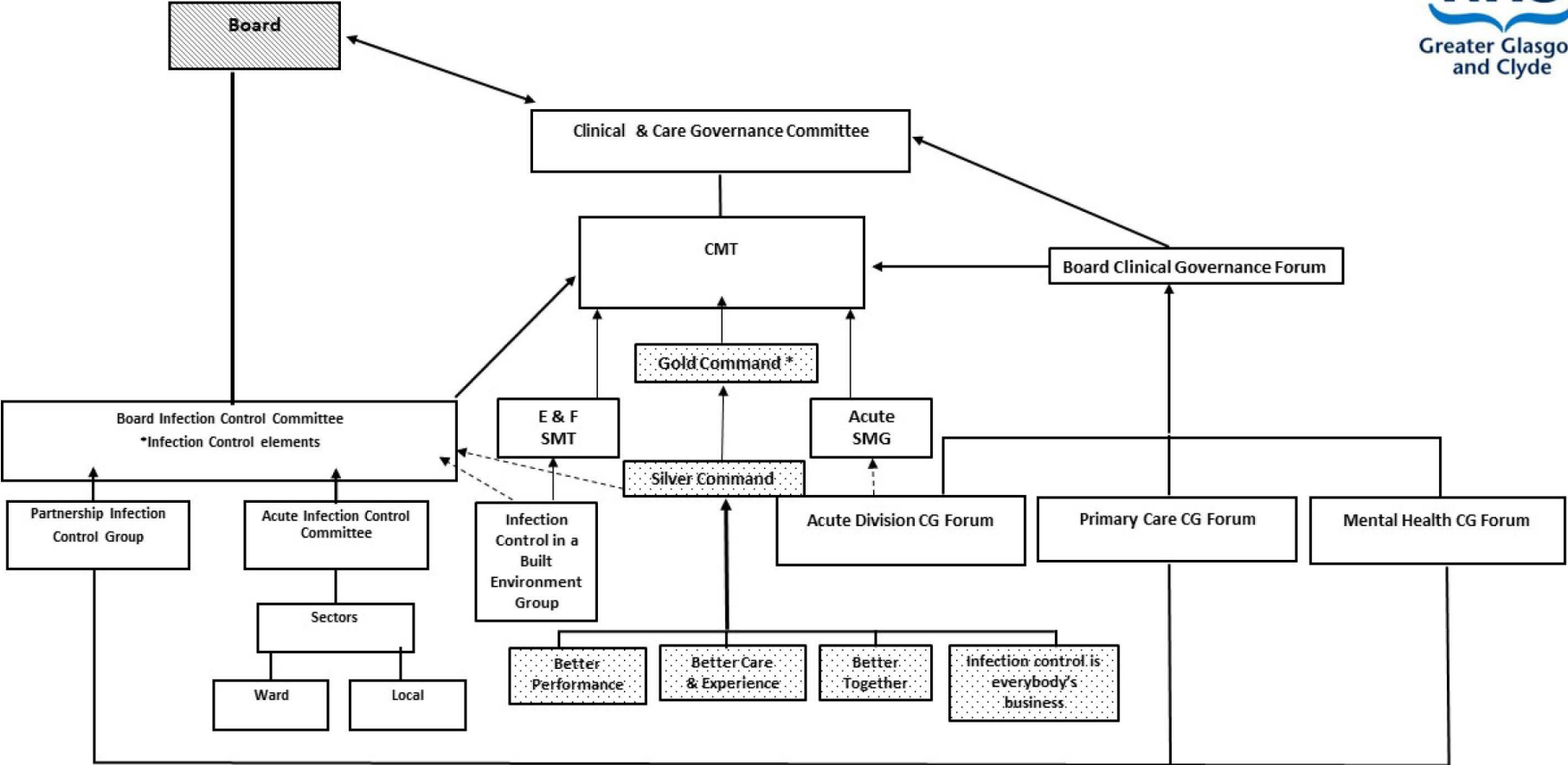
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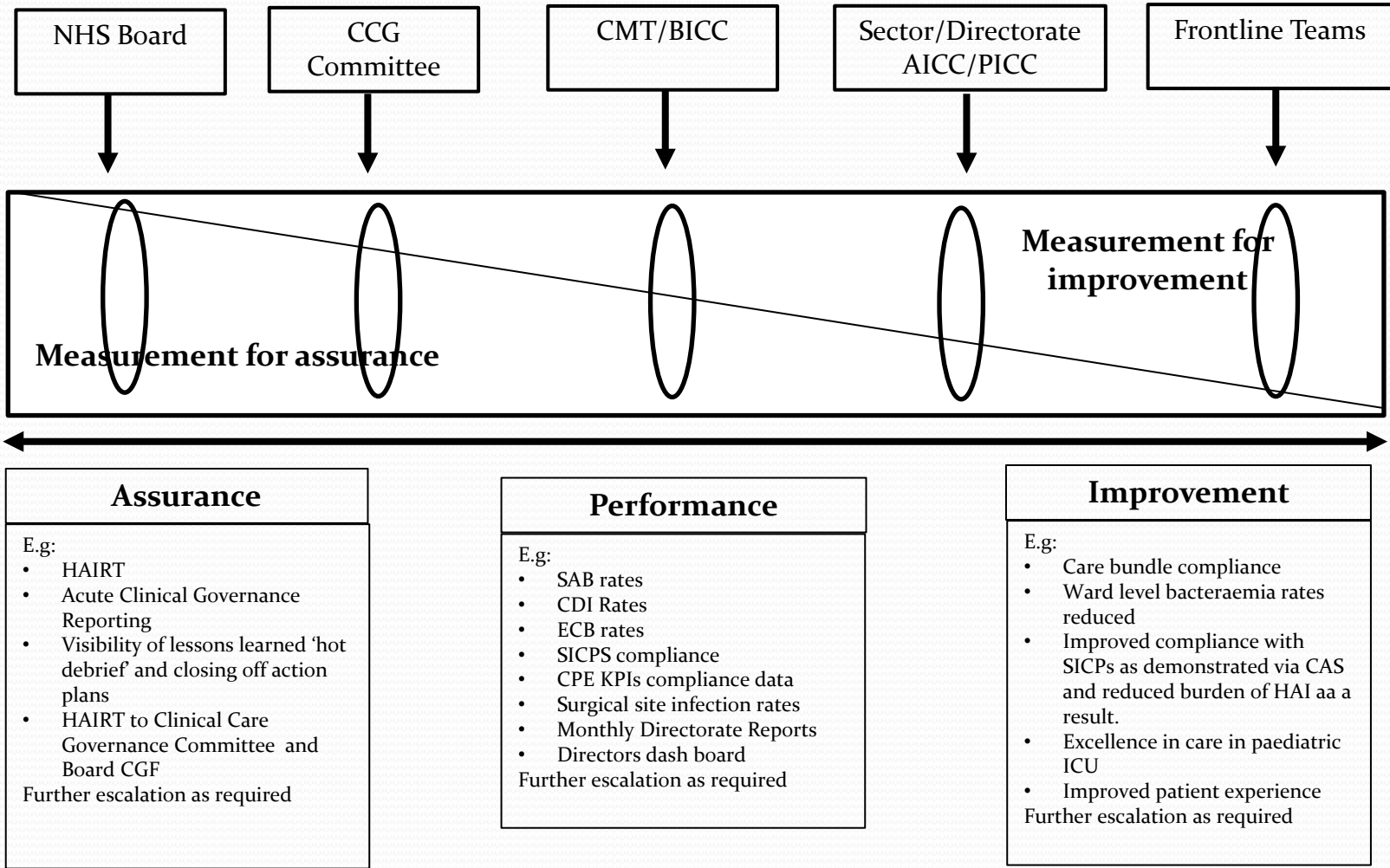
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Objectives	<ul style="list-style-type: none"> <li>Provide reports which invite scrutiny and challenge improvement</li> <li>Directors dashboard.</li> <li>Partnership with service in relations to action plans and contents of reports and associated actions,</li> </ul>	<ul style="list-style-type: none"> <li>Support the improvement collaborative and the reporting of the individual work streams to the steering group.</li> <li>IPCT work plan</li> <li>Shift IPCT from inspection to a model of supported improvement,</li> </ul>	<ul style="list-style-type: none"> <li>Value management training.</li> <li>Diversify the workforce</li> <li>Reduce infection rates and therefore costs associated with treatment and length of stay.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure access to specialist training in relation to ventilation and water.</li> <li>Ensure access to improvement education including .</li> <li>Continue to support ICN to complete specialist training in IPC.</li> <li>Create a workforce plan which is fit for the future</li> </ul>
Risks	<ul style="list-style-type: none"> <li>Inability to communicate effectively the risks to patients to front line services and their role in relation to the prevention and control of infection.</li> </ul>	<ul style="list-style-type: none"> <li>Fundamental change from inspection to improvement could be perceived as a gap in GGC assurance mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>Diversifying the workforce may be perceived by the IPCT as the dilution of expertise.</li> </ul>	<ul style="list-style-type: none"> <li>Some members of the IPCT may not have the necessary skills or will to support transformational change.</li> </ul>
Targets And KPIs	<ul style="list-style-type: none"> <li>SAB</li> <li>CPEKPI</li> <li>CDI</li> <li>ECB</li> <li>Surgical site infection</li> </ul>	<ul style="list-style-type: none"> <li>Improved patient outcomes</li> <li>Reduced complaints</li> </ul>	<ul style="list-style-type: none"> <li>Reduced economic burden of HAI in Greater Glasgow &amp; Clyde</li> </ul>	<ul style="list-style-type: none"> <li>Workforce ready to deliver future challenges</li> </ul>


# Draft Developing Approach

## Performance Management Framework Balanced Approach to Measurement - IPC



**NHS Greater Glasgow and Clyde PICU SBAR Improvement Plan July 2021**

	<b>Recommendation</b>	<b>Responsibility for taking action</b>	<b>Response</b>	<b>Date Completed</b>
1.	NHSGGC confirm the validation results for the single bed wards in PICU.	D Conner / H Brown	  QEUH - PICU ward    QEUH - RHC - PICU 1D room 18 - PPVL Vaward 1D room 17 - Ve    QEUH RHC-PICU    QEUH - RHC - PICU level 1 Negative Isola 1D - Isolation Room	As per individual reports
2.	NHSGGC consider options for increasing the dilution ventilation rate in the transitional corridors	D Conner / A Gallagher	<p>This is further detailed in the attached paper and shows that in its current position there is 'open' and 'closed' door protection between the transitional space and hospital street/staff support area. If full compliance to SHTM03-01 was a requirement then there would be a need to replace the ventilation system within the transitional space. This would have a significant impact on PICU as the 4 bedded rooms would need to be taken out of use for a period of time which would impact on the service considerably. There would also be a requirement for funding for this works.</p>  PICU summary position.pdf	July 2021

3.	NHSGGC should assess any risk to patients as a result of keeping the solution as is currently implemented	S Devine	<p>Meeting with service, H &amp; S and IPCT re transfer risk. Risk assessment completed and added to W &amp; C risk register</p>  <p>RA Ward 1d (PICU) Transition Corridor Jt</p>	July 2021
3.	NHSGGC undertake annual validation/verification checks on all ventilation systems within PICU as per SHTM 03-01 and results communicated to NHSGGC Infection Control & Prevention Committee.	D Conner / H Brown	<p>There is a process in place to enable annual verifications of all critical ventilation systems (including PICU) which is carried out as per SHTM03-01 under the jurisdiction of the AP and under a safe system of work permit.</p> <p>The EFM report is a standing agenda item on both the Acute and Board Infection Control Committees. These reports include an update on ventilation. Several members of IPCT are members of the Infection Control in the Built Environment Group (ICBEG) which is led by EFM and EFM are also currently refreshing the NHSGGC ventilation group and the Assistant Lead ICD will attend this group.</p>	In place and ongoing.
4.	Any deviation from SHTM 03-01 should be recorded and noted on the corporate risk register together with appropriate mitigations in place.	A Gallacher	There are no deviations to SHTM03-01 around the PICU clinical treatment areas as stated within the SBAR. The transitional corridor is a 'risk' and as such this risk to the patient group sits with the clinical team/ICPT. Please see risk assessment in item 2.	July 2021 (refer to item 2)
5.	IPCT should continuously monitor alert organism in line with appendix 13 NIPCM within this area.	J Redfern / S Devine	IPCT have systems and processes in place to monitor A/O as per appendix 13. In addition the template supplied by ARHAI with the suggested list of GNO is updated and issued to PICU each month. Triggers are also in place.	In place since 2020 and is ongoing

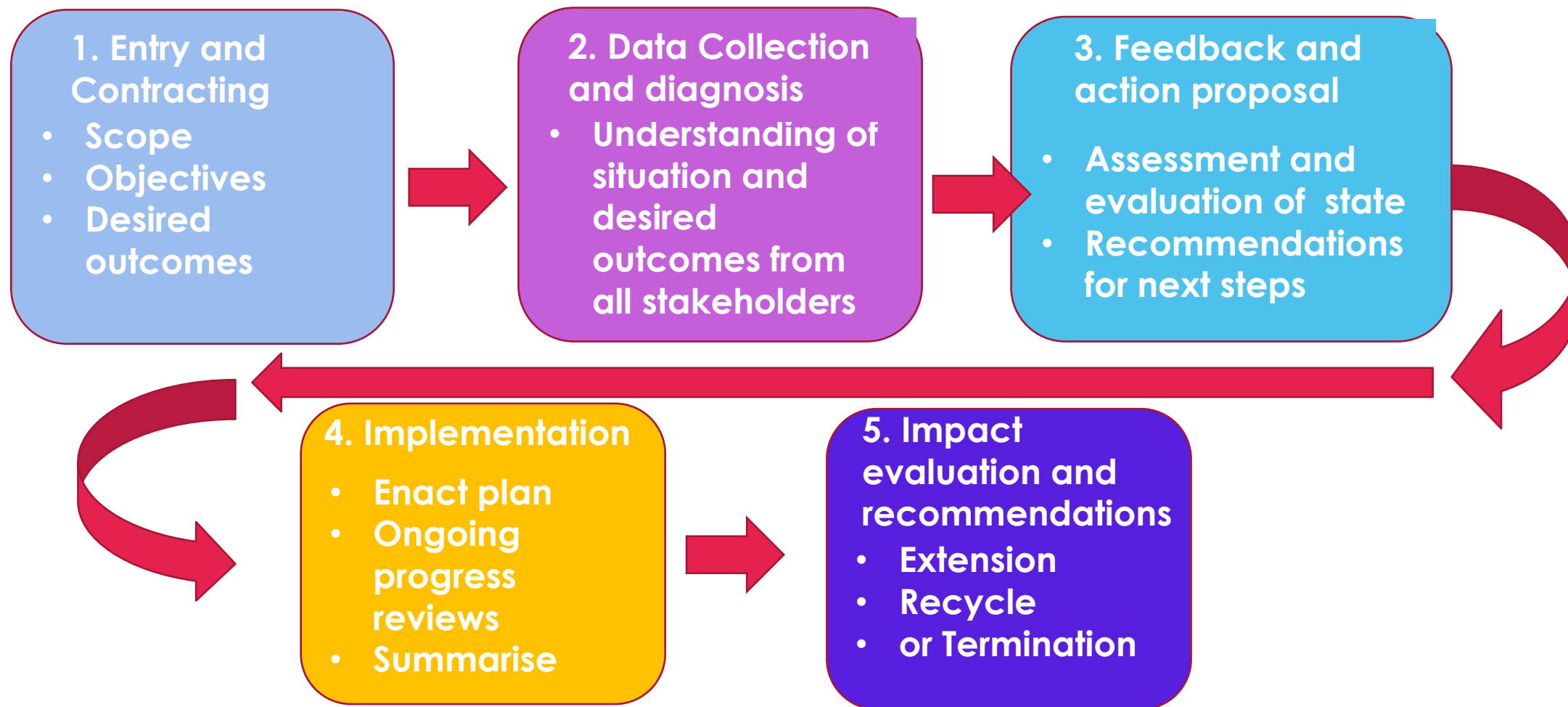
# **DISCOVERY DEBRIEF SESSIONS**

**Jenny Copeland**

**Terri Hunter**



## 5 Stages of OD Plan





## **Facilitate a series of interventions with a view to ensuring that we work in:**

- A positive working environment that promotes staff wellbeing for all
- A quality operational environment that ensures service effectiveness and patient safety
- A clear governance framework that facilitates clinical reviews and debate allowing differing clinical opinions to be heard and acknowledged and provides clear accountability for decisions made
- A team ethos of continuous learning and improvement ensuring sustainable change where beneficial

**PEOPLE DO NOT SEE “THE WORLD” AS IT IS....**



**....PEOPLE SEE “THE WORLD” AS THEY ARE.**

# DISCOVERY OVERVIEW

- Circa 40 people interviewed from IPCT, Labs North and South, Management, and key stakeholders
  - All agreed with the objectives
  - All were willing to share their experience and ideas as how to achieve the objectives
  - People were open and shared their own examples to support their perspectives
  - Many people shared feelings of anxiety relating to the past and concern relating to the impact of this process for the future
- 95% staff = relationships**  
**50% = processes**

# OUTPUTS

**The outputs have been collated in three ways:**

**1. By time:**

**A. The past**

**B. The now**

**C. The future**

**2. Themes: 5 key clusters of activity**

**3. The triangulation**

# HIGH LEVEL DISCOVERY CONSIDERATIONS

## The Past

- Vale of Leven and its legacy
- Whistleblowing (WB) and the systemic response to it
- The view that the WB was unprofessional and unnecessary
- The personal impact to all and emotional damage caused to relationships
- Communication regarding the status of issues raised by the WB
- Staff traumatised by relationships, behaviours, lack of trust and professional dissonance
- Government and HPS response has traumatised and left people fearful

## The now

## The future



# HIGH LEVEL DISCOVERY CONSIDERATIONS

## The Past

## The now

- **Fracture between IPCT and Microbiology**
- **IC No psychological safety or trust**
- **Fractures within Microbiology South**
- **Processes require review and validation**
- **Closure required regarding the WB issues**

## The future

- **OD needed to re-establish leadership, working relationships and trust**
- **Function, form and processes across IPCT and Microbiology to ensure service is sustainable for now and the future**
- **Clarification and validation of governance arrangements**

## Consensus

- **Highly experienced professionals**
- **Many years experience in their roles**
- **All agree with OD aims**
- **Many parties have reported a personal emotional impact**
- **Inappropriate behaviours have been witnessed by many**
- **Under resourced: reported by all areas**

## IPCT

- **IPCT do not see the need for involvement in the OD process as they are ok**
- **IC not popular: - press attention; lots of work, little value; fractured relationships; government oversight;**
- **IC induction and training for MB and speciality estates**

## Microbiology

- **Lack of sessions: advice in a crisis rather than full Micro / ICD service**
- **Micro: No national voice**
- **Micro: Disconnected from feedback loops**
- **North / South report different experiences**

## Leadership and Culture

Highly skilled and fiercely proud professionals who want to prove that GGC is safe and doing its best  
Fundamental lack of trust and psychological safety that is getting in the way of effective working  
Almost all parties hurt by historic events

## Role and Responsibilities Structure, capacity

Two distinct functions: IPC and Micro: that need to work in harmony but do not (South)  
All report under resourcing  
Clearer management influence required

## Governance and Assurance

Due to difference of opinions, lack of trust and fractured communication lines it is difficult to establish clear assurance  
All parties associated with IPC need to be equally involved to have agreed governance

## Communications

A lack of trust has resulted in a perception that outbreaks are bad and a communication barrier exists between IPC and Micro S  
Access to information is restricted  
Feedback loops are not in place

## Training

Micro say that confidence in operating as an ICD is low  
Limited access to training  
Specialist training required: Media, built environment, leadership



## Themes Solutions

### Leadership and Culture

Vision, Purpose, Values, Strategy, Planning, Performance, Collaborative leadership, Psychological Safety, Trust, Relationships, Risk appetite, Behaviours, Celebrating success, Learning organisation, Candour

### Role and Responsibilities Structure, capacity

Function, Form, Capacity and resources, North vs South Equity: workload and OOH rota, Service based Job Planning

### Governance and Assurance

Systems and processes, Risk Appetite, Delegation, Escalation, SMT, PAG, IMT, Clinical Governance, Estates: - SCRIBES; SG / HPS - trust

### Communications

Formal, Clarity of terms and meaning , Informal, Pan GGC, Pan Service, IC and Microbiology, Handovers, Feedback loops, National: - IC Network, Stakeholder management

### Training

IC confidence, Access to training, Media training, Succession planning, Quality Improvement methodology, Leadership / management, High Performing Teams working

# SUGGESTED SOLUTIONS: LEADERSHIP AND CULTURE

**GGC IPC leading the way**

**Conduct transparent, inclusive process, fix ourselves first**

**Collaborative leadership**

**Trust**

**Respect**

**Open, proactive, transparent**

**Encourage issues to be raised**

**Establish Risk Appetite and be clear regarding ethical decision making**

**Quality improvement approach**

**Ensure equity across service for voice and value**

## SUGGESTED SOLUTIONS: ROLES AND RESPONSIBILITIES, STRUCTURE, CAPACITY



**SCOPE REQUIRED  
SIZE OF SERVICE  
BASED ON DEMAND**



**SINGLE  
MICROBIOLOGY  
GROUP; ALL MICRO**



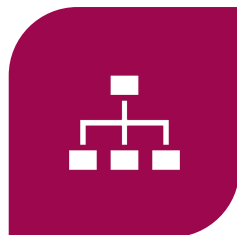
**MICRO: 24 HOUR  
SERVICE**



**SERVICE BASED JOB  
PLANNING**



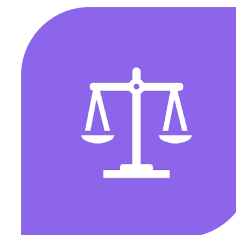
**ENSURE ICM HAS  
AUTHORITY**



**ENSURE IC IS IN JOB  
PLANS: MULTI  
TASKING REQUIRED**



**ENSURE IC TRAINING  
IS PROVIDED TO ALL**



**RESILIENCE: SERVICE  
RESOURCE  
BALANCED**

## **SUGGESTED SOLUTIONS: GOVERNANCE, ASSURANCE, SYSTEMS AND PROCESSES**



**Ensure processes are robust and adhered to supported by data**



**Ensure all meetings are appropriately chaired and accurate minutes and actions are recorded**



**Conflict management process needed**



**Review the SCRIBE process and log**

# **SUGGESTED SOLUTIONS: COMMUNICATIONS AND DATA**

**Closed loop  
feedback  
mechanisms in  
place**

**People should  
have access to the  
information they  
need to do their  
job**

# SUGGESTED SOLUTIONS: TRAINING

**Wellbeing audit**

**Training: Access to appropriate development for all**

**Leadership and management training where required**

**Speciality: e.g Built environment**

**Research**

**Succession planning**

**Joint development estates and IPC**

# DESIRED OUTCOMES

- **Sustainable, effective, safe service**
- **Patient safety and infection control culture**
- **Robust governance and assurance**
- **Positive staff experience**
- **Psychological safety**
- **Duty of candour culture**
- **Learning system culture**

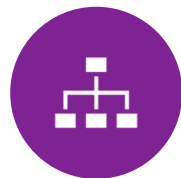


# RECOMMENDATIONS

**ENGAGE ALL STAKEHOLDERS IN  
DISCOVERY FINDING AND NEXT STEPS**



**ESTABLISH AN  
EFFECTIVE  
FRAMEWORK FOR  
JOINT WORKING  
ARRANGEMENTS**



**GOVERNANCE TO  
BE REPORTED  
THROUGH GOLD  
COMMAND**



**MICROBIOLOGY  
SENIOR TEAM TO  
LEAD DEVELOPMENT  
OF LEADERSHIP  
APPROACH,  
SERVICE DESIGN  
AND EMPLOYEE  
EXPERIENCE /  
CULTURE**



**IPCT SENIOR TEAM  
TO LEAD  
DEVELOPMENT OF  
LEADERSHIP  
APPROACH,  
SERVICE DESIGN  
AND EMPLOYEE  
EXPERIENCE /  
CULTURE**



**COACHING FOR  
SENIOR LEADERS**



**IDENTIFY NEED FOR  
SPECIFIC  
MEDIATION**



**SLWGS TO BE  
ESTABLISHED FOR  
EACH THEME**



# RECOMMENDATIONS

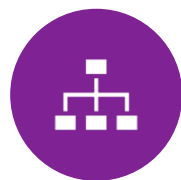
ENGAGE ALL STAKEHOLDERS IN  
DISCOVERY FINDING AND NEXT STEPS



ESTABLISH AN EFFECTIVE FRAMEWORK FOR JOINT WORKING ARRANGEMENTS

- ✓ Silver command
- ✓ Buzz

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GOVERNANCE TO BE REPORTED THROUGH GOLD COMMAND

- ✓ Silver/ Gold command



MICROBIOLOGY SENIOR TEAM TO LEAD DEVELOPMENT OF LEADERSHIP APPROACH, SERVICE DESIGN AND EMPLOYEE EXPERIENCE / CULTURE

- ✓ Lighthouse
- ✓ Driver diagrams



IPCT SENIOR TEAM TO LEAD DEVELOPMENT OF LEADERSHIP APPROACH, SERVICE DESIGN AND EMPLOYEE EXPERIENCE / CULTURE

- ✓ Lighthouse
- ✓ Driver diagrams



COACHING FOR SENIOR LEADERS

- ✓ Extensive



IDENTIFY NEED FOR SPECIFIC MEDIATION

- ? For discussion



SLWGS TO BE ESTABLISHED FOR EACH THEME

- ✓ Activity plans

# NEXT STEPS



Conduct focus groups for dissemination of findings



121 Senior debrief and support (Micro and IPCT)



Senior team vision and purpose workshops (Micro and IPCT)



Culture exploration: Current and future culture identified and associated values and behaviours (Micro and IPCT)



Strategy workshop: Explore 5 themes and develop workplans for each theme



Agree success metrics



Conduct wellbeing survey



Introduce team building activities designed to strengthen team trust



Conduct joint development for Micro and IPCT to foster Safe today, Safe tomorrow, Safe next week working practices

# GGC IPCT / Micro Action Plan Updates



W/C 1.3.21:

IPCT Team engagement sessions



2<sup>nd</sup> March / 3<sup>rd</sup> March :

ODs Session Microbiology



9<sup>th</sup> March:

Wellbeing Survey issued



16<sup>th</sup> March:

Wellbeing survey closed



23<sup>rd</sup> March

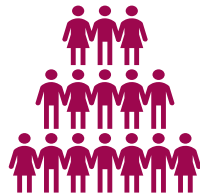
IPCT Senior team Lighthouse and  
strategic planning session



23<sup>rd</sup> March:

Final presentation to Sponsors

# ONGOING ACTIONS



## Success metrics: -

Silver command to establish as part of Qi programme



## Wellbeing survey

Pre and post relationship and process assessment

To be repeated 6 monthly



## Team building:

Micro: - Weekly consultant meetings

IPCT: - Full team launch event  
May / June 2021

Teams are functionally effective

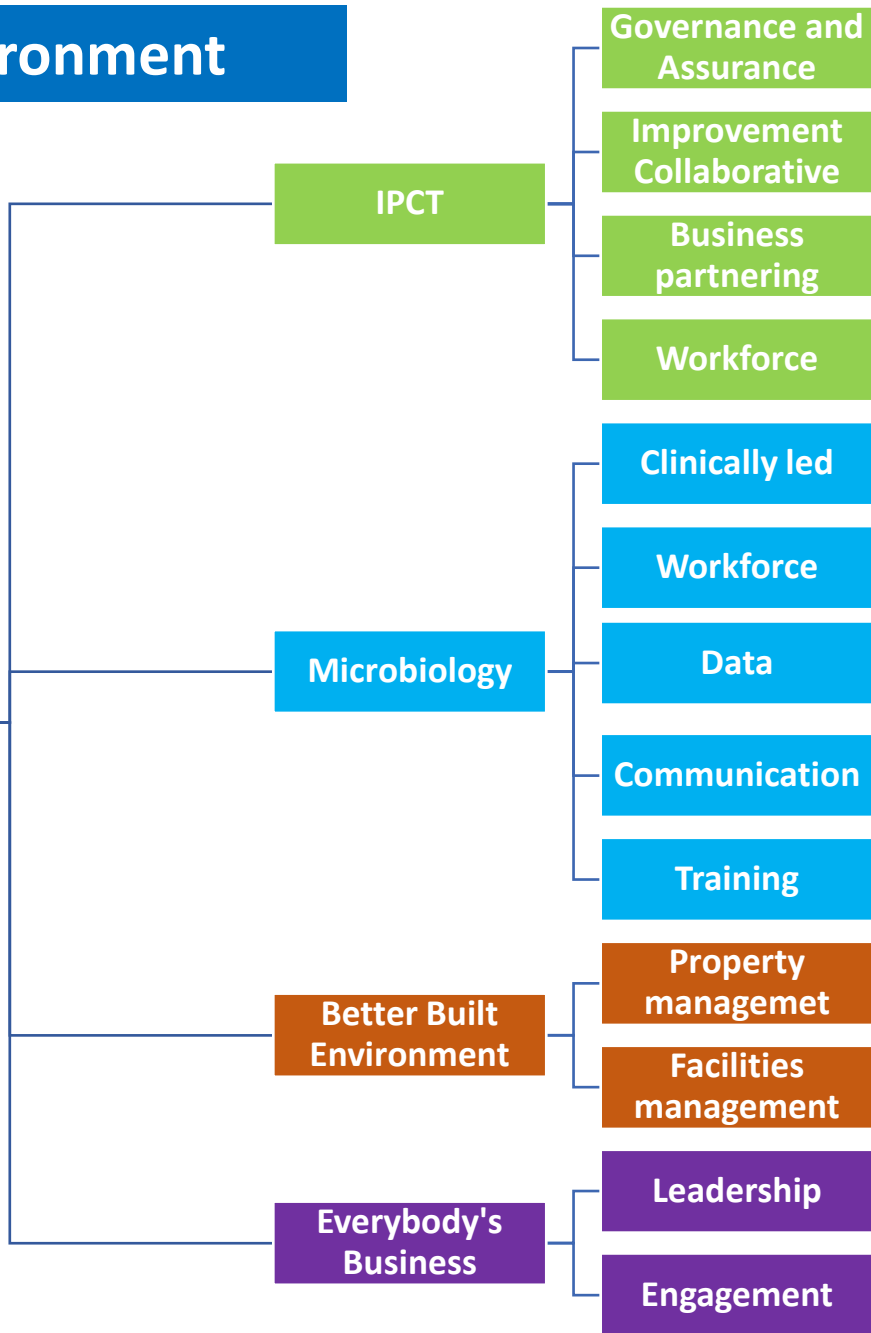
Weekly buzz: - cross discipline forum

# DEVELOPMENT OUTPUTS

Common purpose, vision, work programme: - Silver Command

# Better Safe, Clean Clinical Environment

**Aim**  
To ensure a Better, Safe, Clean Clinical Environment: –  
a built environment to support and enable clinical excellence.



# Wellbeing Survey

Wednesday, March 17, 2021

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# 20

**Total Responses**

Date Created: Tuesday, March 09, 2021

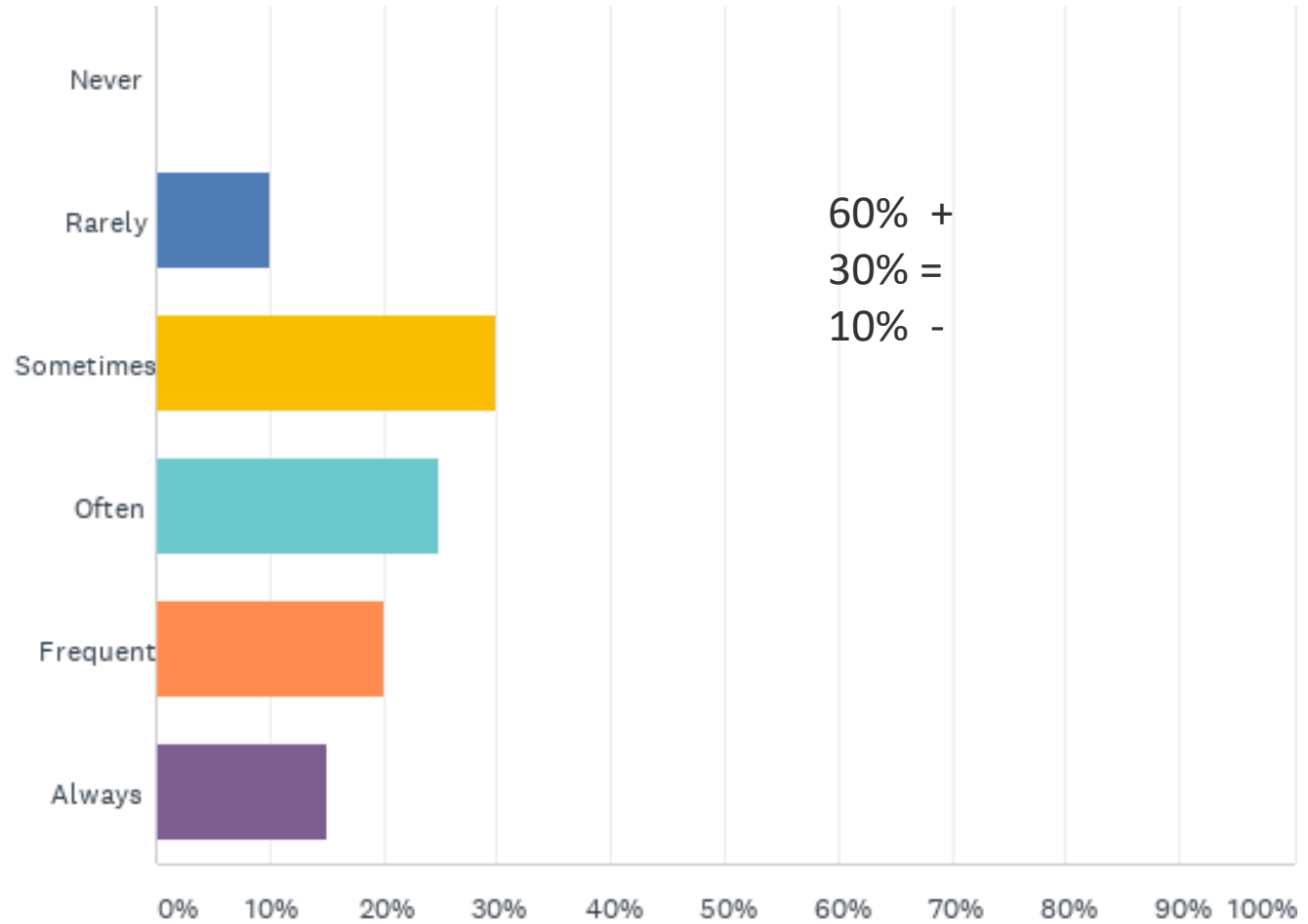
Complete Responses: 20

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## I experience my working environment as positive.

Answered: 20 Skipped: 0



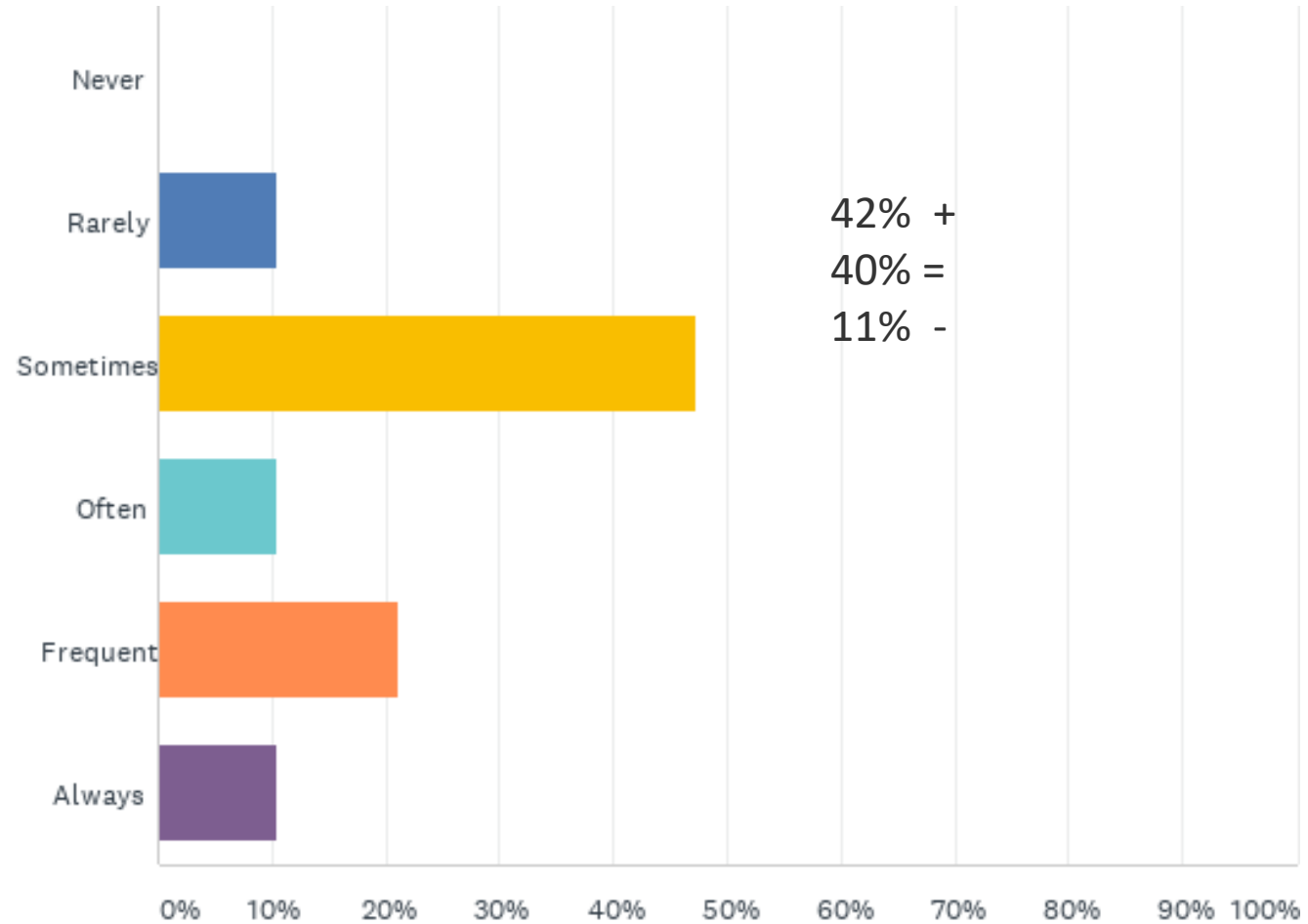
I experience my working environment as positive

Answered: 20 Skipped: 0

ANSWER CHOICES	RESPONSES	
Never	0.00%	0
Rarely	10.00%	2
Sometimes	30.00%	6
Often	25.00%	5
Frequent	20.00%	4
Always	15.00%	3
TOTAL		20

## Q2: Objective 1: A positive working environment that promotes staff wellbeing for all. Page 263 I find my working environment is conducive to my wellbeing

Answered: 19 Skipped: 1



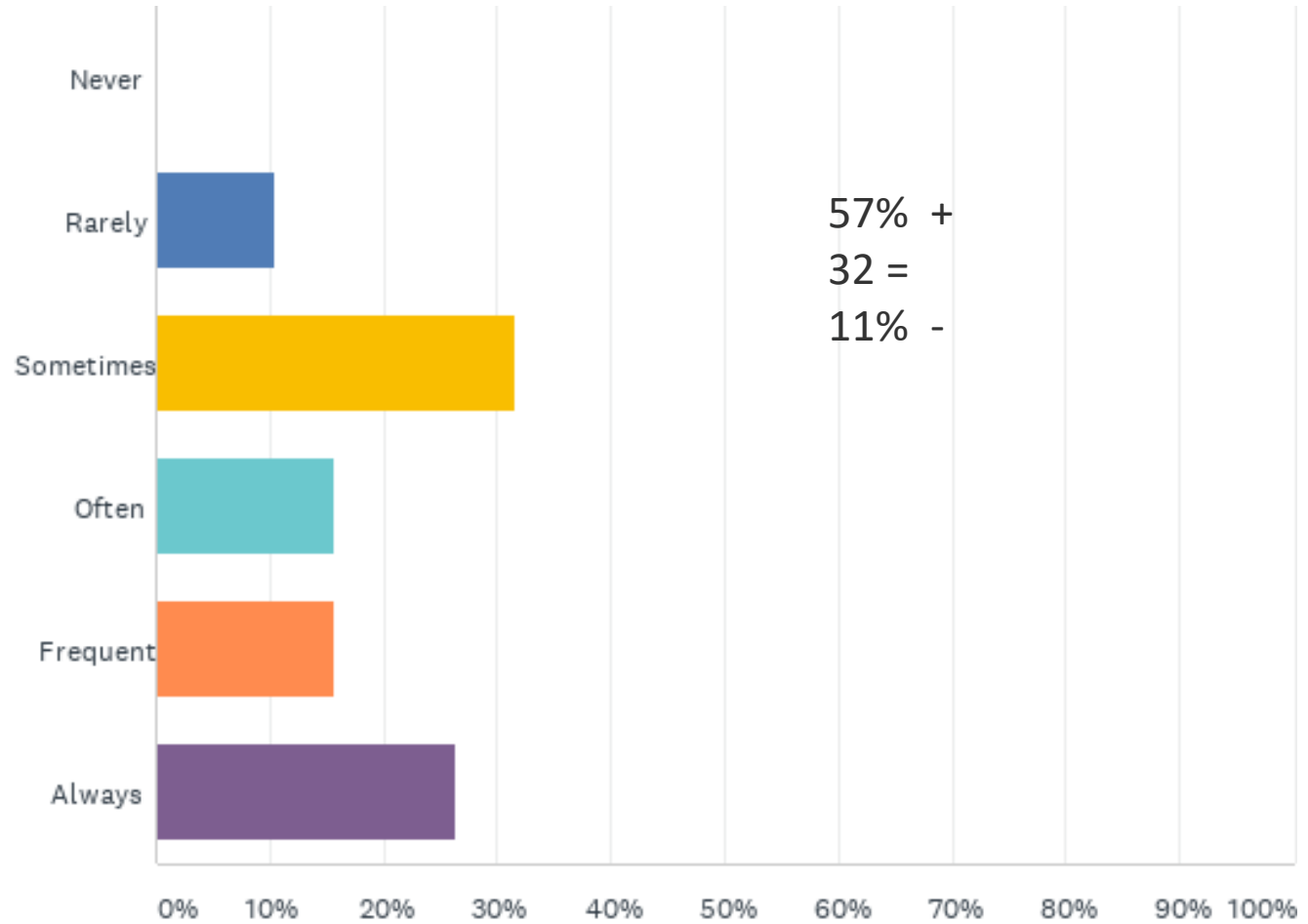
## Q2: Objective 1: A positive working environment that promotes staff wellbeing for all. I find my working environment is conducive to my wellbeing.

Answered: 19 Skipped: 1

ANSWER CHOICES	RESPONSES	
Never	0.00%	0
Rarely	10.53%	2
Sometimes	47.37%	9
Often	10.53%	2
Frequent	21.05%	4
Always	10.53%	2
TOTAL		19

**Q3: Objective 2: A quality operational environment that ensures service effectiveness and patient safety** Page 265  
**I find that the environment allows me to complete my work to the desired quality standards: Safe, effective, person centred**

Answered: 19 Skipped: 1



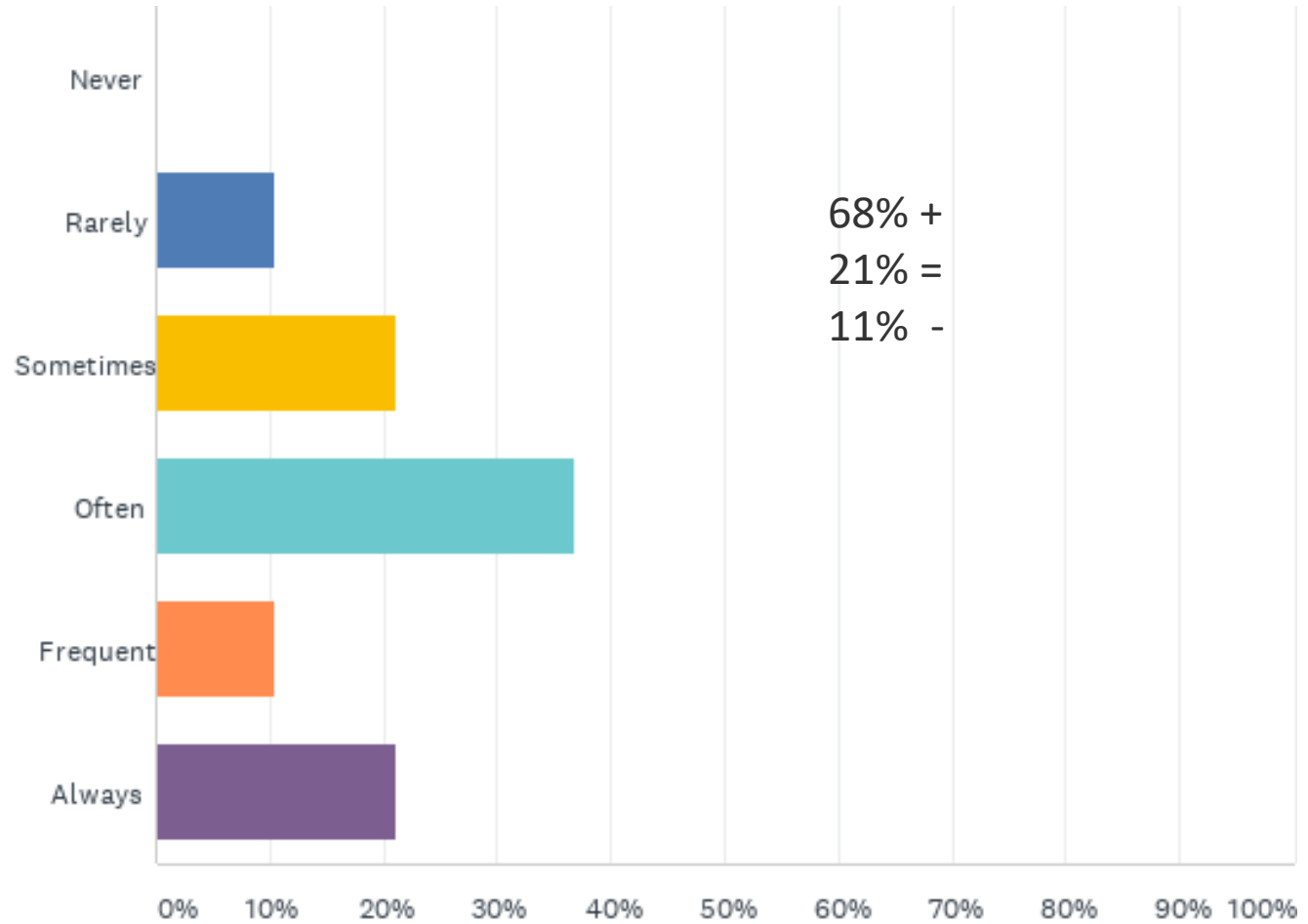
**Q3: Objective 2: A quality operational environment that ensures service effectiveness and patient safety** Page 266  
**I find that the environment allows me to complete my work to the desired quality standards: Safe, effective, person centred**

Answered: 19 Skipped: 1

ANSWER CHOICES	RESPONSES	
Never	0.00%	0
Rarely	10.53%	2
Sometimes	31.58%	6
Often	15.79%	3
Frequent	15.79%	3
Always	26.32%	5
TOTAL		19

**Q4: Objective 3: A clear governance framework that facilitates clinical reviews and debate allowing differing clinical opinions to be heard and acknowledged and provides clear accountability for decisions made** page 267  
**I am able to engage with a clear Governance framework and understand the accountability for decisions made**

Answered: 19 Skipped: 1



**Q4: Objective 3: A clear governance framework that facilitates clinical reviews and debate allowing differing clinical opinions to be heard and acknowledged and provides clear accountability for decisions made** page 268  
**I am able to engage with a clear Governance framework and understand the accountability for decisions made**

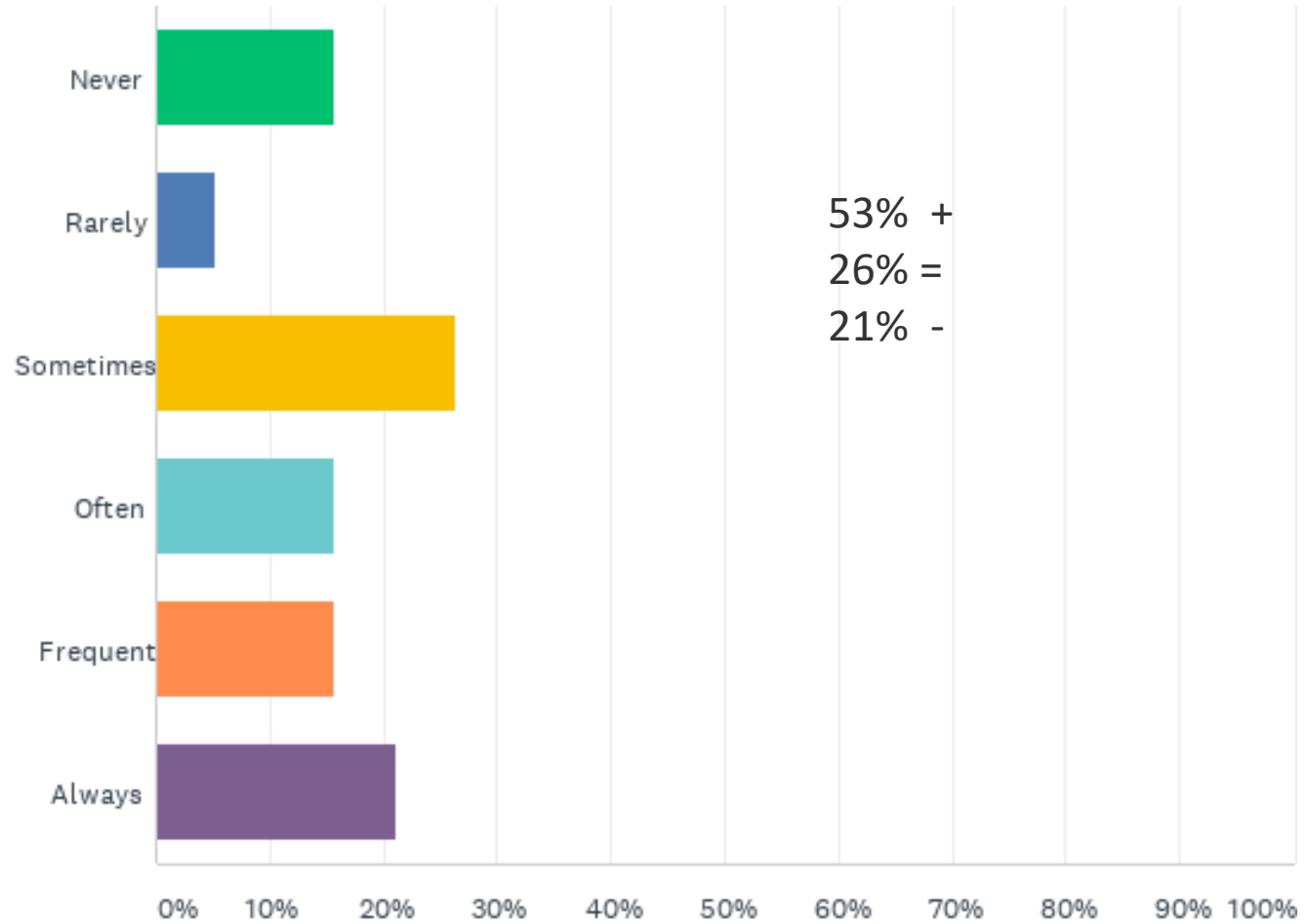
Answered: 19 Skipped: 1

ANSWER CHOICES	RESPONSES	
Never	0.00%	0
Rarely	10.53%	2
Sometimes	21.05%	4
Often	36.84%	7
Frequent	10.53%	2
Always	21.05%	4
<b>TOTAL</b>		<b>19</b>



**Q5: Objective 3: A clear governance framework that facilitates clinical reviews and debate allowing differing clinical opinions to be heard and acknowledged and provides clear accountability for decisions made** page 269  
**I am able to input my professional perspective and influence clinical decision making**

Answered: 19 Skipped: 1



**Q5: Objective 3: A clear governance framework that facilitates clinical reviews and debate allowing differing clinical opinions to be heard and acknowledged and provides clear accountability for decisions made** page 270  
**I am able to input my professional perspective and influence clinical decision making**

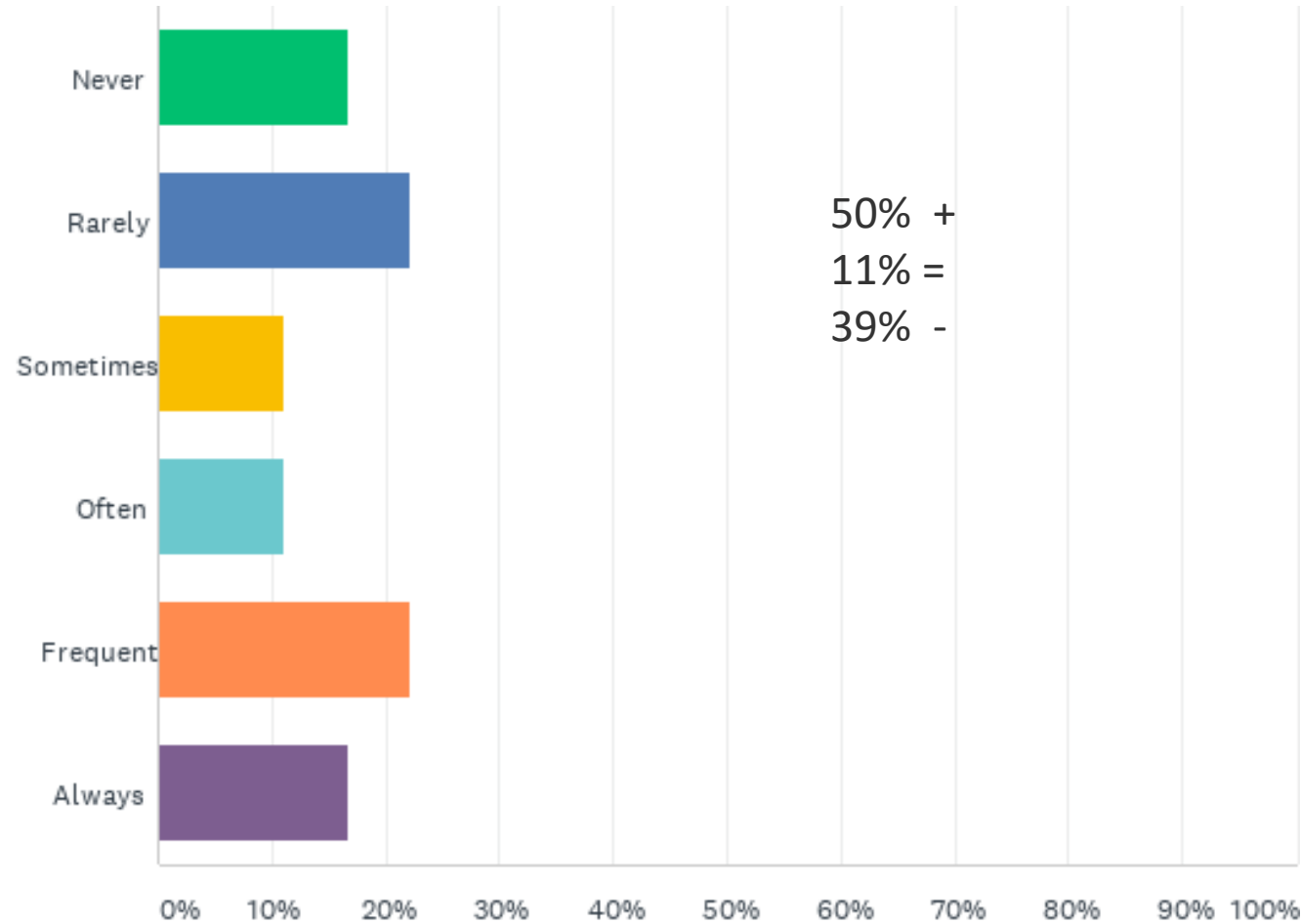
Answered: 19 Skipped: 1

ANSWER CHOICES	RESPONSES	
Never	15.79%	3
Rarely	5.26%	1
Sometimes	26.32%	5
Often	15.79%	3
Frequent	15.79%	3
Always	21.05%	4
<b>TOTAL</b>		<b>19</b>

**Q6: Objective 4: A team ethos of continuous learning and improvement ensuring sustainable change where beneficial**

**I am able to contribute to discussions that seek to understand service issues and continuously improve our working environment, processes and outcomes**

Answered: 18 Skipped: 2



**Q6: Objective 4: A team ethos of continuous learning and improvement ensuring sustainable change where beneficial**

**I am able to contribute to discussions that seek to understand service issues and continuously improve our working environment, processes and outcomes**

Answered: 18 Skipped: 2

ANSWER CHOICES	RESPONSES	
Never	16.67%	3
Rarely	22.22%	4
Sometimes	11.11%	2
Often	11.11%	2
Frequent	22.22%	4
Always	16.67%	3
<b>TOTAL</b>		<b>18</b>

## Q7: Please provide your department (Optional)

Answered: 14 Skipped: 6

ANSWER CHOICES	RESPONSES	
IPCT	92.86%	13
Microbiology	7.14%	1
Both	0.00%	0
<b>TOTAL</b>		<b>14</b>

# WELLBEING HIGH LEVEL OBSERVATIONS

- **April: 2020:** Relationship 95% anxious
- **March 2021:** 60% positive working environment
  
- **April 2020:** Processes: 50% effective
- **March 2021:** Processes: 57% + 32% sometimes = 89%
  
- **Pandemic**
- **Open plan offices / lack of privacy / noise**
- **Scrutiny and perceived intentions of colleagues**

# CONCLUSIONS

- **Robust process**
- **Full engagement**
- **Action plan completed**
- **The past continues to overshadow the now**
- **External reviews / Public Enquiry impact the system and the process**
- **System is functionally effective**
- **And a healthier pace to work**

*“The team and working environment has much improved over the year and there is lots of positive energy from key staff”*

# RECOMMENDATIONS



**Continue to support senior leaders with mentorship or coaching**



**Maintain delivery focus of Workplans: Silver Command**



**Continue weekly Buzz**



**Ensure ongoing staff engagement in improvements**



**Establish firm boundaries relating to professional conduct**



**Repeat wellbeing survey 6 monthly**





# QUESTIONS

Thank you

**Summary of Incident and Findings of the NHS Greater  
Glasgow and Clyde: Queen Elizabeth University  
Hospital/Royal Hospital for Children water  
contamination incident and recommendations for NHS  
Scotland**

Date: 01/11/18  
Status: Final

**Contents**

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Summary of clinical cases associated with this incident .....	6
Summary of initial findings .....	8
Current management of situation.....	11
Hypothesis .....	13
Summary .....	16
Recommendations .....	17
Appendix : 1 Timeline of cases .....	20
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## Executive summary

NHS Greater Glasgow and Clyde (NHSGGC) are currently investigating and managing a contaminated water system across the Queen Elizabeth University Hospital (QEUH) and Royal Hospital for Children (RHC) with probable linked cases of bloodstream infections associated with wards 2A/2B RHC.

Wards 2A/2B RHC is a haemato-oncology unit, also known as Schiehallion, and houses the National Bone Marrow Transplant Unit. In 2016 a patient within ward 2A RHC was identified as having a blood stream infection (BSI) as a result of *Cupriavidus pauculus*. NHSGGC investigations included water samples from outlets within the aseptic suite of the pharmacy department where the parenteral nutrition received by the child was prepared. *Cupriavidus pauculus* was isolated from water samples taken from a tap on a wash hand basin within this area. The wash hand basin was subsequently removed as a result. A further single case of *Cupriavidus pauculus* was identified in September 2017 however no environmental or water sampling was undertaken at this time.

Between the period of 29<sup>th</sup> January and 26<sup>th</sup> September 2018, 23 cases of blood stream infections (11 different organisms) with organisms potentially linked to water contamination were identified. As a result further testing of the water supply was undertaken across both hospital sites early in the investigation. This testing identified widespread contamination of the water system. Control measures implemented included sanitisation of the water supply to ward 2A, installation of the use of point of use filters in wash hand basins and showers in ward 2A/B and other areas where patients were considered high risk. Drain decontamination was undertaken and on 26<sup>th</sup> September 2018 wards 2A/B were closed and patients decanted to ward 6A QEUH and 4B QEUH. There have been no new linked cases identified since the decant of the patients.

NHSGGC requested support from HPS with this incident on 16<sup>th</sup> March 2018 and Scottish Government invoked the national support framework on 20<sup>th</sup> March 2018 which requires HPS to lead an investigation and provide board support. This report is a summary of the findings from this ongoing investigation for the period of 29/1/18 – 26/9/18. A detailed technical report has been produced for NHSGGC by Health Facilities Scotland (HFS).

## Introduction

NHS Greater Glasgow and Clyde (NHSGGC) are currently investigating and managing a contaminated water system across the Queen Elizabeth University Hospital (QEUH) and Royal Hospital for Children (RHC) with 23 probable linked cases of bloodstream infections associated with wards 2A /2B RHC. NHSGGC requested support from HPS with this incident on 16<sup>th</sup> March 2018 and Scottish Government invoked the national support framework<sup>1</sup> on 20<sup>th</sup> March 2018 which requires HPS to lead an investigation and provide NHS board support. It is recognised that this investigation and remedial action is still underway and may be ongoing for a considerable period, therefore this report is a summary of the findings from this investigation and includes cases and findings for the period 29/1/18- 26/09/18.

An initial report was produced by HPS and submitted to SG and NHSGGC on 31/5/18. Due to the ongoing and complex nature of this incident and investigation a further report was requested. This report is a summary overview of this investigation however due to the large volume of data and complexities associated with this incident a more detailed technical report is also being produced by HFS and a draft report has been issued to NHS GGC for consideration. HPS worked with the support of HFS as the technical engineering experts to support this investigation and report production. In addition the HAI Policy Unit Scottish Government (HAIPU) has requested a separate detailed review of wards 2A/B to be undertaken. This is currently underway and will form a separate report for HAIPU and NHSGGC.

## Background

### Health Protection Scotland

HPS plan and deliver effective and specialist national services which co-ordinate, strengthen and support activities aimed at protecting the people of Scotland from infectious and environmental hazards.

They do this by providing advice, support and information to health professionals, national and local government, the general public and a number of other bodies that play a part in protecting health.

HPS is a division of NHS National Services Scotland which works at the very heart of the health service across Scotland, delivering services critical to frontline patient care and supporting the efficient and effective operation of NHS Scotland. The specialist group involved in supporting NHSGGC in this investigation is the antimicrobial resistance and healthcare associated infection (ARHAI) group. The lead from HPS in this investigation and author of this report is a Consultant Nurse in Infection Prevention and Control with a specialist qualification in water and ventilation and is also the national HAI built environment and decontamination lead. HPS have been supporting NHSGGC with this incident since 16<sup>th</sup> March 2018. This report has been produced with full support from colleagues across NSS.

### National Support Framework

The National Support Framework<sup>1</sup> is a structure that sets out the roles and responsibilities of organisations in the event that a healthcare infection outbreak/incident, is deemed to require additional expert support. The National Support Framework may be invoked by the Scottish Government HAI/AMR Policy Unit or by the NHS Board to optimise patient safety during or following any healthcare incident/outbreak(s)/data exceedance or HEI inspectorate visit/report. Scottish Government invoked the national support framework<sup>1</sup> on 20<sup>th</sup> March 2018

### NHS Greater Glasgow and Clyde

NHSGGC is the largest health board in Scotland serving a population of approximately 1.2 million people and employ circa 38,000 staff. The main hospital sites covered by this NHS Board are:

- Inverclyde hospitals campus
- Royal Alexandra campus
- Gartnavel campus
- West Glasgow ambulatory care Campus
- Glasgow Royal Campus
- New Victoria Hospital
- Stobhill campus
- Vale of Leven
- Queen Elizabeth University Hospitals Campus

### Queen Elizabeth University Hospital (QEUH)/Royal Hospital for Children (RHC)

NHS Greater Glasgow and Clyde's (NHSGGC) Queen Elizabeth University hospital (QEUH) is a 1109 bedded hospital with 100% ensuite single side rooms which was handed over to the Board

on 26<sup>th</sup> January 2015 with patient migration commencing from 24<sup>th</sup> April 2015 until 7<sup>th</sup> June 2015. The adjoining Royal Hospital for Children (RHC) is a 256 bedded childrens hospital which was handed over to the Board on 26<sup>th</sup> January 2015 with migration of patients occurring between 10<sup>th</sup> and 14<sup>th</sup> June 2015. The QEUH and RHC were both fully occupied from 15<sup>th</sup> June 2015. There are a number of additional healthcare facilities in the surrounding grounds including the maternity unit, neurosurgical unit, elderly care unit and the national spinal injuries unit.

## Summary of clinical cases associated with this incident

### Case definition

The case definition in place since January 2018 is:

*“any child linked to wards 2A/B RHC with a blood stream infection (BSI) caused by a gram negative bacillus that had been identified from organisms identified within the water system”*

Ward 2A RHC is a haemato-oncology unit, also known as Schiehallion, and houses the National Bone Marrow Transplant Unit and teenage cancer trust. Ward 2B is the day care component of ward 2A. In total there have been 23 cases identified during the period 29/1/18 and 26/09/18.

### 2016-2017

In February 2016 a patient within ward 2A RHC was identified as having a bloodstream infection (BSI) as a result of *Cupriavidus pauculus*. NHSGGC investigations included water samples from outlets within the aseptic suite of the pharmacy department where the parenteral nutrition was made that the child had received. *Cupriavidus pauculus* was isolated from water samples taken from a tap on a wash hand basin within this area. Typing by Colindale reference laboratory confirmed the isolate from the washhand basin and the patient were the same. The wash hand basin was subsequently removed as a result. A further single case of *Cupriavidus pauculus* was identified in September 2017. NHSGGC reported that a second hand hygiene sink was found to be positive but following assessment was unable to be removed. Silver hydrogen peroxide treatment was undertaken and repeat testing resulted in zero total viable counts from this outlet.

### 2018

On 29<sup>th</sup> January 2018 *Cupriavidus pauculus* was again identified from a bloodstream infection (BSI) in a patient in ward 2A. Following identification of this case a series of investigations were undertaken including water sampling from outlets within the ward area. On 21<sup>st</sup> February *Pseudomonas fluorescens* was identified from a BSI and between 11<sup>th</sup> and 16<sup>th</sup> March 2018, 3 cases of *Stenotrophomonas maltophilia* were identified from patients in ward 2A. On 7<sup>th</sup> April a further case of *Stenotrophomonas maltophilia* was identified. *Cupriavidas*, *pseudomonas* and *stenotrophomonas* (amongst other gram negative bacillus and fungi) were identified from water samples obtained within wards 2A/B and therefore all cases considered to be linked to the water system. No further cases were reported until April, when between April and June, a further 10 cases were reported: 5 *Enterobacter cloacae*, 3 mixed gram negative bacilli, 2 *Stenotrophomonas maltophilia*. This cluster of mixed organisms, which were present from drain samples prompted the investigation in to the drains within ward 2A/B. Following drain sanitisation and environmental decontamination using hydrogen peroxide vapour, no further cases were reported until 2<sup>nd</sup> August and between the period 2nd August and 20<sup>th</sup> September 6 further cases were identified: 1 *Chryseomonas indologenes*/*Stenotrophomonas maltophilia*,

1 *Serratia marcescens*, 1 *Klebsiella oxytoca*, 2 *Stenotrophomonas maltophilia*, 1 *Enterobacter cloacae*. This latest cluster resulted in immediate further drain decontamination and a temporary decant facility for wards 2A/B being identified, with the patients transferred to wards 6A and 4B on 26<sup>th</sup> September to allow for investigative and remedial works to be undertaken in wards 2A/B

In total there have been 23 patient cases identified. A number of patients have multiple organisms so the organism total is greater than the case number.

The organisms linked to cases include:

- *Cupriavidus pauculus* (1)
- *Pseudomonas fluorescens* (1)
- *Pseudomonas aeruginosa* (3)
- *Stenotrophomonas maltophilia* (12)
- *Acinetobacter ursingii* (2)
- *Enterobacter cloacae* (7)
- *Klebsiella oxytoca* (1)
- *Serratia marcescens* (1)
- *Pseudomonas putida* (1)
- *Pantoea sp* (1)
- *Klebsiella pneumonia* (1)
- *Chryseomonas indologenes*(1)

In addition to the organisms detailed above there is evidence of fungal growth in the water system however there have been no associated clinical cases reported.

A timeline of cases is detailed in Appendix 1. Whilst this incident has resulted in a number of children requiring additional intervention and some delays in chemotherapy treatment there has been no associated mortality. There have been no associated cases since the temporary closure of wards 2A/B and the decant of the patients to ward 6A QEUH on 26<sup>th</sup> September 2018.

The clinical component of this incident is considered as occurring within two phases:

- Phase one relates to the water contamination and the clinical cases associated at that time relating to the water system. Following installation of point of use filters, the water system was acknowledged as being of suitable quality for use by patients and staff. Whilst work was ongoing to investigate and manage the water contamination incident the clinical component of this phase was considered over with a debrief held on 15th May 2018
- Phase two relates to the environmental contamination and subsequent associated clinical cases occurring as a result of the contaminated drains and the impact caused by the fitting of point of use filters. Phase two is currently ongoing and will remain open until wards 2A/B have re-opened



## Summary of initial findings

Following identification of the potentially contaminated water system in wards 2A/B and the resultant possible linked cases in March 2018, NHSGGC considered the decant of these 2 wards to allow for a full investigation of the source of water contamination in wards 2A/B and consider remedial action. At that time ward 4B QEUH was being prepared for the transfer of adult BMT patients from the Beatson oncology unit. Water sampling was undertaken in this ward prior to decant as a precautionary measure. Results identified the presence of *Cupriavidus pauculus* (and other gram negative bacilli) in water outlets within this ward and was the initial suggestion that there may be widespread contamination of the water system that serves both QEUH and RHC. Further testing across the site provided confirmation of this, with positive samples being identified in a number of areas across both sites at both outlet level and within the water system in the basement level (risers). Within the same timeframe staff within wards 2A/B also reported they had witnessed “black effluent” around the rim of the drain in some wash hand basins. Following visual inspection and laboratory testing, this was considered to be biofilm and sampling identified significant contamination of the drains with microorganisms and fungi. Drain contamination is not unexpected however the level of biofilm evident was not in keeping with a water system of less than four years old.

In an attempt to establish the extent of the water system and any causative factor NHSGGC, supported by HFS and HPS initiated a detailed investigation into the contaminated water system within QEUH/RHC. Support was also requested from a number of external companies experienced in water incident management: These included Leegionella, Public Health England (PHE), water solutions group and Makin & Makin. The detailed investigations led by NHSGGC and supported by HFS/HPS included reviewing commissioning, installation and maintenance records provided by the contractor. This proved to be challenging due to the archiving of data and there were very few members of the initial project team available who are technically qualified to retrieve data and provide verbal clarification. The detailed findings from these records are included within the technical report.

Results from ongoing water testing were reviewed on a weekly basis and highlighted there was evidence of regressional seeding of contamination which supported NHSGGCs view that a whole system remedial approach was required.

### Commissioning and design of the hospital water system

As part of the normal water system commissioning water samples were obtained. Initial preliminary findings have identified that prior to handover from the contractor there were a number of water samples taken that produced results with high level of total viable counts (TVCs). TVCs are indicators that there are hygiene issues within the water system and are quantified as a generic indicator for microbial contamination. Specific microorganisms which can be tested for include: Coliforms, *Escherichia coli* (including O157), *Pseudomonas aeruginosa*, *Salmonella spp*, *Campylobacter spp* and Environmental Mycobacteria. Testing for these is not conducted as standard within current guidance and typically occurs in response to a suspected or confirmed outbreak, or due to identification of a series of sequential cases.

In response to the high levels of TVCs found as part of the pre handover commissioning sanitisation of the water supply was undertaken by the contractor, with some impact and a reduction in TVCs in most areas, however there are a number of reports which indicate that

there may still have been a number of areas with higher than normally acceptable levels of TVCs.

### **Design and installation of taps and clinical wash hand basins**

The design and construct of wash hand basins, showers and taps in these hospitals were agreed with NHSGGC in line with the Scottish Health Technical Memorandum (SHTM) in place at the point the hospitals were designed (commencing 2009), this included the installation of taps with flow regulators. HFS and HPS were involved in this decision making process as was NHSGGC Infection Control team. The SHTM (SHTM 04-01)<sup>2</sup> was revised in 2015 and no longer supports the use of flow regulators in clinical wash hand basins.

Biofilm formation in flow regulators has been identified in a previously published outbreak.<sup>3</sup> The manufacturers of the taps/flow regulators in place across the QEUH/RHC recommend regular removal of the flow regulators for cleaning/decontamination however do not offer more specific guidance on frequency of decontamination of the flow regulators. The flow regulators in use have a number of components and potentially create ideal conditions for the development of biofilm.

NHSGGC provided an external company (Intertek) with some flow regulators to carry out microbiological testing. This confirmed that flow regulators have the ability to harbour a significant number of micro-organisms with the presence of biofilm being detected on all flow regulators tested and 50% showing high levels of contamination. It is also worthy of note that biofilm was present on some flow regulators which was not immediately obvious on visual inspection.

The taps in place across all clinical wash hand basins in both hospitals are also reported to be non compatible with silver hydrogen peroxide, a product which was used during commission stage to sanitise the water system in view of the high TVC results. It is unclear whether this has caused any degradation of the taps. A tap was deconstructed by NHSGGC and examined for the presence of biofilm, in addition to microbiological sampling with several components of the tap exhibiting contamination.

The presence of high levels of gram negative bacteria and fungus in the water system may indicate that temperature control required has not always been achieved. Temperature control is included as part of the wider review and technical report being prepared for NHSGGC by HFS.

Other aspects discussed in the detailed technical report include:

- Flushing
- Contract/project team
- Roles/responsibilities
- Design and construction
- Guidance and specifications
- Specification of water system
- Flexible hoses
- System description

- Pipe work
- Post handover and maintenance

There are a number of recommendations within this report for both NHSGGC and Nationally. The key NHSGGC and National recommendations from the technical report are included within the recommendation section of this report.

## **Infection Control at design commissioning and handover**

### HAI-SCRIBE

Healthcare Associated Infection System for Controlling Risk in the Built Environment (HAI-SCRIBE) <sup>4</sup>, reference has been designed as an effective tool for the identification and assessment of potential hazards in the built environment and the management of these risks. HAI-SCRIBE (2007) was in place during the construction and handover of both buildings.

Implementation of HAI-SCRIBE should be the responsibility of a multidisciplinary team of specialists with appropriate skills.

Compliance with HAI-SCRIBE requires an accurate record of the process of hazard assessment and risk management which is essential 'due diligence' information.

Evidence has been reviewed in relation to the infection control sign-off of results and the system at commissioning/handover. Whilst there is evidence of involvement with initial results and sanitisation there is no evidence of ongoing input or sign off from IPCT. It is noted that there is lack of clarity in current national guidance relating to roles and responsibilities of the IPCT in the commissioning, design and handover of new or refurbished builds. Water was first placed on the Infection prevention and control (IPCT) risk register in 2018. The IPC risk register is reviewed on an annual basis with risks considered and prioritised using a risk scoring system. Water safety was added to the risk register in 2018 in response to the emerging evidence of potential issues associated with this incident. Prior to 2018 water safety did not feature in the IPC risk priorities when scored.

NHSGGC employed a robust approach to the design stage of the hospital project by means of a dedicated Infection Prevention and Control Nurse (IPCN) seconded as part of the project team to support the IPCT aspect of the design stage, commissioning and handover stage.

Whilst there was dedicated resource allocated to the project team, there is no documented evidence of NHSGGC Infection Prevention and Control Team involvement in the commissioning or handover process of the project. However NHSGGC has provided a statement from the Lead Infection Control doctor at the time to confirm that they were involved in reviewing some aspects of the initial water testing methodology and the results for QEUH and RHC during commissioning and handover. The Lead ICD has confirmed being involved in:

- Quality assurance of the water testing methodology used by the commissioning engineers.
- Liaising with Facilities Colleagues in reviewing the water testing results supplied by the commissioning engineers.
- Recommending further actions (dosing), for a small number of outlets with TVCs above

the acceptable limits.

In addition to a nurse consultant being seconded as a dedicated resource to the project team with involvement in design, commissioning and handover, the project team were supported by the IPCT. This support included regular review of the new builds hospital project at the infection control committee and senior IPC meetings. NHSGGC reported that both the infection control manager and associate director of nursing (infection control) liaised regularly with the project associate nurse director and ensured the numerous commissioning groups established were supported by a member of the IPCT. In addition all wards were reviewed by a member of the IPCT prior to occupation by patients.

## **Current management of situation/Control measures**

In addition to holding regular incident management IMT meetings (IMT) NHSGGC established a multi disciplinary water technical group which is a sub group of the incident management team. This group is supported by HFS, HPS, with monthly representation from water solutions group and Makin & Makin.

A number of control measures have been instigated during this incident and in particular in wards 2A/B. These included parent and staff education sessions, daily visits to the ward from members of the infection prevention and control team (IPCT), increased domestic hours, environmental monitoring by means of audit, including Standard infection control precautions (SICPs) audits.

### **Limiting access to water**

In the initial investigation the use of water within wards 2A/B was limited with portable wash hand basins being supplied for hand washing. Patients were requested not to use wash hand basins or showers and wipes were provide as an alternative. Drinking water was provided by means of bottled water. Access to water was re-established once point of use filters were in place in showers and wash hand basins/sinks. BMT patients continue to receive sterile water.

### **Point of Use filters.**

Following the identification that the water contamination was widespread across both RHC and QEUH an additional control measure of point of use (POU) filters for high risk areas was implemented to ensure a safe water supply at the point of use. In addition if a high risk patient was being nursed in an area deemed to be of low risk, a point of use filter was fitted to water outlets in their room. POU filters require to be changed every 30 days and are a costly approach, however in the interim until the water contamination can be addressed, is considered the only feasible approach to ensure safe delivery of water. A number of studies found that installation of point of use filters reduced either infection rates in associated healthcare settings<sup>5,6</sup> or pathogen counts within tested water samples.<sup>7</sup>

Once the POU filters were in place the restrictions on access to water within wards 2A/B was removed and patients were able to access washhand basins and showers. It was noted that following the fitting of the POU filters there was a greater splash evident from the wash hand basins as the point of entry of the water from the outlet was closer the basin. This splash was noted more from clinical wash hand basins than ensuite wash hand basins and trough sinks.

### **Drain Sanitisation**

Following the identification of the second phase of cases associated with this incident and the hypothesis that the cases may be related to drain contamination, the drains were inspected by the IPCT. Once the drains were identified as being visibly contaminated with what was thought to be biofilm, a programme of drain sanitisation was undertaken across high risk areas commencing with wards 2A/B.

### **Environmental decontamination**

Prior to and following completion of the first drain decontamination process in wards 2A/B, a terminal clean of all areas using hydrogen peroxide vapour was carried out.

### **Water treatment**

It is well recognised that drinking water distribution systems contain a diverse range of microorganisms.<sup>8-10</sup> The presence of microorganisms is affected by various factors including; the disinfection processes employed, the location and age of the system as well as pipe material.<sup>11</sup>

There were a number of options explored for longer term water treatment by NHSGGC. These options included:

#### **Chlorine dioxide**

A number of studies were identified which utilised chlorine dioxide systems within hospital settings, and use of these was found to reduce bacterial numbers.<sup>10,12,13</sup> Various advantages and limitations associated with use of chlorine dioxide are known, with the most relevant summarised below.<sup>14,15</sup>

**Advantages:** Known to be effective against a wide range of bacteria, viruses and some protozoa including Giardia.

**Limitations:** Production of disinfection by-products (DBP's). Although potential production of DBP's always needs to be considered, the efficacy of water disinfection should not be compromised in trying to eliminate these.<sup>16</sup>

#### **UV light**

A number of drinking-water treatment technologies are available which employ UV light radiation to inactivate microorganisms.<sup>15</sup> As with chlorine dioxide, various advantages and limitations associated with use UV are known, with the most relevant summarised below.<sup>14-16</sup>

**Advantages:** Bacteria, fungi and protozoa (considered to be more effective at killing Cryptosporidium than chlorine dioxide) are readily inactivated at low UV doses, with higher doses required for virus inactivation. In addition, UV disinfection does not result in the formation of DBP's like chlorine dioxide.

**Limitations:** UV disinfection does not leave any residual compound in treated water and therefore does not offer protection against possible microbial re-growth in distribution pipe-work.

### Thermal disinfection

Very limited information was identified in the published literature in relation to advantages and limitations of thermal disinfection. One study found that heat shock treatment at 80°C reduced Gram negative bacteria in a hospital water system but did not lead to complete eradication.<sup>17</sup> Copper silver ionisation was also considered however this was discounted due to pH levels.

### Preferred solution

The NHSGGC preferred method of choice for water treatment was continual dosing chlorine dioxide. This was supported by HFS and HPS. Shock dosing of the system was considered and it was agreed that due to safety issues and the potential impact on both hospitals ability to function during the process, this was not the most appropriate approach. It was also recognised that in the absence of initial shock dosing it may take up to two years for the process to be effective from tank to tap level. The procurement process is well underway and expected to commence November 2018.

### Temporary closure of wards 2A/B

A recommendation was made by the IMT to pursue the temporary decant of wards 2A/B to allow investigative and remedial work to be undertaken. A number of options were explored resulting in the transfer of patients from wards 2A/B to ward 6A of the QEUH. Adult patients within ward 6A QEUH were transferred to Gartnavel General. Three rooms within the adult BMT (4B) were identified and allocated to the paediatric BMT unit. The patients were transferred on 26<sup>th</sup> September 2018. It is anticipated that the decant facility will remain in place until mid/late December.

### Remedial work/Investigations wards 2A/B

The planned investigations/remedial works planned during the decant period include:

- Drain Survey
- Ventilation review
- Replacement of clinical wash hand basins
- Replacement of taps (with no flow regulator)
- Review of any little used water outlets with a view to remove
- Replacement of sections of pipework where biofilm noted
- Review of toilet cisterns and adaptation to reduce potential toilet plume effect.

## Hypothesis

There are a number of workable hypotheses being explored; it is currently considered the most likely cause of the widespread contamination is a combination of hypothesis B and C

### **A: Ingress contamination**

A small low level number of micro-organisms may have been present in the water supply at the point of entry. Lack of temperature or chemical control may have enabled biofilm formation. Due to the increasing biofilm throughout the system this may have allowed any subsequent micro-organisms present at point of entry an opportunity to flourish and cause widespread contamination of the system.

**B: Regressional contamination**

This may have occurred due to contamination occurring at the taps/outlets or flow straighteners and contamination has regressed backwards throughout the system causing widespread contamination. The widespread positive results and array of bacteria point to contaminated outlets at installation or contamination of high risk components in the tap from ingress as opposed to the patient contact route.

**C: Contamination at installation/commissioning**

Contamination may have occurred due to presence of contaminated pipework or outlets. Prior to handover the system required to be sanitised due to high TVC counts. It is unclear if a robust flushing regime was in place from installation to handover and from handover to occupancy to prevent contamination.

**Secondary Hypothesis**

It is recognised that in many situations control measures or actions taken in an attempt to minimise the risk of HAI there can be unintended consequences. In this scenario the secondary hypothesis is linked to the unintended consequence of the point of use filter use:

**POU filters.**

In an attempt to provide water of a safe microbiological quality NHSGGC applied point of use filters to all clinical and patient wash hand basins in high risk areas and areas where high risk patients were being treated. These filters meant the exit point of the water from the taps was closer to the washhand basin and as a result caused more splash which may also lead to disruption of any drain biofilm as well as potential environmental contamination. (Pictures 1, 2). At the time of fitting the filters, the issue of biofilm within the drains and the associated risk or the resultant splashing that was being caused had not been identified and therefore the subsequent increased risk of environmental contamination and potential exposure of the children was not recognised.



Picture 1





Picture 2

### **Additional potential considerations to minimise impact**

#### Ensuite single side rooms/hand hygiene practice

Since 2008 it is recommended that all new build hospitals have 100% en suite single side rooms.<sup>18</sup> As a result this has substantially increased the number of wash hand basins and therefore the frequency with which a wash hand basin is used and the water volume in each basin reduced when compared to multi occupancy wards with a single wash hand basin. Since the introduction and widespread use of alcohol gel, the need for hand washing as a first approach has greatly decreased, as alcohol gel may be used on hands that are not visibly soiled. This requires further exploration and consideration and review of flushing regimes and number of wash hand basins required.

#### Disposal to drain

A number of drain samples were sent to Intertek for analysis. A report has highlighted that in addition to the general presence of biofilm, there was biofilm noted around the aluminium spigots. There was also some occlusion reported as a result of adhesive and pooling noted between the back of the sink and the pipework. All aluminium spigots in wash hand basins in wards 2A/B were replaced with PVC spigots. In addition a number of foreign objects were identified within the drains. It was also reported that there was evidence of a yellow fluid present suggestive of urine being disposed to the drain. The biofilm has a mustard yellow colour and an odour of ammonia was detected. There was a small amount of yellow liquid in the base of the bowl trap which when removed and looked at in isolation also had an ammonia smell. Parents, families and clinicians are advised that hand wash basins are for hand washing only and additional activities such as fluids being disposed of to drain via a handwash basin should not occur. Staff are aware that this is not acceptable practice however the positioning of a wash hand basin in every single room may encourage patients or visitors to expel fluids such as contents of a drink bottle. Items such as coffee, sweet drinks encourage the growth of bio film and microorganisms within a drain. The large open horizontal drain may also encourage the accidental disposal of foreign items.



## Summary

There have been no new reported cases since the decant of patients to ward 6a on 26<sup>th</sup> September 2018. The IMT will continue to meet regularly until the patients have been transferred back to wards 2A/B. The water subgroup will continue to meet until early/mid 2019 and will be supported by HFS/HPS. It has been evident to HPS that since the identification of this widespread incident and clinical impact on wards 2A/B, patient safety has been paramount with NHSGGC clinicians, facilities, IPCT and management team. A significant financial investment has been made to minimise ongoing risks including widespread use of point of use filters in addition to remedial work planned. A number of lessons can be taken from this incident for NHSGGC and NHSScotland as a whole in relation to water safety and commission, handover and maintenance of buildings. The national work and learning for NHSScotland will be driven via the HAI built environment steering group which is widely represented and chaired by the associate director of facilities (NHSGGC) and deputy chair is the lead ICD (NHSGGC)

## Recommendations

A number of local and national recommendations have been made based on the investigation to date. This includes recommendations for NHSGGC which have been identified from the detailed HFS technical report:

### 1. NHSGGC (as identified within the technical report)

- Continue developing and implementation of the decontamination maintenance protocol of flow regulators.
- Ensure that any tap replacement programme has no flow regulators.
- Ensure that the management of the water systems is as described in guidance, including letters of appointment; appropriate numbers of authorised persons and competent person and appropriate training.
- Consider the resolution of outstanding issues with Energy Centre.
- Consider having a formal process in place to prioritise, manage, record and react to any BMS alarms from anywhere in the campus network.
- Carry out routine maintenance and reactive maintenance on the hot and cold water systems and components as per the Planned Preventative Maintenance (PPM) schedules in ZUTEC and specific manufacturers' recommendations and ensure that all infrequently used outlets are managed and flushing is recorded. This should include all water dump valves and checking turnover of the water tanks.
- Have the seasonal commissioning as required by the specification carried out by the Contractor.
- Ensure all pipe work to removed external bib taps has been removed and all EPDM flexible hoses have been removed or managed by risk assessment.
- Ensure that the BMS server provided under the contract meets the requirements of the contract specification in relation to data storage integrity.
- Ensure all electronic records relating to water are checked and any missing or incorrect documentation rectified and provided.

### 2. All NHS Boards

- All NHS boards should ensure facilities teams are adequately resourced to ensure maintenance of all aspects of the water system are maintained in accordance with policies and guidance.
- All maintenance undertaken should be recorded and maintenance records should be reviewed regularly to ensure all aspects of the water system are maintained in accordance with policies and guidance

### 3. HPS/HFS

HPS via the existing Infection Control Built environment programme will, in conjunction with HFS:

- Prioritise water safety and undertake a review of NHSScotland current approach to water safety.
- Review NHSScotland current approach to water testing in healthcare settings.
- Review NHSScotland current surveillance and reporting of potentially linked water related HAI cases.
- Based on findings develop risk based guidance on water testing protocols, results interpretation roles and responsibilities and remedial steps to be considered
- Review existing national and international guidance relating to water safety and develop robust requirements/guidance for building handover requirements in relation to the water systems.
- Review the role of the IPCT into the built environment, including day to day activities, refurbishments and new builds (including design, commissioning, handover, maintenance).
- Develop an evidence based/best practice built environment manual which will be evidence based and cover as a minimum current and emerging evidence and the technical requirements from a clinical and HAI perspective that will be adopted by all NHS boards.
- Establish a risk based approach to water testing and any remedial action required, including roles and responsibilities that NHS boards will adopt.
- Produce evidence based guidance on water coolers, ice machines and dishwashers from a water safety and decontamination perspective.
- HPS to scope out a review on the use of flow regulators across NHS Scotland and identify and associated risks and recommend any remedial actions required.
- Sink and drain cleaning guidance to be reviewed as part of the HPS built environment guidance
- HPS to review the requirement for 100% ensuite single side rooms in new builds in light of changing hand hygiene practice as part of the HPS built environment guidance
- HPS to review the evidence for and requirement for the number of clinical wash hand basins per patient/bed in light of changing hand hygiene practice as part of the HPS built environment guidance

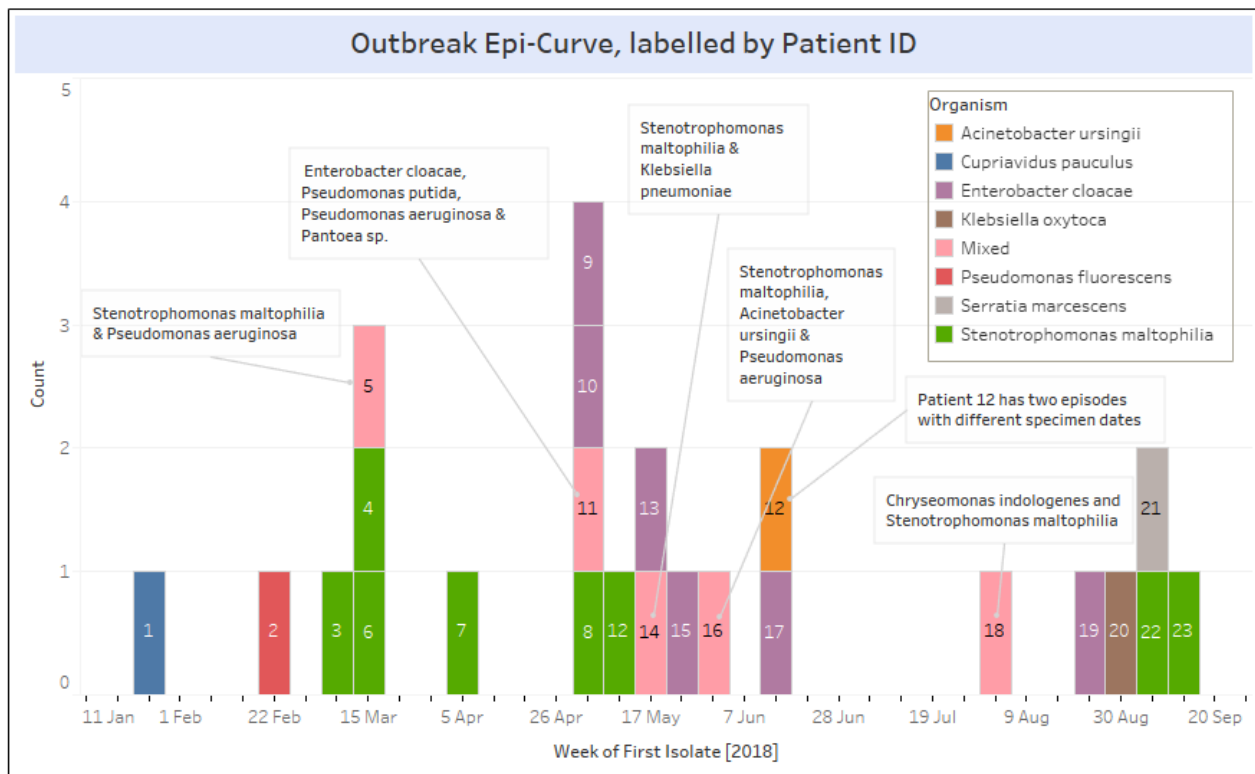
HPS/HFS will continue to provide support to NHSGGC relating to the current water incident and provide input into the weekly meetings until mid 2019 (and reviewed thereafter)

Further develop the existing Scottish expertise in the built environment programme (mainly water and ventilation) at national level

HFS to lead (supported by HPS)

- Review of construction management guidance to establish how it can provide assurance that similar issues will not occur in future projects.
- Consideration to be given to production of updated “standard” Employer’s Requirements (also known as Authority Contract Requirements (ACR) or Board Contract Requirements (BCR) as a National resource for all Boards.
- Consideration for updated technical water and other guidance to include:-
  - Thermal disinfection in sections of water distribution systems
  - Handover checklists
  - Contract management procedures
  - Design guides to eliminate thermal pickup in cold water systems
  - Update advantages and disadvantages of chemical disinfection techniques
  - The organisms Boards should test for and action to take on defined levels
  - Drain cleaning regimes
  - Biofilm growth in drainage systems

## Appendix : 1 Timeline of cases



The epi-curve demonstrates that only one case of *Cupriavidus pauculus* was reported from 26<sup>th</sup> January 2018, with the other associated cases being *Stenotrophomonas maltophilia* and/or *Pseudomonas aeruginosa* positive between 21<sup>st</sup> February 2018 and 5<sup>th</sup> April 2018.

## References

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**DRAFT**

# Stakeholder Communications and Engagement Strategy

**2020 - 2023**





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# 1. Introduction

By listening and learning from the public experience of health we can understand what really matters to people. Engagement that takes place routinely helps to develop trust and fosters mutual understanding, making it easier to identify sustainable service improvements. It also helps us to identify local needs and priorities and target resources more effectively.

In November 2019, NHS Greater Glasgow and Clyde was escalated to Stage 4 in the NHS Board Performance Escalation Framework by the Scottish Government for infection prevention and control and engagement and information with patients and families. A key theme to emerge from the experience of families was the need for greater transparency from the Board.

As a Board, we are fully committed to continually improving the ways in which we communicate and engage with people and communities and we have been working with Scottish Government over the past year to deliver improvements in our communications and engagement.

This strategy seeks to build on this and sets out how we will continue to improve and strengthen relations with our communities and create ongoing, continuous approaches to inform, listen to and involve all of our stakeholders.

In recent months, our lives have been transformed as we combat a global health emergency. In these turbulent times effective engagement with patients, public and other stakeholders has never been more important.

Research on responses to public health emergencies has shown that people are more likely to work together to achieve common goals through approaches involving collaboration and co-production. The task of establishing a two way dialogue to ensure that advice to communities is relevant and helpful falls not only to national governments but also to individual health and social care organisations. In response to COVID-19, there is an immediate and ongoing need to listen and engage with communities to develop approaches to support individuals to comply with the public health measures that are required.

Effective community engagement is also critical to ensure that our services are fit for purpose. In response to the pandemic, new models of service delivery have had to be set up swiftly. This has been accompanied by a rapid digital healthcare transformation with a move from face to face to virtual consultations significantly increasing. These new ways of working, together with our plans for remobilising activity suspended in response to the pandemic, are set out in the Board's **Remobilisation Plan**. The **Stakeholder Communications and Engagement Strategy** will make a significant contribution to the delivery of this Plan.

Beyond 2020 and the response to COVID-19, the Board is committed to delivering its long term clinical strategy, **Moving Forward Together**. As we implement new ways of working in both the short and longer term, meaningful and effective engagement will ensure that our health and care services are fit for purpose and lead to better outcomes for people.

The delivery of the Board's Public Health Strategy, **Turning the Tide on Prevention**, will also be achieved through listening to and working with our communities and patients to understand their needs, priorities and views about improvements and by developing approaches that "build on our relationships with communities and community planning partners creating a multi-agency public health workforce to address our shared priorities."

The six Integration Joint Boards (IJBs) within the Greater Glasgow and Clyde area have each developed their Strategic Plans setting out their priorities for the next three years in delivering integrated health and social care services to their communities. We will work in partnership with the IJBs as they transform the way integrated services are delivered, to support people to remain in their homes for as long as they can, lead healthy lives, and be supported as far as possible within community settings.

This strategy sets out how, over the next three years, we will deliver a planned and sustained approach to communications and engagement to support the delivery of our organisation's goals and build collaborative, trusted relationships between the Board, our patients, their carers, and our communities, based on honesty, openness and transparency.





## 2. Purpose of this Document

NHSGGC has a wide range of stakeholders external to the organisation including patients, their carers and families, local communities, general public, the third sector, charities, further education, universities, wider public health partners, MSPs and other elected representatives.

The high level three-year Strategy sets out our long term approach to achieving effective communications and engagement with all our partners and stakeholders.

It will be delivered through a series of annual action plans which will provide the detail of how the strategy will be delivered, together with an outline of specific actions to be taken to support the organisation achieve its annual business objectives.

While staff, public and patient engagement are inextricably linked, to effectively manage a focus on external audiences, the Board's approach to staff communication and engagement is covered by a separate strategy.

Legislation and professional standards supporting effective person centred communication with patients, including Realistic Medicine and Duty of Candour legislation, are also covered elsewhere.



## 3. Legislation, Standards and Guidance

Legislation set out in the Patients' Rights (Scotland) Act and the Community Empowerment (Scotland) Act state that NHS Boards, as public bodies, have a duty to involve people in the design, development and delivery of the health care services they provide for them.

Also, this Strategy recognises and adheres to the guidance and principles set out in Scottish Government Health Directorate CEL 4(2010).

The CEL 4(2010) sets out the phases and process that need to be applied, proportionately, by a Board to any service change they propose. It states that NHS Boards are responsible for ensuring:

- That engagement processes and activities are fully accessible
- That any potential adverse impact on equality groups must be taken into account by undertaking an equality impact assessment.

The guidance also sets out how Boards should take forward major service change. This states that in circumstances where a proposed service change will have a major impact on a patient or carer group, members of equalities communities or on a geographical community, Boards should seek advice from the Scottish Government on whether a service change is considered to be major. In such cases NHS Boards must carry out a full public consultation with local communities and Healthcare Improvement Scotland to quality assure this process. The final decision on the way forward needs Ministerial approval.

They should also inform potentially affected people, staff and communities of their proposal and detail how they:



Will involve them in the development and appraisal of options



Will involve them in a consultation of any agreed options



Will reach any final decision evidencing the impact public involvement had on this

The Scottish Government and COSLA are currently consulting on new participation and community engagement guidance, which will provide an overarching framework for engagement to apply across health and social care bodies. This guidance, which is expected to replace Informing, Engaging and Consulting People in Developing Health and Community Care Services (CEL 4, 2010), is due to be published in January 2021.

The strategy also complies with the following legislation, standards and guidance:

- Freedom of Information (Scotland) Act 2002
- General Data Protection Regulation and Data Protection Act 2018
- Equality Act 2010
- Community Empowerment (Scotland) Act 2015
- NHS Reform (Scotland) Act 2004
- The Gunning Principles (R v London Borough of Brent ex parte Gunning 1985)
- National Standards for Community Engagement (Scottish Development Community Centre) (2015/16)
- Fairer Scotland Duty 2018
- Healthcare Improvement Scotland Community Engagement Participation Toolkit
- NHS Greater Glasgow and Clyde Corporate Social Media Policy
- NHS Greater Glasgow and Clyde Guidance on Personal Use of Social Media
- NHS Greater Glasgow and Clyde Accessible Information Policy.

## 4. Our Principles and Values

In planning and delivering communication and engagement, we will:



**Be collaborative and inclusive in our approaches.** By working collaboratively we will share ideas, recognise expertise and use our resources and our networks effectively. We will build and maintain connections with partner organisations, in particular our six Health and Social Care Partners, the voluntary and community sector and community leaders. We will encourage inclusive participation and co-production and actively seek out the voices of those communities who face health inequalities and from potentially excluded and disadvantaged groups.



**Be open, honest and transparent in all our communications and engagement activity.** By fostering a listening culture where feedback from our patients, the public and our stakeholders is proactively sought, heard and taken into consideration in our commissioning decisions. We will explain clearly and transparently how decisions are made and feedback to the public and our stakeholders about how they have made a difference. Importantly, when we get things wrong, we will be honest about this. We will acknowledge when mistakes are made and learn from them, including our obligations to fulfil the legal duty of candour.



**Communicate in a professional, easily understood and jargon-free way.** Information will be written in a way that is appropriate to the audience and mindful of language and other communication barriers exploring how to overcome these barriers in partnership. We will provide information that people need, delivered in a way that they wish to receive it.

Our communications and engagement will be:

- Early, visible, open and transparent
- Accurate and sensitive
- Two-way, with listening of equal importance to informing
- Person centred and tailored to the needs of individuals
- Timely
- Collaborative and consultative, involving those affected in the planning, design and delivery of engagement processes
- Mindful of the need to acknowledge perceptions as well as facts.

Our engagement will always adhere to the NHS Scotland and NHSGGC set of values:

- Care and compassion
- Dignity and respect
- Openness, honesty and responsibility
- Quality and teamwork.



## 5. Strategic Context

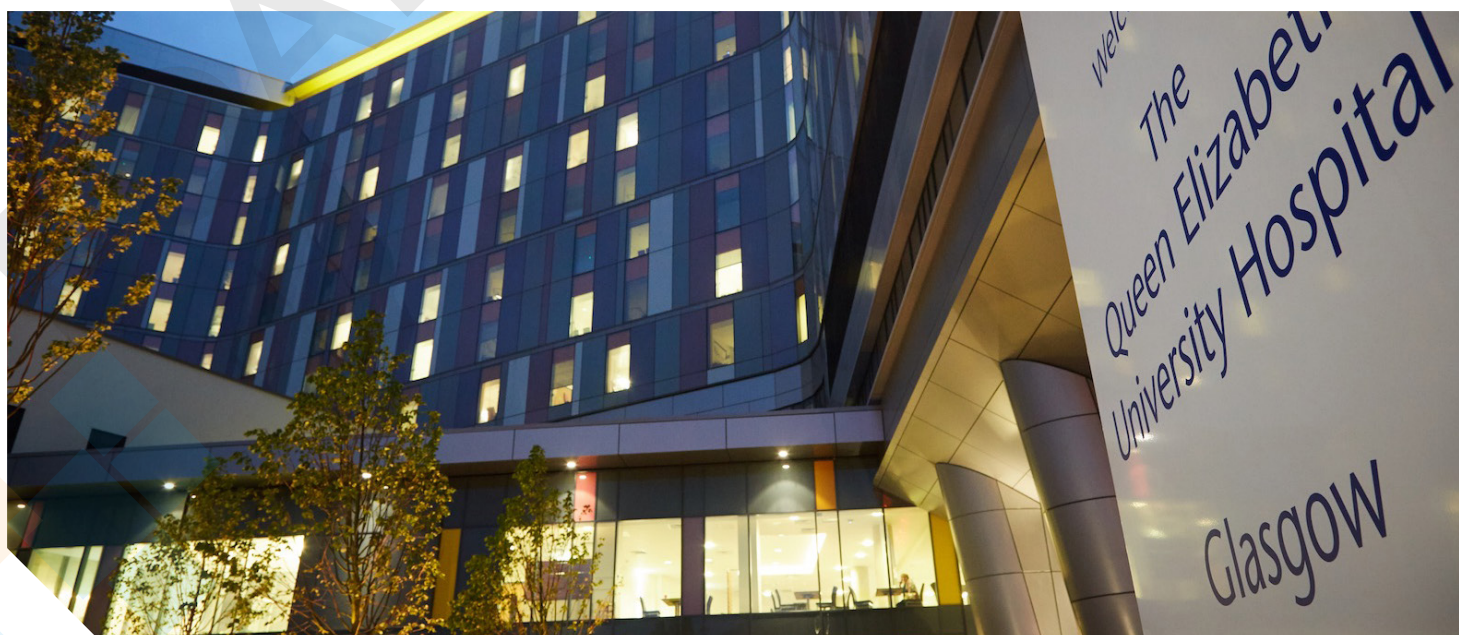
### a. Queen Elizabeth University Hospital and the Royal Hospital for Children

In light of a number of issues in relation to the Queen Elizabeth University Hospital and the Royal Hospital for Children, the Scottish Government escalated NHSGGC in November 2019 to Stage 4 for infection prevention and control and engagement and information with patients and families. This brought direct oversight and engagement from Scottish Government to the operation of Queen Elizabeth University Hospital and Royal Hospital for Children. An Oversight Board, reporting to the Chief Executive Officer (CEO) of NHS Scotland and chaired by the Chief Nursing Officer, was set up to ensure improvements to the systems, processes and governance in relation to infection prevention, management and control and to ensure improvements to the associated communication and public engagement issues.

The Board and its senior officers continue to work with the Oversight Board and families to enhance and strengthen our communications and engagement. The recommendations from the communications and engagement sub-group of the Oversight Board will be acted on as part of the implementation of the Board's overall Stakeholder Communications and Engagement Strategy.

The Interim Report of the Oversight Board is due to be published by the end of December 2020. In relation to communications and engagement, a number of findings and recommendations have already been shared with the Board.

When reviewing how the Board responded to the unfolding circumstances of infections, the Oversight Board noted evidence of improvement already at work within the Health Board. They also noted that communication to patients and families individually at the point of care was undertaken with compassion, care and support by the relevant staff, especially in the Schiehallion Unit. However, while the Oversight Board recognised that the Board has strived to learn from the unique situation it faced, it found that "there remains a continuing need for improvement in how communication, engagement and information provision takes place". This strategy sets out the high level actions that will be taken to move the organisation forward from this position and to build and improve our communications and engagement with patients, their families and all our stakeholders.



## Case study

### Development of closed Facebook page for parents of haemato-oncology ward patients

The Paediatric Haemato-Oncology Facebook Group was set up one year ago to support the patients of Ward 6A and their families. The group provides a mechanism by which to communicate with the families and patients, receive feedback and share information. Specifically, share important announcements, good news stories, provide updates and gain feedback.

The page is available to previous and current patients of Ward 6A and their families and is intended to supplement the face to face engagement that is received from those providing care on the ward.

The 6A page was created as an engagement gap had been identified between NHSGGC and haemato-oncology families. In order to ensure that families had a mechanism by which to raise questions as well as an information portal for important announcements, it was agreed that a closed Facebook page would be set-up, enabling all users to have the opportunity to post information and interact with messages from the team on the ward.

The Facebook page was utilised through the Independent Review of the QEUH and RHC to share NHSGGC statements and information from the Scottish Government. However, more laterally, it has also been used to share photographs of current and former patients going back to school after lockdown and poll parents and patients about food on the ward.

The page enables immediate feedback, allows us to track trends and sentiment from users as well as provide the opportunity to have a direct channel of communication with individual users of the page.

With now almost 200 members, it has been a welcome addition to the engagement tools utilised to reach this group.

## b. Response to the Global COVID-19 Pandemic

On 23rd March 2020, the UK went into lockdown in response to the COVID-19 pandemic, announced twelve days previously by the World Health Organisation. Over the following months, the four nation governments put the country on an emergency footing, with significant restrictions on movement and on social interaction to disrupt and suppress the virus.

In May 2020 the Scottish Government published its route map through and out of the crisis setting out a phased approach to easing lockdown restrictions while still suppressing coronavirus (COVID-19) including a plan to re-mobilise health and social care services.

The Scottish Government document entitled '**Responding to the Re-mobilisation, Recover and Re-design Framework**' sets out three core tasks:

1

Delivering as many normal services as possible, as safely as possible

2

Creating and protecting the capacity to deal with the continuous presence of COVID-19

3

Preparing health and care services for winter



In her letter to Board Chairs dated 25th June 2020 the Cabinet Secretary for Health and Sport highlighted the requirements to engage with people during significant changes in service delivery including during COVID-19:



I recognise that many NHS Boards have had to rapidly reconfigure their services in light of this pandemic and that changes needed to be quickly implemented to protect the people of Scotland. I understand that the urgency of the situation did not allow organisations to involve or consult the public as they would normally be expected to.

However, the statutory duty to involve people remains as important as ever during the pandemic, even though the methods for doing this will have to be fully considered. I appreciate that the engagement will need to take account of the continually changing environment in which we are operating and may require different engagement approaches to be deployed. ”

In July 2020, Healthcare Improvement Scotland – Community Engagement published guidance to inform the approaches Boards should take to deliver effective community engagement moving forward including evidencing how engagement has informed re-mobilisation plans during the early stages and in moving towards March 2021.

During this next phase of the pandemic, and throughout the period of recovery, engagement with patients and users will be an important element to support the delivery of NHSGGC's Remobilisation Plans to help us understand and build on the benefits brought by changes during the initial phase and have these informed by people who are using services.

Whilst we are resuming services as quickly and safely as possible, it is important that patients with the greatest need are prioritised. This will mean that some patients will have a longer wait than is ideal for their treatment and it will be important to communicate effectively with patients to ensure they have a clear and realistic expectation of when they will receive treatment that is clinically appropriate to their individual circumstances.

## c. Moving Forward Together

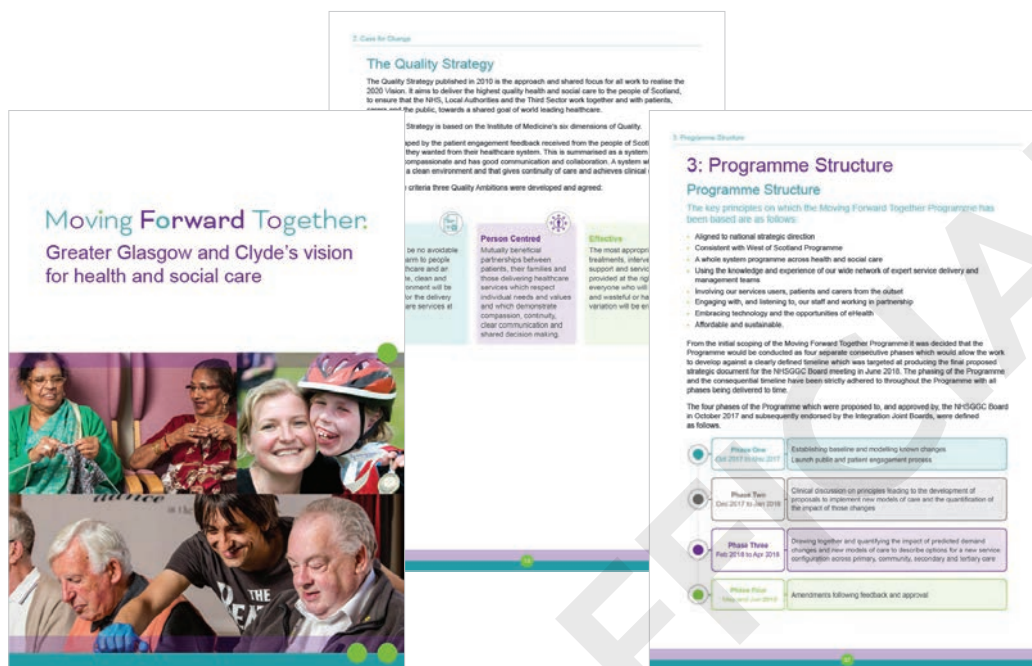
The blueprint for the future delivery of health and social care services in Greater Glasgow and Clyde was approved by the NHS Board in June 2018.

The Moving Forward Together (MFT) strategy sets out how primary, community and acute health and social care services will work together to support people to live longer, healthier lives in their own homes and communities and to promote self-management and independence. The strategy seeks to maximise the number of people who are supported to live at home in good mental and physical health for as long as possible.

It describes how care shall be delivered as close to home as possible, supported by a network of community services with safe, effective and timely access to high quality specialist services for those whose needs cannot be met in the community.

A whole system approach will be taken to achieve this in which services are delivered by a network of integrated teams across primary, community and specialist hospital-based care, working seamlessly around the needs of the person.

To support our response to the COVID-19 pandemic, many strands of work aligned to MFT have continued to deliver important and necessary change for the organisation and indeed, a number of workstreams have been vastly accelerated. The COVID-19 pandemic has reinforced the objectives and practical assumptions set out within MFT and associated strategies. Effective communications and engagement will be key to the successful delivery of MFT.



## d. Turning the Tide Through Prevention

The Board's first Public Health Strategy, **Turning the Tide Through Prevention**, was approved by the NHS Board in August 2018. The 10 year public health strategy aims to accelerate the improvement in healthy life expectancy (HLE) and life expectancy (LE) and narrow the gap in HLE/LE within Greater Glasgow and Clyde and between Greater Glasgow and Clyde and the rest of Scotland for both men and women by 2028.

The strategy sets out six core programmes of work which relate directly to agreed national public health priorities. These six programmes comprise:

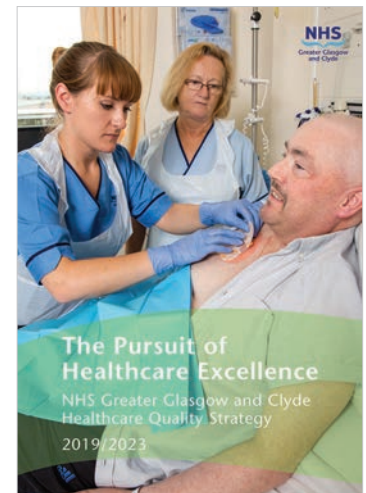
- 1 Understanding the needs of the population
- 2 Tackling the fundamental causes of poor health and of health inequalities and mitigate their effects
- 3 Applying a life-course approach, recognising the importance of early years and healthy ageing
- 4 Intervening on the intermediate causes of poor health and health inequalities
- 5 Improving the quality of services
- 6 Protecting the public's health.

The impact of the pandemic extenuates many of the themes within our Public Health strategy 'Turning the Tide Through Prevention'. Our response will require specific elements to go further, faster. The Public Health Directorate will still be dealing with the pandemic especially in relation to Test and Protect, outbreak management and vaccination. A planned review of the action plan attached to 'Turning the Tide Through Prevention' may require further conversations, engagement and involvement of communities to prioritise areas of work likely to have maximum impact over this period.

## e. 'The Pursuit of Healthcare Excellence'

The Board's Quality Strategy was approved by the Board in February 2019. The strategy outlines how we intend to continuously improve the quality of care to our patients, carers and communities and provide care that is responsive to individual personal preferences, needs and values, and ensuring that these guide all decisions about care and treatment.

Key to this is the encouragement of patient, carer and visitor feedback as part of the quality improvement cycle. The Quality Strategy sets out various mechanisms in place within NHSGGC to enable us to gather feedback on patients' experiences and to encourage learning from these experiences to shape care and services.



## f. HSCP Participation and Engagement Strategies

Each of the six health and social care partnerships in the Greater Glasgow and Clyde area have Partnership and Engagement Strategies. These set out the approaches within each area to engage with their localities.

The key themes of all strategies mirror those set out in our strategy; that of openness, transparency, inclusivity and a strong local focus on participation and engagement activity.



## 6. Why is it Important to Engage With People?

As part of the Charter of Patient Rights and Responsibilities, people have the right to be involved in decisions about their own care and treatment, and to be meaningfully involved in developing and co-designing local health and care services.

Aside from our legal requirements and policy drivers, as an organisation we are committed to ensuring that the voices of patients, families, carers, staff and our communities, can influence and shape the design, development and delivery of our services. Person centred care can only be delivered by listening to patients and carers and finding out what matters to them.

This also sits with our Corporate Values to be open and honest, provide a caring and compassionate environment and treat people with dignity and respect. Working with all our stakeholders helps ensure we are held to these values and can work together to continually improve quality.

Research has also shown a number of benefits to engaging and involving people, including:

- **Empowering people to make decisions that affect their health and wellbeing**, increasing people's involvement and management of their own health and care which can lead to better healthcare outcomes
- **Improving quality and safety of care** provided by organisations
- **Improving communication and information provision about services**, public health and how people and communities can stay healthy
- **Improving health inequalities** across a wide range of health and wellbeing conditions, by empowering people to feel ownership of their own health service
- **Improving an organisation's accountability** amongst the public and improving trust and legitimacy in decision making.





Draft guidance from Scottish Government and COSLA highlights a number of risks to organisations from ineffective engagement:

- Failure of organisations to understand all the issues for communities, missing the opportunity to identify sustainable solutions to service challenges
- Communities, especially vulnerable and lower-profile groups, feel disconnected and disengaged from services
- Unnecessary public resistance to changes due to lack of awareness and understanding
- Threatened public confidence, which can lead to protest
- Legal challenge resulting from concern about a decision and the process of engagement with potential for added financial implications
- Change may take longer to implement (or not progress at all) and risk that services may not meet the needs of communities as well as they could.



## 7. Strategic Aims

The aims of the strategy are to:



Embed a clear and consistent communications and engagement approach that supports NHS Greater Glasgow and Clyde towards achieving our vision, aims and commitments



Empower staff and teams across NHSGGC to have ongoing engagement with people in an open and honest manner, ensuring that the public voice is at the heart of all service planning, improvements and developments



Achieve the best representative views, comments and opinions from our diverse communities that we can so that our work is inspired and shaped by people's views



Enable people to voice their views, needs and wishes and to be able to contribute to plans, proposals and decisions about services



Make it easy for people to access information about health and healthcare as part of our role to support people to stay well and make healthy choices, and ensure that this information can be made available to everyone



Use innovative ways to communicate and engage with key stakeholders, members, partners, patients, the public and local community groups in ways that most suit them, while maintaining and improving those channels that are already shown to be effective



Give local people the knowledge, skills and confidence to maintain good health and better manage their own health conditions, using real insight from people to help them make the right choices to access local services, manage their own health and prevent illness where possible



Develop and enhance the reputation of the organisation through proactive and reactive media relations, social media, marketing activity, high quality service and performance information and effective engagement



Build collaborative, trusted relationships between the Board, our patients, their carers and our communities, based on honesty, openness and transparency



Ensure that the NHSGGC's communications and engagement activity is accessible to all by using a variety of media, clear language and recognising and addressing individuals' needs. This includes language translation and accessibility for visually and hearing impaired members of our community. We will also ensure we provide communication and engagement opportunities accessible for those with Learning Disabilities



Ensure that we are actively seeking views from groups who are 'seldom heard' and/or have poor health outcomes



Measure and evaluate engagement effectively using disaggregated data and report back to local people on how their feedback has been used to shape and improve services.

The specific activities that underpin this strategy will be set out in an annual delivery plan, which by the very nature of communications and engagement, is designed to be an evolving and iterative document. Whilst the detail for the plan may vary from year to year, some of the established key strands are set out below.

## a. Understanding our Audiences

### (i) Working in partnership with our stakeholders

Stakeholders are people, groups or organisations that are interested in or can be affected by our work. We have a great number of external stakeholders, including patients, their carers and families, local communities, general public, the third sector, charities, further education, universities, wider public health partners, MSPs and other elected representatives. We work collaboratively with many different stakeholders to deliver our priorities.

So that we communicate and engage successfully and efficiently, we need to understand who our stakeholders are, how they prefer to be involved and what they are interested in.

We will routinely identify all our stakeholder groups and the appropriate channels to use for each of these groups, and we will refresh these on a project by project basis ensuring we give all affected communities across NHS GGC the opportunity to be involved.

Recognising that not everyone has access to digital communication approaches, we will ensure that traditional methods of communication are included in the mix of communications methods deployed.

### (ii) Understand how our stakeholders feel about us

In order to build relations with your stakeholders it is important to understand how they feel about you. We will carry out regular surveys of our key stakeholders to measure attitudes and opinions towards NHS GGC including a focus on stakeholder perceptions and understanding of the Board.

Working with the Consultation Institute and our public Stakeholder Reference Group we will seek the opinions of our stakeholders on our engagement and on how they wish to engage with us. We will utilise the research to gain feedback from stakeholders on how we can improve stakeholder communications and shift sentiment.

## b. Improving our External Communications

### (i) Improving our communication with patients and families

Openness and honesty are important principles on which communications with patients and their families must be founded and this is especially the case when things go wrong.

There has been significant learning within NHS GGC from the experiences of families of patients in the haemato-oncology unit of the Royal Hospital for Children.

A top priority for the Board will be to continue to develop effective communications approaches with patients and their families, tailored to their individual needs. These approaches will be taken forward with the close involvement of patients and families and based on learning from a review of how it has engaged with the children, young people and families affected by the recent infection incidents.



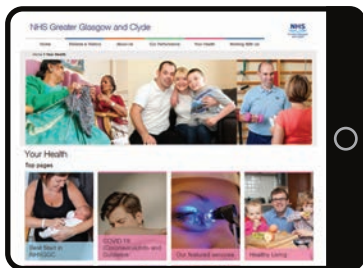
## (ii) Strategic communications planning

We will use insight to shape narratives, planning, horizon-scanning and evaluating – to tightly target and assess activity. Rigorous evaluation of all our communication activity is critical to ensuring that we understand what works well and what doesn't in achieving our objectives. We will understand and use analytics routinely to measure impact and focus priorities.

We will work closely with Scottish Government Health and Care Directorates, other NHS Boards and Health and Social Care Partnerships (HSCPs) to share evidence and learn from one another. We will also work with Healthcare Improvement Scotland – Community Engagement who play an important role in supporting Boards and Health and Social Care Partnerships in service user and public engagement.

## (iii) Continue to develop our external communications channels

### Our website



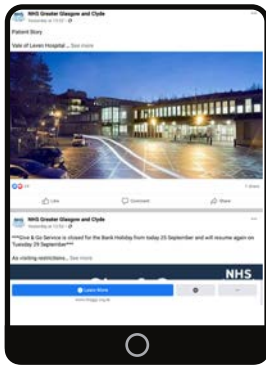
A website is often the first place that patients, public and job seekers go to learn more about an organisation. The NHSGGC corporate website has over **9.8 million visitors a year**. The site explains what we do, provides information about all our services and is the public repository of all Board papers. It also includes an online feedback system for the public to give their views about our services. We will continue to develop the site to ensure information is relevant, clear and easily accessible. We will also develop our corporate website to create dedicated engagement space where people can find information on how to get involved and share their views on particular topics to shape and influence service design and improvement, encouraging people to share opportunities to their peer network who may not have digital access.

### Social media



With social media increasingly influencing the way people consume information, our corporate sites are playing an increasingly important role in our external communications. Social media allow us to share information directly with our communities and enables them to interact with us. The Board has corporate social media accounts on all major social media sites, and also sponsors a number of accounts which are tailored to specific groups of patients and communities. We have seen the rapid growth of our followers on all our corporate social sites, which include Facebook, Twitter, YouTube and Instagram, in recent months and together they currently account for **audiences of more than 65,000**. We will continue to grow and develop these networks as trusted channels of communication. We will deliver a new social media strategy and set clearly identifiable goals for each social channel, informed by audience insight and engagement. We will work to create compelling content for our online audiences, tailored to their needs.





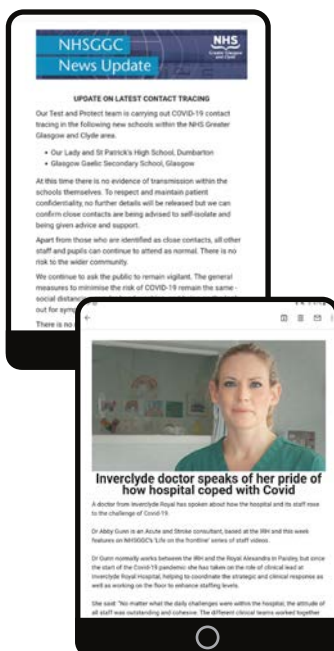
Although it is recognised that engaging through social media can be challenging, there is more we can do to improve the amount of two way interaction we experience via our platforms. We will look to ask more questions to start conversations, provide responses to incoming posts, answer questions on partner feeds to enhance engagement, ask for feedback on topics, and look into running polls particularly on emerging issues and providing more call to action on our posts.

There are also a variety of digital tools for online engagement. With the current social distancing restrictions in place, online engagement has become necessary and important. More work will be done on researching and testing these sites to assess whether they are suitable for engagement with our audiences.

### Involving People Network

A key aspect of our external communications strategy has been to grow the NMSGGC Involving People Network – our database of people and key influencers who wish to receive information directly from us – so that we can increase our direct-to-public communications. Our Involving People Network has been an important tool to enable us to engage with local communities for more than a decade.

It is used both as a broadcast medium and also as a means of seeking views and encouraging participation and feedback. Currently more than 100,000 individuals are registered on the Network. With open rates that regularly outperform the industry average, we are able to communicate with our own audiences quickly and regularly on issues of interest. We will continue to expand and grow this network. From this, we will develop a stakeholder management system to allow us to engage with individuals and groups based on interests, demographics and issues ensuring we are reaching all our communities and capturing their lived experiences.



### (iv) Deliver relevant information for our communities

NMSGGC serves a large population covered by six local authority areas. These local communities all have different areas of interest. Working in partnership with the HSCPs and local authorities, we will develop regular flows of information with specific communities, building on the monthly updates for the Vale and Inverclyde communities that are currently produced.

Over the next three years, we will develop regular targeted communications to ensure all communities are kept updated on key health and social care developments in their local areas using a mix of methodologies based on preferences.

Local media will play a key role in this and we will work with them on issues of local interest.

We will also explore the use of local online networks, such as community Facebook pages, to reach and engage with local communities.

## Case study

### Vale News and Inverclyde Health News

The Inverclyde and Vale e-newsletters were developed in conjunction with the respective local communities to ensure the public were informed about activities in their local areas.

A number of issues had been identified both in West Dunbartonshire and Inverclyde, with members of the public and local community groups feeling ill-informed about health care decisions and activities in their local areas.

Following engagement with both communities, it was agreed that a regular drumbeat of stories about health care in the local area would enable greater community involvement and awareness raising of the proactive and positive activity in each local area, as well as give NHSGGC the opportunity to myth bust a number of concerns that have been raised.

The newsletters were launched in the summer of 2020 and have been very well received.

### (v) Effective media relations

As an NHS organisation we are accountable to the public and need to work with the media to explain our role and be accountable. The media provides a valuable opportunity to reach people, raise awareness and encourage healthier lifestyles. It is therefore crucial that good media relations form one of the core objectives of our stakeholder communications and engagement strategy.

The media are both an audience and a communications vehicle with the capacity to bolster or damage a reputation. By working on a basis of mutual professional respect, we will work to build our relationship of trust with the media; not only feeding a steady stream of positive news stories but also being transparent and open when things go wrong.

We will provide a responsive and professional media relations service and will ensure that all our spokespeople are appropriately trained and adequately briefed prior to any media interviews. We will monitor press coverage on a daily basis and correct any inaccuracies or issue rebuttals, if and where appropriate. Our communications will reflect the Board's commitment to transparency and candour.

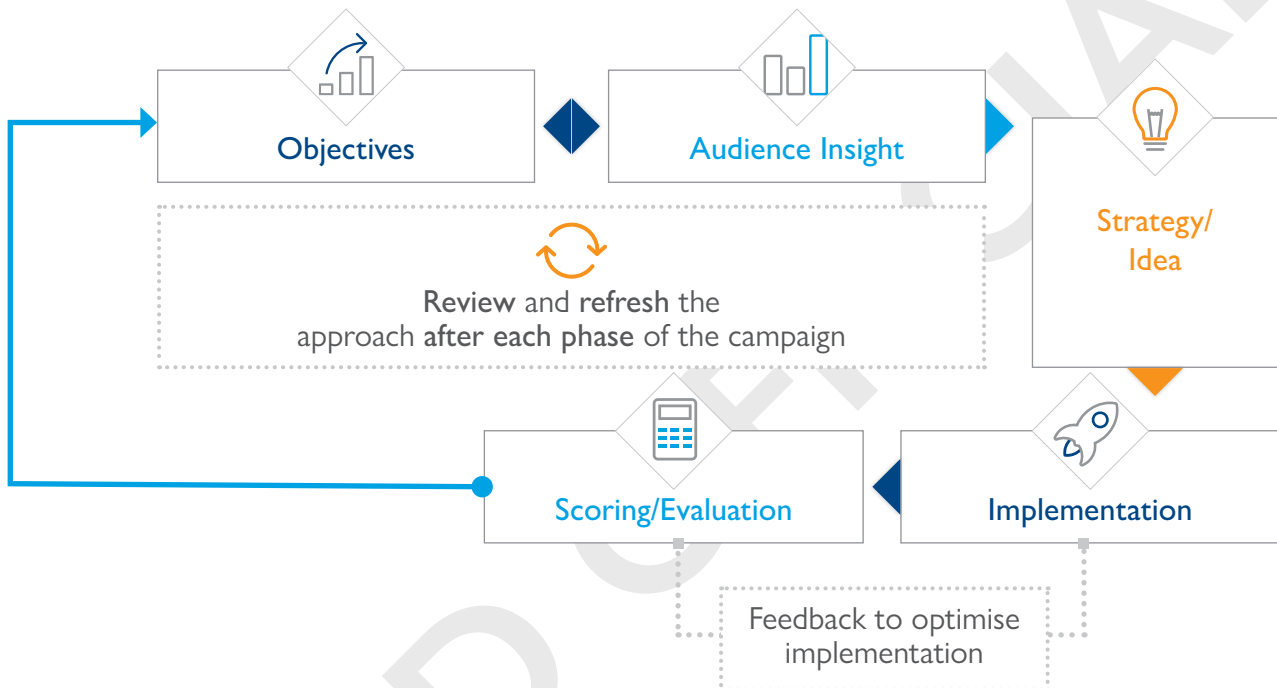
Video has grown significantly in use and now accounts for 69 per cent of all consumer internet traffic. Its success lies in its inherent 'shareability'. Engage viewers and they will share a video with others.

To provide content that can be readily used by print and online journalists, our press team will operate as a digital newsroom with press releases becoming the core script for a news package which routinely includes video and audio content for digital channels.

## (vi) Campaigns

Campaigns are planned sequences of communications and interactions that use a compelling narrative over time to deliver a defined and measurable outcome. Marketing and social marketing campaigns are used in health to persuade people to change their behaviour (for the good), to follow public health measures, and to support people to use our services effectively. We will continue to deliver insight-driven local campaigns and work in partnership with the Scottish Government and other Boards to deliver national campaigns with clear, consistent public messaging.

All campaigns will be planned using the OASIS framework (below). OASIS is a series of steps that can help bring order and clarity to planning campaigns. The aim is to help make the planning process rigorous and consistent.



Over the next three years we will deliver a range of campaigns to support people to use our services appropriately, including unscheduled care, GP Out of Hours, and our seasonal campaigns. We will also work with colleagues in Public Health to deliver a range of social marketing campaigns to support positive behaviour change.

## Case study

### Using feedback to improve the online feedback system

Work was undertaken in 2018-19 to improve uptake of the online patient feedback system by people with protected characteristics, particularly Black and Minority Ethnic (BME) people. The Equality and Human Rights Team engaged with 135 BME people over 4 language groups as well as 20 sessions with third sector BME agencies. The sessions demonstrated how to use the feedback system and gathered real time feedback at the events. In all, 90 staff for third sector organisations attended. Since 2017-18 there has been a seven fold increase in the feedback from BME groups. Additionally over the life of the Equality Scheme our BSL Mediator worked directly with 229 contacts with Deaf people addressing barriers to services often in real time. This feedback augmented the online patient feedback system as many Deaf people are not able to give their feedback in written English.

## (vii) Communicating in an emergency

In the event of a major incident effective and responsive communications will impact directly on public perception and confidence in NHS Greater Glasgow and Clyde. Communications plans for such events need to be adaptable to take account of as broad a range of scenarios as possible, although no two incidents will ever be the same. A major incident communications plan forms part of the Board's major incident plan. It will be reviewed regularly to ensure it is fit for purpose and able to respond to a fast-moving media environment.

## c. Building and Strengthening of Engagement

### (i) Listening to our patients

At NHSGGC we are committed to listening to and learning from people's experiences of our services. These experiences not only help us to understand what we are doing well, they help us identify where we could be doing better and help influence service development and improvements.

Key systems for the gathering of feedback are the NHSGGC Corporate Feedback System, the Care Opinion platform and social media and, importantly, conversations between staff and patients at point of care.

Alongside 'The Pursuit of Healthcare Excellence' Quality Strategy, this document will work to support NHSGGC in the capture of and learning from feedback. Staff across NHSGGC will be empowered and encouraged to draw on the lived experiences of patients, carers and those that matter to them to develop and improve services in real time at point of care.

Care Opinion is our main mechanism to support us to embed our Listening and Learning culture across NHSGGC, by allowing patients and carers to interact directly with staff about their experiences of care in a safe and anonymous manner. Care Opinion has now been added to the ward iPad home screens that were procured to facilitate person centred virtual visiting. This will enable ward teams to promote Care Opinion at the point of care and provide patients with the opportunity to share their experiences and give feedback prior to being discharged home.

We will also continue to raise awareness of the different ways that patients and carers can share their experiences via Care Opinion and all feedback sources at service and corporate levels through a range of communications approaches, with the roll out of Care Opinion to ward iPads a key success that will be further embedded to drive up learning from unsolicited feedback. Patients will still be able to share feedback via more traditional means if preferred.

We know from experience and evidence that focusing on what really matters to people can lead to big improvements for people and communities, and the quality and effectiveness of care.

NHS Greater Glasgow and Clyde, specifically paediatrics and older people's care, have been at the forefront nationally and internationally in developing tools that provide a consistent and reliable process around 'what matters' conversations.

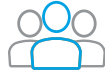
We also know that this approach is good for the people who provide support and care, enabling them to work to their values and bringing deeper satisfaction to daily work.

We will also continue to embed the principles of the What Matters to You to encourage and support meaningful conversations between people who provide health and social care and the people, families and carers who receive such care.

## (ii) Engaging well

Community engagement is a purposeful process which develops a working relationship between communities, community organisations and public and private bodies to help them identify and act on community needs and ambitions. It involves respectful dialogue between everyone involved, aimed at improving understanding between and taking joint action to achieve positive change.

Our wider approach to public engagement and involvement will follow CEL4 guidance and the national standards for Community Engagement, which are:



**We will identify and involve the people and organisations** that are affected by the focus of the engagement, drawing on equalities data collected by services



**We will identify and overcome any barriers to participation**, working with communities to overcome any that are identified



**There is clear purpose for the engagement**, which is based on a shared understanding of community needs and ambitions



**We will work effectively together** to achieve the aims of the engagement



**We will use methods of engagement** that are fit for purpose



**We will communicate clearly and regularly** with the people, organisations and communities affected by the engagement



**We will assess the impact of the engagement** and use what we have learned to improve our future engagement.

Healthcare Improvement Scotland – Community Engagement works alongside NHS Boards and integration authorities to ensure engagement with local communities throughout changes to services and provide assurance that people and communities have been involved in any major service change.

They help equip staff to engage well, and provide guidance, tools and techniques to involve people in shaping the services, including people who are often not involved are reached. They provide training and support to staff to develop skills in community engagement or specific participation tools.

Healthcare Improvement Scotland – Community Engagement will be a key partner in the delivery of our Strategy and have contributed to its development.



Based on these national standards, and on the Healthcare Improvement Scotland – Community Engagement Participation Toolkit, we will develop an NHSGGC stakeholder engagement framework and associated training programmes to equip and support our staff to apply consistent approaches when engaging stakeholders.

We will train staff in the use of the toolkit and develop the role of the Patient Experience Public Involvement (PEPI) Team as expert advisors on local engagement. The PEPI Team will also support the delivery of corporate engagement exercises, including formal consultation processes.

### (iii) Engaging differently

Community engagement methods are wide ranging, but many involve face-to-face, in-person engagement however in response to the current COVID-19 pandemic, social distancing measures have been introduced. As a result of these measures, any face-to-face community engagement activities to inform health and care services or national policy will not be hosted or supported until it is safe to do so. We need to engage differently.



This will include utilising a variety of tools to create two way dialogue through online and digital engagement, for example:

- Using social media to ask for feedback or start a conversation
- Hosting online Teams or Zoom focus groups working to support inclusive engagement with those who may be less comfortable using technology
- Exploring the feasibility of developing and testing an online citizen's panel approach to engagement, which would allow us to reach a representative sample of service users throughout the year to gauge their views and opinions on key areas of service development across NHSGGC.

These digital-first approaches to engagement will be used in addition to traditional non face-to-face methods, allowing NHSGGC to deliver a blended approach to how we engage and continue to tailor our engagement to best suit the needs of our stakeholders. When developing our communication and engagement plans, we will consider who our key stakeholders are to help inform how we plan and design our engagement approach to ensure it is meaningful and accessible.

It should be noted that Healthcare Improvement Scotland have completed an Equality Impact Assessment of a digital-first approach to community engagement and this will be of value in planning and designing NHSGGC activity.

## Case study

### Obtaining patients' views on new ways of working during COVID-19

Key stakeholder engagement has been fundamental in the COVID-19 response and remobilisation planning in NHSGGC. In developing the Remobilisation Plan early and ongoing engagement with NHSGGC's Stakeholder Reference Group, drawing on their experiences is key to ensuring the public voice is present from inception and through implementation of the plan.

As part of our initial engagement the Patient Experience Public Involvement (PEPI) Team are also delivering on a programme of stakeholder engagement to evaluate new ways of working that have been implemented in response to the COVID-19 pandemic. These were commissioned by the Recovery Tactical Group, with the PEPI Team gathering the views and experiences of patients and staff in relation to the following remobilisation work streams:

- Signposting pathways for unscheduled care within community and acute services
- Use of Virtual Consultations and Near Me
- GP Out of Hours – use of the appointment system and Near Me.

As part of the stakeholder engagement work, the PEPI Team are working closely with the Equality and Human Rights Team to ensure our engagement approaches are accessible and support us to reach our diverse patient groups. In addition, the Equality and Human Rights Team are also carrying out discrete pieces of engagement to capture the views and experiences of protected characteristic groups who have recently used Near Me including patients whose first language isn't English. We are committed to listening and learning from the views and experiences of our staff and patients and other key stakeholders and will draw on them to influence how we shape and embed new models of care, ensuring a person centred approach to how we design and deliver services.

#### **(iv) Focus on collaboration in delivering engagement**

Many organisations within Greater Glasgow and Clyde undertake public engagement or consultation including the six HSCPs, the local authorities, Scottish Ambulance Service and the third sector. It is of benefit to us all to work collaboratively and share opportunities, which will save time, public money and cause less inconvenience to the public. A recent example of this was the joint HSCP and NHSGGC engagement sessions when the public were invited to give their views on the HSCP draft strategic plans and the Board's Moving Forward Together Strategy.

We will continue to work with partner agencies to develop support communities to engage with us, including HSCPs and third sector. We will develop better partnership working with health and social care and third sector partners to co-design strategic approaches to patient and public engagement.

NHSGGC provides a number of specialist regional and national services and will work in partnership with the referring Boards on potential service changes that may impact on their residents.

#### **(v) Giving all our stakeholders a voice**

Our engagement activities will include appropriate and proportionate representation from across our diverse communities. This will include those stakeholders with legitimate concerns who struggle to get heard, the 'dependent stakeholders'. There is a danger that only the most motivated groups, strongest opinions or loudest voices are heard or considered. It is important to involve everyone with an interest, especially those individuals and communities whose voices are more seldom included. Without a full range of perspectives, decisions may be unfairly balanced in favour of certain groups – or may unwittingly create barriers for others. We will work with partners, including the Consultation Institute, third sector (including key national health charities), community planning partners, advocacy groups, and elected representatives to develop approaches to support all those affected to have a voice.

#### **(vi) Learning from lived experiences**

A key component of all engagement activity will be the capture of recent lived experiences, to ensure we have as well-rounded a view of our services as possible when designing and delivering engagement activities. Placing these lived experiences at the heart of our work will allow NHSGGC to explore and learn what is working well and where we could improve, while ensuring services remain responsive and effective for those who use and need them most.

To ensure continual development of best practice when capturing these lived experiences we will work with key partners across NHSGGC, including HSCPs and third sector groups such as the ALLIANCE to explore how we can share learning with each other and ensure the lived experience of people is at the heart of our services.

A key area we are keen to learn from and explore is the work carried out by HSCP colleagues to better involve those with lived experience of homelessness and community justice through dedicated engagement activity and assertive outreach programs in partnership with key community partners. These active outreaches focus on positive outcomes and mentoring from those with lived experience and ensuring people feel empowered to achieve positive change. NHSGGC will work with HSCP colleagues to draw out key learning points and explore how we can apply these different ways of working to help achieve greater public engagement across NHSGGC and ensure the voices of those with lived experience and from marginalised groups have the opportunity to influence and shape service developments.



## Case study

### Community Justice: Positive Outcomes

During the last year, following a service review, the Persistent Offender Project was renamed the Positive Outcomes Project, to reflect the aspiration for individuals engaging with the service to achieve sustained positive outcomes in their lives. The service seeks to stabilise at risk drug and alcohol misusing offenders by supporting them into mainstream addiction services. The overall aim is to reduce addiction related offending, improve their quality of life and support them into training and employment opportunities.

Following the review, the service have employed a 'lived experience mentor', who has real life experience of the kind of problems service users face and is working closely with social work and police teams to identify and engage with individuals who could benefit from the service. The individuals who the mentor engages with know that they have a real understanding of their situation and how difficult yet possible, it is to positively change. This instils a real sense of hope for clients who may feel trapped in the vicious cycle of offending and outcomes to date have been very positive.

## Case study

### Homelessness: Rapid Rehousing Transition Plan (RRTP)

Glasgow's Rapid Rehousing Transition Plan was developed in response to the Homelessness Rough Sleeping Action Group recommendations (HARSAG) which had been established by the Scottish Government. These Plans are to be the subject of an Annual Review with the first Review presented to the IJB in January 2020. Key achievements outlined within the Annual Review include the following:

- Renewed investment in the Housing Options Agreement to enhance staffing within the Prison Casework Team and improve pathways to settled accommodation
- Agreement reached to create additional posts within Community Homelessness Service (CHS) to support the development of Housing Options
- Worked with Vanguard Consultants to develop a revised CHS operating model, which when implemented will see improvements in service user experiences and will support the reduction in length of stays within temporary accommodation
- Part-funded the Private Rented Sector (PRS) Hub aimed at supporting tenants at risk of homelessness as a consequence of welfare reform
- Created a Universal Credit (UC) Support Team in order that service users with transient lifestyles are supported to make and sustain a claim for UC
- Agreed a Rapid Rehousing Transition Plan resource framework
- Housing First Partnership and service pathways was operational with 53 people accessing Housing First tenancies
- Enhanced staffing levels within front-line homelessness services.

## Case study

### Caledonia Project

In March 2019 the Caledonian Team in Glasgow became operational. The Caledonian System is an accredited integrated approach to address men's domestic abuse and to improve their lives and their families. It represents a fundamentally different way of managing perpetrators of domestic abuse in Glasgow. Over the two year programme, a range of individual and group interventions are provided to men which focus on reducing the risk of future abuse. Female partners, ex-partners and children are also supported by a women's services worker who focuses on their physical safety and psychological health and wellbeing. Work is also underway on the development of 58 interagency protocols coupled with training, designed to maximise women's and children's safety and reduce the likelihood of men's re-offending.

Activity since April 2019, the Caledonian team have completed 277 Caledonian Assessments & 251 Court Reports to assist with sentencing perpetrators of domestic abuse. They are currently working with:

- 97 women in relation to safety planning and support
- 26 children who have been affected by domestic abuse
- 135 men subject to Community Payback Orders with a programme requirement to engage with the service.

There is work ongoing to provide the national Caledonian Team with outcome measures, including feedback from partners/victims in relation to the system's efficacy. This data will be used to support the ongoing evaluation of the programme moving forward. This will include information to monitor whether risk is increasing or reducing; the impact upon actual behaviour at home; and the impact on the children involved.

### (vii) Inclusive engagement

Public authorities covered by the Equality Act (2010) are directed to engage with people with different protected characteristics for three reasons: firstly, to create an evidence base for setting equality outcomes and mainstreaming actions; secondly, to capture the impact of policy or service change, and thirdly, to find solutions, overcome barriers and to identify ways to mitigate adverse impacts on certain groups. The Equalities and Human Rights Team will continue to work with colleagues to mainstream a sensitised approach to engagement and deliver on our duties under the Act.

Providing our diverse communities with equitable opportunities to engage and participate will be underpinned by an awareness of unconscious bias. Checks and balances will be put in place to question risk of cultural stereotypes, carefully consider reasons for decision making and monitor decision makers for unconscious bias.

## Case study

### Involving BSL users

In October 2018 NHSGGC published its first British Sign Language (BSL) Action Plan as part of our duty under the BSL Scotland Act 2015. In order to develop the plan, the Equality and Human Rights Team held 10 public engagement events with BSL users over a five month period. This included two in Glasgow City and one each in Inverclyde, East Renfrewshire, Renfrewshire, East Dunbartonshire and West Dunbartonshire in collaboration with Health and Social Care Partnerships and Local Authorities where possible. In total, more than 100 BSL users participated in these events to inform the plan.

### (viii) Working with key stakeholder groups

MSPs and MPs are an important group of stakeholders as they represent the public locally and, work on behalf of their constituents to hold NHSGGC to account. They are key influencers within communities, with a significant profile both online and in traditional media. A priority will be to enhance our relations with politicians representing NHSGGC constituencies, building on the regular weekly written briefings that have been developed through the pandemic to develop an open, two-way regular dialogue. A regular programme of engagement with elected members has been refreshed.

Local authorities are partners in the delivery of health and social care and we will continue to work collaboratively with the six local authorities in our area and through the Integration Joint Boards deliver joint decision making and accountability on community health and social care services that are run by HSCPs.

Elected by the community, local councillors play an important role in representing the public interest and in making decisions about local services. As such, it is important to ensure that they are well informed about the Board's activities and can engage with the organisation on matters of local interest to them.

Similarly, the third sector and charities are also key representatives of specific groups of people and causes. A hugely diverse group, charities can provide detailed information around key challenges faced by patients, access to patient groups and a support for public engagement. Members of the public who are engaged with a charity often have a personal reason for engagement and therefore tend to be much more interested and active. Through stakeholder mapping and effective engagement planning, charities will be invited to play a central role in our engagement activities.

## d. Building our Reputation

Corporate reputation is best defined as the collective sentiment surrounding a company. It's an amalgamation of stakeholder opinions, public perception, past actions, word of mouth, and published content that, ultimately, labels a business as "good" or "bad."

As we strengthen and improve our communications and engagement, then we would expect to see a shift in public perceptions about us.

An organisation's reputation, however, is built not only on its behaviours and its communications but also on its performance.

A distinct part of communication and engagement activities over the next three years will be to promote the Board's performance and achievements in order to enhance the position of the organisation. This will focus on the authority and expertise of our people and the high quality of care we provide. This will be delivered through proactive and reactive media relations, marketing activity, thought leadership opportunities, high quality information, effective engagement and proactive management of complex and contentious issues. We will monitor, manage and analyse online reviews and social media comment. Using social listening tools, we will develop reporting to capture key stakeholder online sentiment about NHSGGC.

For an organisation's reputation it is equally important to acknowledge when things go wrong, to be open and transparent in such circumstances, to handle the situation with empathy, and to take responsibility for the mistake.

Our reputation management strategy will also include an assessment of reputational risks and the development of approaches to manage and mitigate these risks.

## 8. Roles and Responsibilities

At a Board level, the NHS Board is made up of a diverse range of individuals from a variety of backgrounds with our non-executive Directors recruited as members of the public. We seek to ensure a balanced skill set, including individuals with communication and engagement background to maximise our expertise in this area. The Board has the responsibility to oversee all activity with a key element of the role of the Board to effectively engage and communicate with all stakeholders.

At a corporate level, communications and public engagement is led by the Director of Communications and Public Engagement. **This is a newly created post to strengthen senior leadership of our public engagement strategy.**

The Director provides strategic advice to the Executive Team and the NHS Board on stakeholder engagement, delivers the Board's strategic communications and engagement strategy and develops stakeholder handling and engagement strategies for high-profile and often complex issues.

Working to the Director, the Board's Corporate Communications Team has a number of key functions:

- Proactive and reactive media handling including a 24 hour on-call service, media monitoring and relationship building, liaison with SG communications and other local partners and other stakeholders, responding to all media generated Freedom of Information requests
- Preparation for emergency comms handling with full remote capability
- Internal communications to 38,000 staff
- Digital communications, including full technical support and information population of the NHSGGC website, and corporate social media and YouTube accounts
- Creating and delivering fully integrated campaigns for staff and the public
- Event management, including Ministerial visits, Royal visits, Celebrating Success Event(s), Annual Review
- Graphic design.

The Patient Experience Public Involvement Team also report to the Director for Communications and Public Engagement. The team is responsible for the Board's corporate public engagement programme. They also provide training, support and expert advice to staff on local engagement and involvement activities along with best practice advice on ensuring they are reaching as wide a range of their service users as possible.

Reporting to the Director of Public Health, the Equality and Human Rights Team are responsible for engaging with people with different protected characteristics as part of our responsibilities under the Equality Act (2010). This engagement creates an evidence base for setting equality outcomes and mainstreaming actions, captures the impact of policy or service change through a formal EQIA process and to ensure an understanding of the impact of decisions on different people and helps the Board to find solutions to overcome barriers and to identify ways to mitigate adverse impacts on certain groups. The Equality and Human Rights Team also support other teams and services across NHSGGC to be able to engage with those with protected characteristics.

An overarching Stakeholder Reference Group, set up to contribute to the development of the Board's clinical strategy, Moving Forward Together, supports and guides NHSGGC in our engagement processes. The Group is composed of Public Partners – service users, patients and carers, representatives from patients' and carers' groups, or community groups that have an interest in health and social care and is chaired by one of the Board's two Vice-chairs.

The purpose of this Group is to:

- Act as a sounding board by hearing about and providing feedback on early concepts and ideas to transform health and social care services
- Advise us on the development of information materials and resources for wider public use making sure they are fit for purpose and easy to understand
- Advise us on how we might inform and engage more widely with the public, to communicate back to their organisations, peers, friends and families and to play a role in wider public communication.

Stakeholder Reference Groups are also established for specific change proposals to guide and advise on the engagement process to be followed. These groups are composed of patients, carers, representatives from the Third Sector, patients' and carers' groups, community and any other associated groups that are potentially affected by a service change proposal.

## Case study

### **Transfer of Paediatric Inpatient and Day Cases from Ward 15 Royal Alexandra Hospital to Royal Hospital for Children – Service Change**

To support the engagement and formal consultation process around proposed changes to Paediatric Services at the Royal Alexandra Hospital, a Stakeholder Reference Group was set up. The membership included staff, parents, carers and members of interested groups and their role was to advise on how best to inform and engage with patients, families and the public about the proposal. This included helping to shape information materials to convey the clinical case for change. The group worked to ensure that there were different ways that parents, families, the public and third sector organisations could make their views known about the proposal.

Engagement and consultation activities included; Drop in sessions in Ward 15 for families to hear more about the drivers for change and share their views; Public Events which were led and facilitated by the Clinical Leads; dedicated web pages where people could find out more about the proposals and how to get involved to share their views; regular e-bulletins that were cascaded widely across community groups and networks; distribution of leaflets in every GP surgery, pharmacy and library in Renfrewshire and Inverclyde. Engagement was also carried out with children and young people to help understand what was important to them when in hospital to help inform the proposed changes.

The Consultation process concluded in February 2017 and based on the findings the Board voted in favour of the proposed change. This was approved by the Cabinet Secretary for Health, Sport and Wellbeing in January 2018.



## 9. Outcomes

Delivery of this strategy will result in:



**Better health outcomes for patients, carers and the public** across NHSGGC through delivery of co-designed services, developed with the public voice at their core



**Person centred services** designed and developed around the needs of the people and communities using them most



**Better two-way dialogue** with key stakeholders, improving our ability to listen to external views and identify and mitigate risks to support



**Better services** as a result of early engagement with stakeholders and listening to their views



**Greater stakeholder engagement**, support and advocacy. External organisations know our story



**Better reputation measurement**, allowing us to track how we are doing on engagement in the short and medium term.

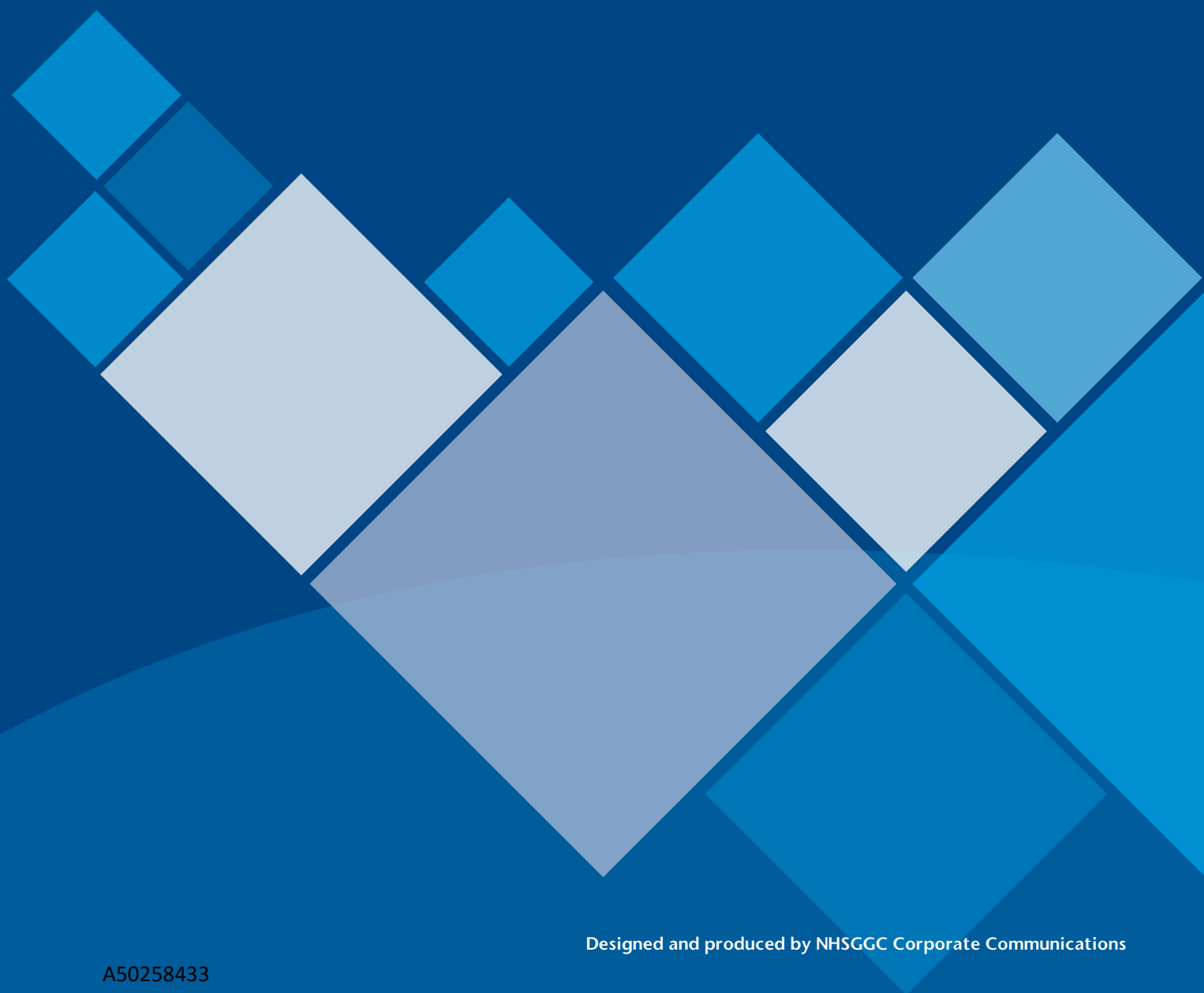
## 10. Monitoring and Evaluation

The strategy will be delivered through an annual delivery plan.

Progress reports on the strategy and delivery plans will be presented to the Executive Management Team, the Corporate Management Team, the Finance, Planning and Performance Committee and the Board on an annual basis. The progress reports will focus on monitoring the objectives outlined in section 7.

Progress will be measured against outputs from activities, the outcomes of the activities and the organisational impact. Specific project updates will also be shared with relevant Committees or Groups as appropriate.







## Issue Log Review Meeting

15.1.21

Attendees: Angela Wallace; Ton Steele; Teresa Inkster; Christine Peters

Facilitation: Jenny Copeland; Terri Hunter

No	Log no.	Topic	Action	Owner	Update
1.15.1.21	2	NICU	Was suggestion to change to trap device taken on board if Y/N relation to be provided	TS	
2.15.1.21	3	General statement	TS to share the external thermal imaging scan of the building	TS	
3.15.1.21	3		It is essential that any reports of concern are reported, recorded and escalated as a matter of urgency.	FIO	
4.15.1.21	4.1	ITU	TS to arrange a visual inspection of RDU outlets and where there are signs of water ingress.	TS	
5.15.1.21	4.2	ITU 4C	Continued discussion is required re Neutropenic Patients in 4C. AW to explore where best to conduct the exploration  AW to with Tom Steele create a discussion and consideration space to explore further potential of Ward 4c	AW	
6.15.1.21	4.4		High risk patient areas: Filters in ITU: Patient and isolate to be matched  Acknowledge what is being done already How do we go forward: Tighten up link between patient and water testing? How do we protect niche clients? National guidance review	TS/HFS	
7.15.1.21	8	Historical issues with current potential consequence	TI to clarify specific rooms to be classified for use	TI	
8.15.1.21	8		TS to liaise with Darryl to clarify what is required (2016 report) PPVL Rooms	TS	
9.15.1.21	8.2		AW to ascertain status re air sampling in which area?	AW	
10.15.1.21	8.5		TS to clarify with Gerry re decision at Board Water Technical Group and evidence re lack of biofilm.	TS	
11.15.1.21	8.8		TS to clarify status of bronchoscopy endoscopy unit	TS	

## Issue Log Review Meeting

15.1.21

Attendees: Angela Wallace; Ton Steele; Teresa Inkster; Christine Peters

Facilitation: Jenny Copeland; Terri Hunter

12.15.1.21	8.8		TS to clarify membership of <b>Critical Ventilation Group</b> verification group from IC	TS	
13.15.1.21	8.9		Respiratory physiology lab: Room identified in children's hospital: Clarify status <b>of completion</b>	TS	
14.15.1.21	F	Theatres doors	TS and CP to explore how best to provide assurance CP to recover original document.	CP	
15.15.1.21	H	Chilled Beams	TS to confirm if <b>BMS</b> has been reconfigured any previous <b>condensation</b> issues re summer 2020		
16.15.1.21		IPC issues	AW to arrange a review meeting to discuss and sign of IPC related issues  <b>AW to arrange a process to discuss and update the IPC issues on the historical log</b>	AW	
17.15.1.21		Collaboration	How does GGC create collaboratively utilising skills and knowledge e.g. <ul style="list-style-type: none"> <li>• Fabric</li> <li>• Water</li> <li>• Ventilation</li> </ul> <b>AW to lead a conversation within NHS GGC that connects, utilises and builds good communication and opportunities to use expertise across the clearer safe environment as part of the gold and silver command</b>	AW	
18.15.1.21		Ongoing reviews	Arrange dates for future log review and sign off	AW	

---

**From:** INKSTER, Teresa (NHS GREATER GLASGOW & CLYDE) [REDACTED]  
**Sent:** 20 May 2020 16:23  
**To:** WALLACE, Angela (NHS FORTH VALLEY); PETERS, Christine (NHS AYRSHIRE AND ARRAN)  
**Subject:** Re: Duty of Candour  
**Attachments:** Notes from Duty of Candour SLWG meeting all comments (1).docx; DOC algorithm V3 20.5.19.pptx

Hi Angela, I have attached previous work on duty of candour. I don't know what has happened in terms of progression of this work. What is not considered is the situation we have described recently when post mortem results become available and how these would be fed back to HPS/SG

kr

Teresa

Dr Teresa Inkster  
Consultant Microbiologist, QEUH  
National Training Programme Director Medical Microbiology  
Dept of Microbiology  
Queen Elizabeth University Hospital  
Glasgow  
Direct dial : [REDACTED]

---

**From:** WALLACE, Angela (NHS FORTH VALLEY)  
**Sent:** 18 May 2020 22:21  
**To:** PETERS, Christine (NHS AYRSHIRE AND ARRAN)  
**Cc:** INKSTER, Teresa (NHS GREATER GLASGOW & CLYDE)  
**Subject:** Re: Duty of Candour

Oh yes please re any previous DOC work... I was in the sub group with Craig but not seen the final output  
Think Ayrshire and ARRAN colleague's shares their work too

Much appreciated

Kindest

A

Sent from my iPhone

On 18 May 2020, at 21:55, PETERS, Christine (NHS AYRSHIRE AND ARRAN) [REDACTED] wrote:

Thanks Angela for your time in responding - and for all your hard work in a complex situation . I do recognise change takes time and I hope we always engage in a helpful way, in bringing focus to the patient centred issues, some of which are urgent.

Regarding the DoC policy - Teresa could maybe forward the one she had been working on before resignation which may be a good starting point .

I look forward to catching up tomorrow ,

Kr

Christine

---

**From:** WALLACE, Angela (NHS FORTH VALLEY)  
**Sent:** 18 May 2020 20:50:29  
**To:** PETERS, Christine (NHS AYRSHIRE AND ARRAN)  
**Cc:** INKSTER, Teresa (NHS GREATER GLASGOW & CLYDE)  
**Subject:** RE: Duty of Candour

Hello Christine and Teresa

Thank you for this and i do appreciate your support and challenge.

I am as you both know systematically trying to get behind the issues, get answers and support people to respond differently. I know as this is not immediately helpful for this situation in relation to these children and families, but i did say i would look into this and deal with this now.

This is reflected in the email trail. I thought both you and Teresa's contribution was clear and helpful and the response from Sandra to take things forward positive.

I am asking people to work as a team, as you suggest, and that is what i am seeking to achieve as routine. I do appreciate the clinicians role in relation to the individual patient and their loved ones but i am determined to have a process and way of working that the wider team is involved and we are all clear in that regard. I do think this forms part of the work and outputs of the oversight board for GGC to have a duty of candour HAI which we can implement in GGC and across NHS Scotland  
Christine, I note both points of challenge and concern, i am seeking to have these answered, i don't have enough information, as you quite rightly suggest, but i am committed to understanding this. Although the micro/ict meeting did not happen last week, i had to delay a little to ensure i had spent enough time with senior managers to create the conditions that the meeting is supported and sustained. The zero meeting will happen this week, so just a little behind and i do hope that space will allow active engagement and working through of these types of critical areas and be a place that will drive both learning and improvement.

I will keep supporting all to answer these key questions as promised

I hope this is helpful at this time

Kindest regards as always

Angela

---

**From:** PETERS, Christine (NHS AYRSHIRE AND ARRAN)  
**Sent:** 18 May 2020 17:11  
**To:** WALLACE, Angela (NHS FORTH VALLEY)  
**Cc:** INKSTER, Teresa (NHS GREATER GLASGOW & CLYDE)  
**Subject:** Fw: Duty of Candour

Hi Angela,

I do not think this is a reassuring email trail. It is not clear to me if as a Micro team we had not pursued the issue whether the fact that both these children had HAIs and that these were the cause of death would have been picked up and actioned. Given how much interest by SG there is in this issue and in fact these particular cases, I really hope I am wrong about that, but the communications we saw :

1. did not mention Acinetobacter as an issue to the pathologist whilst it was the organism of interest in both terms of PM microbiology and the same type as another patient
2. did not recognise the serratia as an HAI at all.

Furthermore I am not sure why Pamela would suggest it is specifically up to Teresa and I to follow through on Duty of Candour (there are other Microbiologists available!). I hope you agree that If we have authorised results, given clinical advice and PM interpretation, it seems only reasonable to have a closed loop of information coming back to assure that such an important conclusion has been openly and transparently dealt with, as I now believe/hope it will be.

kr

Christine

---

**From:** PETERS, Christine (NHS AYRSHIRE AND ARRAN)  
**Sent:** 18 May 2020 16:51

**To:** Devine, Sandra; [teresa.inkster](#) [REDACTED] WALLACE, Angela (NHS FORTH VALLEY); Rodgers Jennifer (NHS GREATER GLASGOW & CLYDE); Redfern James (NHS GREATER GLASGOW & CLYDE)

**Cc:** Joannidis Pamela (NHS GREATER GLASGOW & CLYDE); VALYRAKI, Kalliopi (NHS GREATER GLASGOW & CLYDE); Leanord Alistair (NHS GREATER GLASGOW & CLYDE)

**Subject:** Re: Duty of Candour

Thanks Sandra,

regarding Duty of Candour, Microbiologists are usually involved in discussions with the clinicians if there have been errors in the lab that have had impact on the patient. ICDs would have this role when HAI is involved given their role in the PAGs/IMTS.

It is important to work as a team so that there is visibility regarding 1. the fact that these are indeed HAI cases (ICD) 2. the likely role of the infection in the clinical outcome (microbiologist involved in assessing this as part of duty role) 3. that there has been a communication with the pathologist and clinical team regarding these (ICD with comms to Micro team to close the loop).

The concern with these cases was that it was unclear that they were considered to be HAI cause of death with organisms which had been investigated as part of an outbreak, and it seems clear from the PM and clinical history that this was the case.

I am grateful to the IPCT for taking this forward,

kr

Christine

**From:** Devine, Sandra <[Sandra.Devine](#) [REDACTED]>

**Sent:** 18 May 2020 16:29

**To:** [teresa.inkster](#) [REDACTED] WALLACE, Angela (NHS FORTH VALLEY); Rodgers Jennifer (NHS GREATER GLASGOW & CLYDE); Redfern James (NHS GREATER GLASGOW & CLYDE)

**Cc:** Joannidis Pamela (NHS GREATER GLASGOW & CLYDE); VALYRAKI, Kalliopi (NHS GREATER GLASGOW & CLYDE); Leanord Alistair (NHS GREATER GLASGOW & CLYDE); PETERS, Christine (NHS AYRSHIRE AND ARRAN)

**Subject:** Re: Duty of Candour

Hi teresa

Presumably the pathologist should now be in contact with clinicians and W & C SMT and we can then provide info re was this part of an incident. I believe Pepi has already given advice to pathologists. As suggested I will contact CG to find out if they have any additional information.

KR

Sandra

Sent from my BlackBerry 10 smartphone on the EE network.

**From:** Inkster, Teresa

**Sent:** Monday, 18 May 2020 16:21

**To:** 'WALLACE, Angela (NHS FORTH VALLEY)'; Devine, Sandra

**Cc:** Joannidis, Pamela; VALYRAKI, Kalliopi (NHS GREATER GLASGOW & CLYDE); Leanord, Alistair; [christinepeters](#) [REDACTED]

**Subject:** RE: Duty of Candour

Hi,

The responsibility for DOC lies with the patients clinician. However in terms of interpretation of the results for the pathologists who are querying the significance of PM microbiology, HAI status and what typing results mean, only the ICDs can assist with this as they have knowledge of these incidents. Similarly, with any feedback to HPS/SG if part of an incident.

Kr

Teresa

**From:** WALLACE, Angela (NHS FORTH VALLEY) [REDACTED]

**Sent:** 18 May 2020 15:38

To: Devine, Sandra [REDACTED]  
 Cc: Joannidis, Pamela [REDACTED] VALYRAKI, Kalliopi (NHS GREATER GLASGOW & CLYDE) [REDACTED] Inkster, Teresa [REDACTED]  
 Leanord, Alistair [REDACTED]

**Subject:** [ExternaltoGGC]Re: Duty of Candour

Thank you Sandra

This would be ideal if we could do this.

It might be helpful to connect too with CG lead as he was working on this in support of the SG oversight group- sub group on communications in relation to HAI in GGC

Happy to discuss of course

Kindest regards

Angela

Sent from my iPhone

On 18 May 2020, at 15:09, Devine, Sandra <[Sandra.Devine@\[REDACTED\]](mailto:Sandra.Devine@[REDACTED])> wrote:

Hi

If you would like me to forward this enquiry to Neil Spenceley/Jen/Jamie can you let me know please. This is not information we currently collect or have specific access to but I'm sure the clinical team will assist if this is required.

Kind regards

Sandra

Sandra Devine

Acting Infection Control Manager

NHS Greater Glasgow & Clyde

[REDACTED] (PA Ann Lang)

**If you require an urgent response can I please ask you to telephone me as I am often in meetings and away from the office and unable to check voicemail until the end of the day. Thank you**

---

**From:** Joannidis, Pamela

**Sent:** 18 May 2020 15:02

**To:** VALYRAKI, Kalliopi (NHS GREATER GLASGOW & CLYDE)

**Cc:** Devine, Sandra [REDACTED]

**Subject:** RE: Duty of Candour

Hi Pepi

The responsibility for Duty of Candour lies with the clinical team and directorate SMT. This will be done with the parents where applicable at a time most suited to the parents.

It would be appropriate therefore for Christine and Teresa to contact the clinical team in the first instance. I have copied in Sandra as ICM in case this is not the case!

Pamela

---

**From:** VALYRAKI, Kalliopi (NHS GREATER GLASGOW & CLYDE)

**Sent:** 18 May 2020 12:06

**To:** Joannidis, Pamela [REDACTED]

**Subject:** [ExternaltoGGC]Duty of Candour

Hi Pamela,

In our consultants' meeting at micro it was discussed that we have had 2 pathology requests for clarification of some micro results for 2 children that have sadly passed away.

There is one serratia and one acinetobacter ( that will be written on the DC ) which are HAIs for RHC.

Teresa raised Duty of Candour regarding these cases ensuring this has been followed up.

I was asked to take this forward as ICD.

The CHI numbers of the patients are

[REDACTED]

Thank you

Pepi

**Notes from Duty of Candour SLWG meeting 24/2/19**

**Present**

**Dr Teresa Inkster, Lead ICD, GGC (chair)**

**Susie Dodd –Lead IPCN, RHC**

**Lynn Pritchard –Lead IPCN QEUH**

**Ann Kerr- Lead Surveillance nurse, GGC**

**Apologies – Sandra Devine ANDIC,**

**Joan Higgins, LIPCN, Clyde,**

**Dr Pepi Valyraki, ICD QEUH**

**Background**

There is an ethical responsibility as well as a professional and statutory requirement for healthcare professionals and managers to inform patients or their families who have suffered as a result of a safety incident that was caused by the organisation and has resulted in harm or death.

This is termed duty of candour and is a legal requirement. Duty of candour involves apologising, acknowledging and explaining what happened to patients who have been harmed due to an act or omission by the organisation.

**Discussion**

The group discussed what constitutes 'harm' in relation to infection control and degrees of harm (severity 1-5) as per NHS GGC duty of candour policy.

It was agreed that a lot of communication is undertaken with patients already by IPCNs and information leaflets are given out for common HAIs such as MRSA, CDI and GAS. ICDs often speak to patients with multi drug resistant organisms.

**Infection control incidents**

The group also considered the recent CEL letter requesting that patients and families involved in infection control incidents are communicated to.

It was agreed that the IPCT would support the patient's clinician in the duty of candour event in relation to declared infection control incidents. IPCT will provide written



communication in conjunction with the Comms team and will speak to the patient with the clinician present if requested.

The group agreed that duty of candour should be added to the communications section of all PAGs and IMTs. A decision would be made by the PAG/IMT group as to whether the incident constitutes a duty of candour event. It is anticipated that most AMBER/RED incidents will. In this situation IPCT should assist with written communications to families/patients and be available to speak to any patient or family. A GREEN incident is likely to be considered low harm but duty of candour should still be discussed and minuted. As per CEL letter GREEN incidents require patients to be communicated to. The group agreed they could be given written communication if the conclusion of PAG/IMT is that cross transmission has occurred or there is a common source of infection.

#### Colonisation vs. infection

Most incidents involving colonisation will be rated GREEN and constitute a low harm event as patients unlikely to be treated.

It was agreed that if patients who are colonised as part of an incident in which patients have significant infections then they should be informed they are part of the incident.

It was agreed Susie would develop a flow chart to assist with colonisation vs. infection.

#### **Action SD**

#### Common IC scenarios

Common scenarios that might not require a PAG/IMT were discussed as to whether they constitute a duty of candour event

<b>Infection control incident</b>	<b>When is Duty of candour action required</b>
Staph aureus bacteraemia	It was agreed that preventable SABs are a duty of candour event and the patient's clinician should inform them or the family. These will be categorised as moderate, severe or death. It was agreed to develop an information sheet for SABs. Datix will be issued if thought to be avoidable. <b>Action LP</b>
Surgical site infection	SSI is a known risk factor of surgery and covered by surgical consent process.  A duty of candour event might be considered if patients met the criteria for moderate to severe harm as a result of; <ul style="list-style-type: none"> <li>- Contamination of surgical instruments</li> <li>- Ventilation failure</li> </ul>

	<ul style="list-style-type: none"> <li>- As part of an increase in SSI incident if significant findings of non compliance with standards.</li> </ul>
C diff infection	<p>A duty of candour event would be ;</p> <ul style="list-style-type: none"> <li>- Moderate or severe harm as a result of CDI</li> <li>- evidence of cross transmission with epidemiological links in time, place person and matching typing results for any CDI patient</li> </ul> <p>It was noted that all CDI patients are informed of infection regardless of harm rating and are given a patient info leaflet</p>
Carbapenamase producing enterobacteraciae,(CPE) multidrug resistant Gram negative bacteria(MDRGNO)	<p>A duty of a candour event would be;</p> <ul style="list-style-type: none"> <li>- a patient who is screened as a contact of a known CPE</li> <li>- a new HAI CPE not acquired elsewhere</li> </ul> <p>It was agreed that CPE/MDRGNO screening for some patients might lead to psychological harm which is considered moderate harm.</p> <p>It was noted that all patient with CPE/MDRGNO are given patient information leaflets .Many are spoken to by an ICN and sometimes the ICD is involved.</p>
Colonisation with environmental Gram negatives	<p>This is a common scenario due to sensitive triggers. A single case would not be a duty of candour event. If a trigger breached then decision should be made at PAG/IMT. Many such scenarios are rated Green and if remain colonisation only would be classed as low harm.</p>
Coagulase negative staphylococci bloodstream infection in neonates	<p>A single case would only constitute a duty of candour event if part of a larger incident where moderate or greater harm</p>
Single blood stream infection with common environmental Gram negative ( Pseudomonas aeruginosa, Acinetobacter baumannii, Serratia marsecens,Stenotrophomonas maltophilia)	<p>A single BSI would not constitute a duty of candour event .</p>

HAI E coli bacteraemia	? Needs patient info leaflet.
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### **The role of IPCT in Significant Clinical Incidents (SCI)**

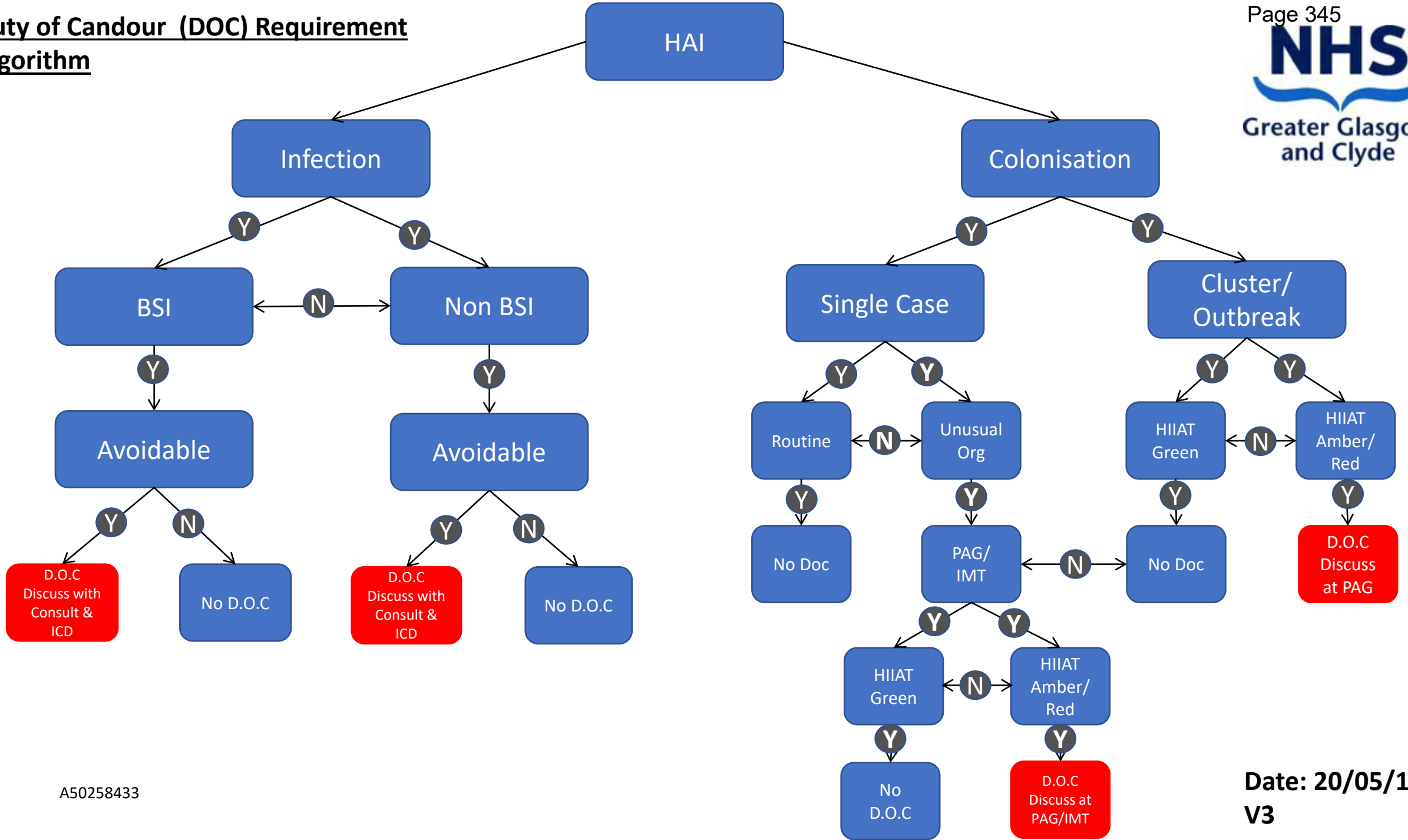
Any duty of candour event classed as Severe harm or death will be a SCI. IPCT will be asked to participate in the review team. Where possible it is better that an IPCN and ICD who have been independent from the incident participate. This process differs from the infection control debrief, if required, it should proceed as normal.

### **Actions**

Develop info leaflet for preventable SAB	Lynn Pritchard
Develop flow chart for colonisation vs infection	Susie Dodd
Include examples of Combs from recent incidents	Teresa Inkster
Disseminate to SMT and all teams for comment	Teresa Inkster
Develop IC policy to be used in conjunction with NHSGGC duty of candour policy	All



**Duty of Candour (DOC) Requirement Algorithm**



---

**From:** Claire Peacock (NHS Forth Valley) [REDACTED]  
**Sent:** 08 November 2021 16:58  
**To:** Wallace, Angela  
**Subject:** Fw: Angela / Penelope / Terri

Claire Peacock  
PA to Prof. Angela Wallace, Executive Nurse Director /  
Admin & Clerical Supervisor  
Nursing Directorate  
NHS Forth Valley  
Forth Valley Royal Hospital  
Stirling Road  
Larbert  
FK5 4WR  
(T) [REDACTED] (E) [claire.peacock@\[REDACTED\]](mailto:claire.peacock@[REDACTED])

---

**From:** Angela Wallace (NHS Forth Valley) [REDACTED]  
**Sent:** 26 May 2021 13:01  
**To:** Hunter, Terri [REDACTED] 'Penelope Redding' [REDACTED]  
**Subject:** Re: Angela / Penelope / Terri

Hi Penelope and Terri,

please accept my apologies for the lateness of my reply. I have been on A/L.

I am glad the time spent was helpful and our discussion supported the key messages that we are continuing to work across the Infection Control Community in GGC with improvement, learning and excellent teamwork front and centre. As acknowledged in the discussion much has been done and the agenda moving forward continues to be challenging and ambitious. We continue to encourage challenge internally, externally and seeking best practice from literature. We also have continued OD at the heart of all of the work described above.

It was lovely to see you again Penelope. Please don't hesitate to let me know if I can be of any assistance.

Kindest regarding

Angela

---

**From:** Hunter, Terri [REDACTED]  
**Sent:** 11 May 2021 14:13  
**To:** 'Penelope Redding' [REDACTED] Angela Wallace (NHS Forth Valley) [REDACTED]  
**Subject:** RE: Angela / Penelope / Terri

Thank you Penelope

It was lovely to see you again this morning and apologies I had to run off. I was running a workshop on Compassion Fatigue for our staff so needed to get it set up before they joined.

Angela and the teams have done and are continuing to do great work in making progress and moving things forward. I hope that was clear from our discussion. As we said, the initial Discovery of views was over a year ago and the work that has been done since then has been substantial and continues on.

Please keep safe and well.

Warmest wishes

Terri

Dr Terri Hunter

Senior Organisational Development Advisor

Chartered Organisational Psychologist, AFBPS

NHS Greater Glasgow & Clyde

Acute Services, South Sector | Communications | Finance

m: [REDACTED]

e: [terri.hunter](mailto:terri.hunter@nhs.uk) [REDACTED]



## National Wellbeing Hub

For people working in health and social care

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Access to mental health and wellbeing resources and a signpost to support services.

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**From:** Penelope Redding [REDACTED]

**Sent:** 11 May 2021 12:26

**To:** Angela Wallace (NHS Forth Valley) [REDACTED]; Hunter, Terri [REDACTED]

**Subject:** [ExternaltoGGC]RE: Angela / Penelope / Terri

Dear Angela and Terri

Thank you for spending so much time this morning presenting the finding of the OD discovery process report and the progress that has been made.

Clearly a lot of professional work has been put into understanding the challenges and putting processes in place to address the challenges.

I would not have expected all the issues to have been resolved at this point and hope that the ongoing work continues to make improvements.

I think that it is important to understand why the 20 respondents to the March 2021 survey were mainly from the ICPT. The results may not truly represent the opinion of the microbiology team if they are still overworked and / or feeling their responses will not make any difference. This hurdle is still one that I believe must be overcome and it is important to be aware of these feelings. There are some individuals who have always found it too stressful to speak up and need to be won over that the process is mindful of their

feelings and beliefs and will make a difference. As I am sure you are aware it will also take more work to embrace the people who can voice their concerns. Both groups are important. Both groups are an important part of governance within GGC. It is a risk to patient safety if concerns cannot be understood and addressed appropriately.

I was pleased to hear that all the concerns raised are reported through the HIORT system. This will ensure that nothing will be uncovered in the Public Inquiry.

I would appreciate an update in the future if you feel that is appropriate. I do worry about my ex-colleagues and the microbiology and infection control services which I was a part of for so many years.

My thanks again.

Kind Regards

Penelope

-----Original Appointment-----

**From:** Angela Wallace (NHS Forth Valley) [REDACTED]  
**Sent:** 10 May 2021 10:39  
**To:** Penelope Redding; Hunter, Terri  
**Subject:** Angela / Penelope / Terri  
**When:** 11 May 2021 10:00-11:00 (UTC+00:00) Dublin, Edinburgh, Lisbon, London.  
**Where:**

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# Review of NHSGG&C paediatric haemato- oncology data

Health Protection Scotland

Report date  
October 2019

**This is management information and not official statistics**

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Published management information are non-official statistics which may be in the process of being transitioned into official statistics. They may not comply with the UK Statistics Authority's Code of Practice with regard to high data quality or high public value but there is a public interest or a specific interest by a specialist user group in accessing these statistics as there are no associated official statistics available.

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## Introduction

Health Protection Scotland (HPS) supported NHS Greater Glasgow and Clyde (NHSGG&C) with a recent water related incident (March 2018 – September 2018) investigating and managing a contaminated water system across the Queen Elizabeth University Hospital (QEUH) and Royal Hospital for Children (RHC) with probable linked cases of bloodstream infections associated with wards 2A/2B RHC. Yorkhill Hospital (YH) relocated into the RHC in June 2015. Wards 2A/2B within RHC houses the haemato-oncology unit, also known as Schiehallion, the National Bone Marrow Transplant (BMT) Unit and the Teenage Cancer Trust (TCT). In September 2018, to allow remediation works to be undertaken in 2A/2B, patients were transferred to QEUH ward 6A and three rooms were allocated within the adult BMT of ward 4B for the paediatric BMT unit. To accommodate this move, adults from 6A were transferred to Gartnavel General. A [summary report](#) of the initial incident (Jan –Sept 2018) is available from Scottish Government web page.

Whilst a suspected increase in environmental Gram-negative blood cultures within ward 6A is investigated, admissions have been restricted since 1<sup>st</sup> August 2019.

The aim of this report is to review NHSGG&C paediatric haemato-oncology data and investigate the suspected increase in environmental Gram-negative blood cultures in the paediatric haemato-oncology population.

The objectives of this review are to:

- To describe the differences in the datasets currently being used to investigate cases of bacteraemia in patients cared for in paediatric haemato-oncology wards in NHSGG&C.
- To review the environmental Gram-negative blood cultures in the paediatric haemato-oncology population.
- To identify whether there is a change in the type of reported environmental Gram-negative blood cultures in the paediatric haemato-oncology population.

## Methods

The following data sets were provided for the review by NHSGG&C, further details can be found in Appendix 1 – Background information.

### NHSGG&C data sets:

#### NHSGG&C CLABSI surveillance data

An extract was provided from the central line associated bloodstream infection (CLABSI) surveillance system for date range January 2015 –September 2019. CLABSI uses Centers for Disease Control (CDC) classification

*‘A CLABSI is a primary BSI in a patient that had a central line within the 48-hour period before the development of the BSI and is not bloodstream related to an infection at another site. However, since some BSIs are secondary to other sources other than the central line (e.g., pancreatitis, mucositis) that may not be easily recognized, the CLABSI surveillance definition may overestimate the true incidence of CRBSI’*

Paediatric haematology oncology patients were identified using theatre management system ‘Opera’ to obtain information on all patients who received a new central venous device at NHSGG&C and combining haematology oncology diagnosis via the Clinical Portal. This data was de-duplicated on a 7 day case definition per organism. Exclusion criteria include patients who have their central venous device inserted at another hospital even if the majority of their care was at RHC or if the patient was transferred to RHC with a CLABSI.

#### NHSGG&C ECOSS extract

Gram-negative extract was provided for data obtained locally from Electronic Communication of Surveillance in Scotland (ECOSS) for date range July 2013 – September 2019.

#### NHSGG&C Microbiology laboratory information management system (LIMS) Surveillance data

Microbiology laboratory information management system (LIMS) extract for date range June 2014 – September 2019. The dataset had been de-duplicated at species level by NHSGG&C. This is a dataset obtained through ‘Telepath’ the LIMS using a named consultant therefore linking cases from other hospitals/outpatients/previous admission/or coded elsewhere in the hospital which are linked to the unit through the consultant in charge of their care.

## HPS dataset - ECOSS extract

A data extract from ECOSS system of all blood samples in children less than 18 years of age from 2013 to present was obtained the 7<sup>th</sup> October 2019. The following fields were used to assign the location of the samples. NHS Health Boards are coded by the location of the submitting laboratory. Additional hospital/ward data was derived from the ECOSS Unit Location field, or where incomplete free text within the medical specialty and requesting location fields were used to generate a final hospital list to be mapped against the total occupied bed days to generate hospital level rates.

For NHSGG&C hospitals, the free text within the unit location, medical specialty and requesting location fields are used to derive a location and ward within the hospital where the positive blood culture aspirated was associated, to find any specimens with a connection to wards 6A and 4B in the QEUEH, ward 2A or 2B within RHC, or the equivalent within Schiehallion ward in Yorkhill hospital. In ECOSS the reporting laboratory codes for wards 6A and 4B were coded to RHC following the move to QEUEH.

Positive blood cultures of the following micro-organisms were grouped. A full breakdown of the grouping is detailed in the Appendix 1:

- **Gram-negative bacteria**
- **Gram-positive bacteria**
- **Environmental bacteria group** all species of the following: *Achromobacter*; *Acinetobacter*; *Aeromonas*; *Brevibacillus species*; *Brevundimonas*; *Burkholderia*; *Cedecea*; *Chryseobacterium*; *Chryseomonas*; *Clavibacter*; *Comamonas*; *Cupriavidus*; *Delftia acidovorans*; *Elizabethkingia*; *Flavimonas*; *Gordonia*; *Pseudomonas*; *Pseudoxanthomonas*; *Psychrobacter*; *Ralstonia*; *Rhizobium*; *Rhodococcus*; *Roseomonas*; *Sphingomonas*; *Stenotrophomonas* and *atypical mycobacteria*).
- **Environmental including Enteric (ENT) group** - Environmental bacteria including following enteric organisms which as well as the environmental list above includes species of the following *Citrobacter*; *Enterobacter*; *Klebsiella*; *Pantoea*; *Serratia*.

Fungi (all species of the following: *Candida*; *Rhodotorula*) were excluded as it could not be established if all positive fungi blood cultures were being processed through ECOSS.

The following organisms grouped by genus, were previously isolated in water samples from ward 2A/2B: *Acinetobacter*; *Burkholderia*; *Chryseobacterium*; *Cupriavidus*; *Delftia acidovorans*; *Elizabethkingia*; *Pantoea*; *Pseudomonas*; *Rhizobium*; *Stenotrophomonas*.

The following organisms grouped by genus, were previously isolated in drain samples from ward 2A/2B: *Citrobacter*; *Cupriavidus*; *Delftia acidovorans*; *Enterobacter*; *Klebsiella*; *Pantoea*; *Pseudomonas*; *Serratia*; *Stenotrophomonas*.

## Case definition

The trends in bacteraemia in this patient population were assessed using the HPS ECOSS data extract of positive blood cultures.

The study population includes patients less than 18 years of age cared for in the paediatric haematology oncology specialty in NHS GG&C (including new and existing patients).

A species level case definition was used in previous investigations and this was repeated for this review in order to make comparisons with the NHS GG&C datasets.

In order to account for the diversity of organisms likely to be identified if there is an environmental source and to account for polymicrobial episodes, case definitions were developed at group level. These groups are defined as an environmental bacteria group, environmental including enteric bacteria group and Gram-negative group. These groups are not mutually exclusive; therefore the trends analysis should be interpreted as such. A case definition for Gram-positive bacteraemia was also developed to provide context to the trends in the other groups.

From this population the proposed case definition of a case is defined as a patient with:

- 1) A positive blood culture of a single organism that has not been previously isolated from the patient's blood within the same 14 day period (i.e. 14 days from date last positive sample obtained).
- 2) A positive blood culture for any organism defined as environmental bacteria group (detailed above) that has not been previously isolated with same or other environmental bacteria group organism in the patient's blood within the same 14 day period.
- 3) A positive blood culture for an environmental including enteric bacteria group (detailed above) that has not been previously isolated with same or other environmental including enteric bacteria group organism in the patient's blood within the same 14 day period.
- 4) A positive blood culture where Gram-negative bacteria has been isolated in 14 day period that has not been previously isolated with same or other Gram-negative organism within the same 14 day period.
- 5) A positive blood culture where Gram-positive bacteria has been isolated in 14 day period that has not been previously isolated with same or other Gram-positive organism within the same 14 day period.

As per the case definition and to align with other national bacteraemia surveillance, a standard 14 day rolling deduplication was applied to the HPS ECOSS dataset. All positive blood cultures were included with the exception of post mortem blood, any quality test samples, foetal samples or non-human samples.



## Denominator data

HPS use extracted data from ISD(1) provided by Information Services Division (ISD) for routine published reports. Due to unavailability of data for September 2019 data from August 2019 were used as a proxy.

Full details of ISD data collection can be obtained from

<http://www.isdscotland.org/Products-and-Services/Data-Support-and-Monitoring/ISDS1/>

The activity data extract provided information on occupied bed days and bed occupancy of haematology and oncology from July 2013 to August 2019. In addition, it provided data on combined haemato-oncology day cases and outpatient appointments. The outpatient figures included patents who did not attend (DNA).

## Incidence Rate

Rate per 1,000 total occupied bed days (TOBDs) = (Number of cases of positive blood culture of given case definition in hospital(s) or speciality / TOBDs in hospital(s) or speciality x 100,000). Incidence rates for the whole of RHC (including positive blood cultures and bed days of wards 6A and 4B following the move to QEUH) were compared with combined rates from the Royal Hospital for Sick Children in Lothian and the Royal Aberdeen Children's Hospital in Grampian. R was used to calculate rate ratios (RR) with corresponding exact 95% Confidence Intervals (95%CI).

## SPC Charts

Hospital and specialty data were analysed using Byars method for statistical process control (SPC) U-charts using the rules detailed in Table 1. The mean, trigger/warning (+2 standard deviations) and upper control limits (+3 standard deviations) are presented. These control lines vary by month due to variations in the TOBD denominator. The mean was calculated from the data prior to the move to RHC when available (HPS and NHS GG&C Gram-negative data). Further information on SPC charts can be found at :

<http://www.isdscotland.org/Health-Topics/Quality-Indicators/Statistical-Process-Control/>

**Table 1: Statistical Process Control (SPC) rules.**

Rule	Description	Marker
Outlier	Data point(s) exceeding the upper or lower control limit ( as 3 standard deviations)	Red diamond
Trigger point	Data point(s) exceeding the upper or lower warning limit ( as 2 standard deviations)	Yellow triangle
Shift	A run of 8 or more consecutive data points above the centreline	Circle drawn round points
	A run of 6 or more consecutive data points either increasing or decreasing.	N/A

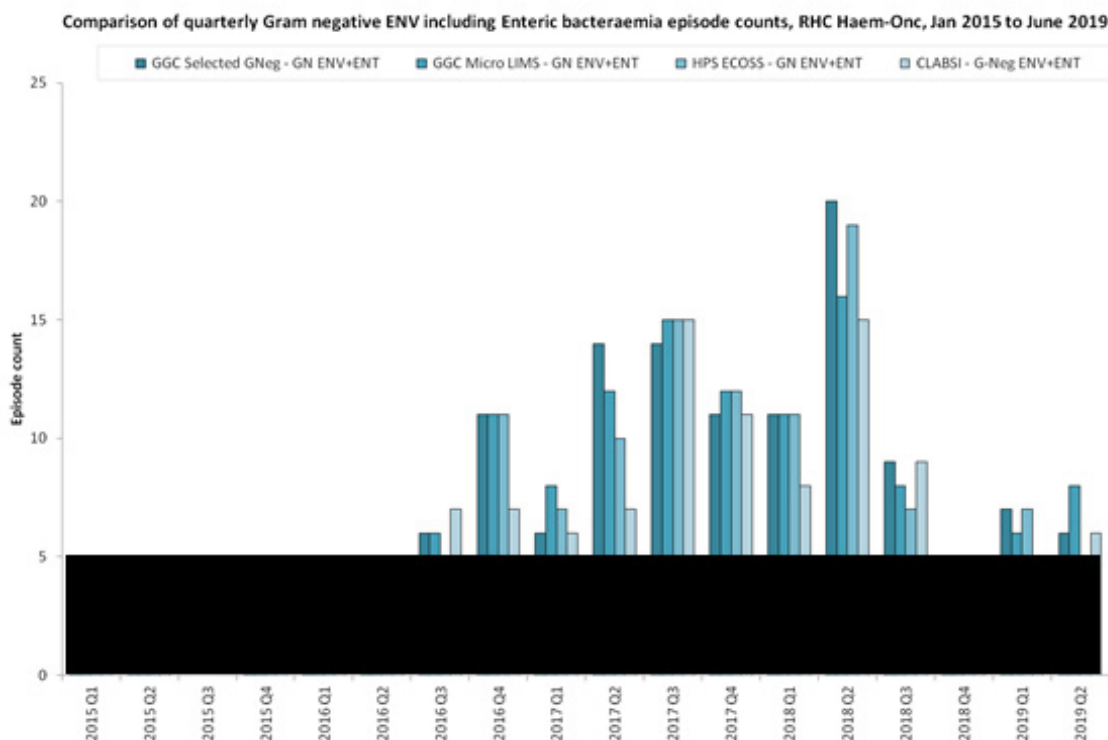
## Results and Commentary

### Comparison of datasets (species level)

In order to validate the datasets provided by NHSGG&C they were compared with an extract taken by HPS (ECOSS extract) a single organism at species level case definition (1) was used so all isolates could be compared. The datasets that were provided all contained data covering the period from January 2015 to June 2019. Figure 1 shows the differences between the datasets when selected environmental Gram-negative organism were compared. The main difference found between the datasets are detailed in Table 2 and Table 3.

It is important to note that each dataset used different case definitions and methods to identify patients who had samples taken or treatment in RHC haemato-oncology unit which accounts for most of the discrepancies identified between datasets.

**Figure 1: Comparison of NHSGG&C selected Gram-negative quarterly counts of species level case definition (1) for NHSGG&C and HPS datasets from 2015 Quarter 1 to 2019 Quarter 2.**



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS), NHSGG&C central line associated bloodstream infection (CLABSI) surveillance system, and NHSGG&C laboratory information management system (LIMS).

**Table 2: NHSGG&C CLABSI surveillance data and possible reasons for dataset not matching for the time period January 2015 and September 2019.**

HPS episodes without corresponding NHSGG&C episode (n=118, 20.8%)	NHSGG&C episodes without corresponding HPS episode (n=56, 12.4%)
Possible contaminants (n=48, 40.7%) (only one result available for common skin contaminants coagulase-negative staphylococci, <i>Micrococcus spp.</i> , <i>Propionibacterium acnes</i> , <i>Bacillus spp.</i> , <i>Corynebacterium spp.</i> )	Location mapping 53.6% (n=30) could not be identified as belonging to the RHC haematology oncology cohort based on the details of their ECOSS result.
Differences in inclusion and exclusion criteria in CLABSI data - 48.3% (n=57) were either known pathogens or had more than one positive and were included in the other NHSGG&C datasets.	Using de-duplication of 7 rather than 14 days - 23.2% (n=13)
Using de-duplication of 7 rather than 14 days - ( ).	Missing in ECOSS ( ) of results were not in ECOSS but were included in the NHSGG&C Micro LIMS dataset.
Location errors ( ) were not included in any of the NHSGG&C datasets therefore it is likely that they were not part of the true RHC Haem-On cohort.	18 years of age or above excluded by HPS – ( )

1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) and NHSGG&C central line associated bloodstream infection (CLABSI) surveillance system.

**Table 3 NHSGG&C Microbiology LIMS surveillance data and possible reasons for dataset not matching for the time period June 2014 and September 2019.**

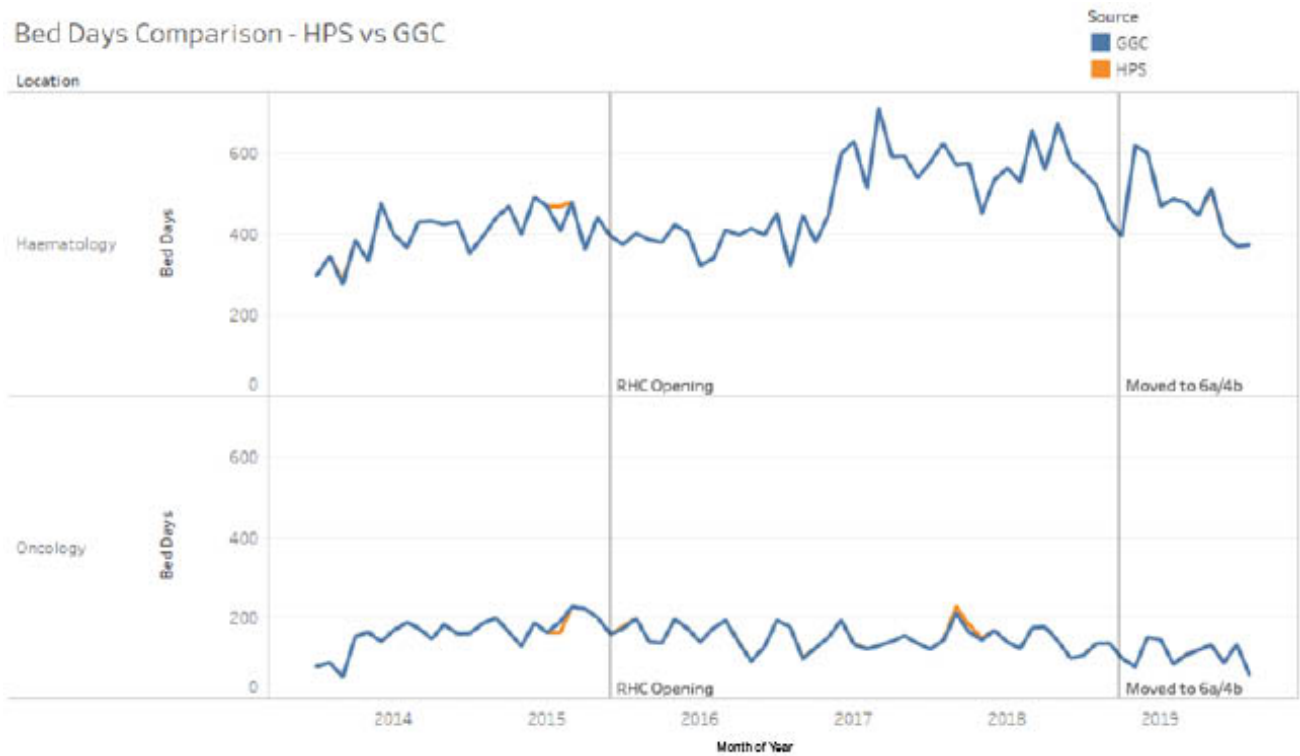
HPS episodes without corresponding NHSGG&C episode (n=42, 6.8%)	NHSGG&C episodes without corresponding HPS episode (n=85, 12.9%)
HPS episodes with corresponding results listed in NHS GGC CLABSI dataset but missing in Micro LIMS data (n=25, 59.5%)	Micro LIMS data included 24 (28.2%) episodes that should have been excluded using the 14 day species de-duplication rule.
<p>Episodes missing from both the NHSGGC Micro LIMS and CLABSI datasets (n=15, 35.7%).</p> <p>██████ of these specimens were not collected from haem-oncology wards so were unlikely to be part of the true RHC Haem-Onc cohort and can be excluded from surveillance.</p> <p>██████ were possible contaminants with only one result available in ECOSS and can be excluded from surveillance.</p> <p>██████ were known enteric pathogens and aspirated in haem-oncology wards.</p> <p>██████ was an environmental organism which was also included in the NHSGGC selected Gram-neg dataset.</p>	<p>Location mapping 29.4% (n=25) could not be identified as belonging to the RHC haematology oncology cohort based on the details of their ECOSS result.</p> <p>Ten of these patients had their start of episode specimens taken in different hospitals across six health boards.</p>
ECOSS result not updated with species name, these should be excluded as episodes during deduplication ██████	18 years of age or above excluded by HPS – ██████
	Non-blood culture specimens excluded by HPS – ██████ This included four bone marrow specimens and one pus.
	<p>Missing in ECOSS -30.6% (n=26) of results were not in ECOSS.</p> <p>Of these 10 were included in the NHSGG&amp;C CLABSI dataset.</p>

1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) and NHSGG&C laboratory information management system (LIMS).

### Review of denominator data

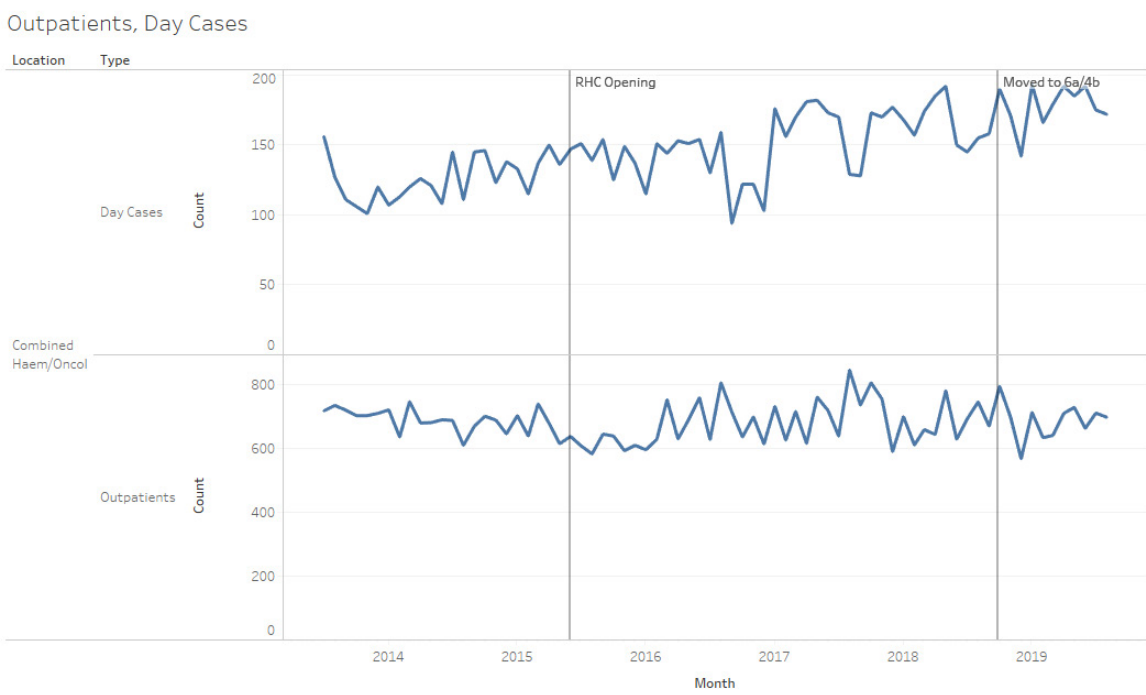
The NHSGG&C activity data was also validated by comparing it to data held by HPS provided by Information Services Division (ISD) and only minor differences were shown (Figure 2). An increase in occupied bed days’ activity occurs in haematology in December 2016 which was not mirrored in the oncology figures. Activity data for day cases and outpatients including patients that did not attend (DNA) is shown in Figure 3 showing a gradual increase in day cases following the move to RHC.

**Figure 2: Review of total occupied bed days by haematology and oncology specialities for the time period July 2013 to August 2019.**



1. Total occupied bed days: Activity data (provided by NHSGG&C) & Information Services Division ISD(S)1 (HPS).

**Figure 3: Day cases and outpatient appointments (including did not attend) of combined haematology and oncology activity from July 2013 to August 2019.**



1. Activity data provided by NHSGG&C.

### Case level data

From the data obtained by HPS from ECOSS there were 688 positive blood culture episodes at species level (case definition 1) for under 18 paediatric haematology oncology population in NHSGG&C linked to RHC between July 2013 and September 2019. From the 688 species level cases, 167 episodes were classed as environmental including enteric group from 97 different patients. Approximately one third (33.5%, n=56) of the species episodes reported formed part of polymicrobial environmental gram negative bacteraemia episodes.

For case definition 2, there were 70 cases of environmental organisms, and when expanding this group to include enteric organisms (case definition 3), there were 132 cases.

When deduplicating at Gram-stain level (case definitions 4 and 5), there were 390 cases of Gram-positive group organisms and 176 cases of Gram-negative group organisms.

Using the Gram-negative case definition an upward shift with a run of ten data points above the mean was observed from March to December 2017, with the upper warning limit (UWL) breached in August 2017, March 2018, May 2018 and again in September 2019 (Figure 4).

Figure 5 shows the SPC chart for the environmental group case definition. The UWL was breached in June 2018. The environmental group was extended to include selected enteric organisms such as species of *Enterobacter*; *Klebsiella* that were linked with drain contamination. The environmental including enteric group is described in Figure 6, showing the UWL was breached in March 2018 and March 2019.

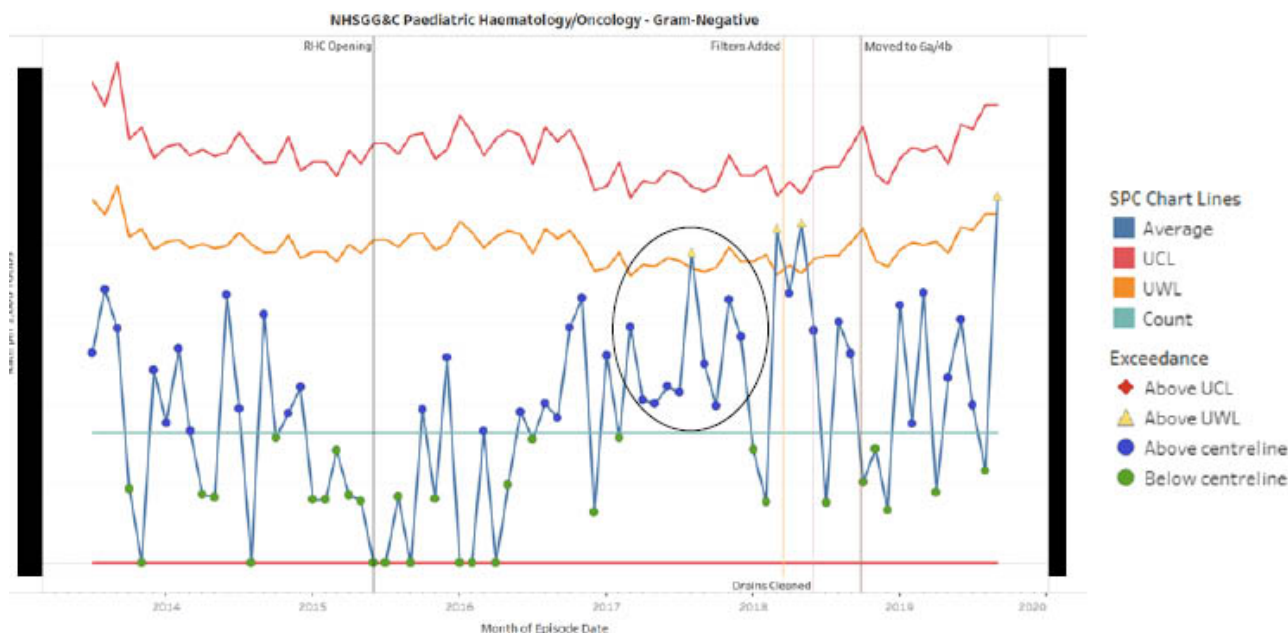
Figure 7 describes the incidence of Gram-positive blood cultures in paediatric haematology oncology population. There was no upward shift in rates following the move to RHC however the upper control limit (UCL) was breached in January 2016, January 2017, April 2017 and June 2017. With rates above the UWL July 2016, May 2017, November 2017 and December 2017. Following the increase in activity at the RHC shown in Figure 7 with six out of twelve data points in 2017 breached a trigger limit (UWL or UCL). The rate now appears to be similar to that observed prior to the move to RHC with seven out twelve data points having a rate below the mean rate in the last year.

A summary of the SPC shifts and triggers shown in Figure 4 to Figure 7 is provided in Table 4.

No change was observed when crude comparisons were made between the rates with the exception of the Gram-positive group ( $p=0.04$ ) which significantly decreased when comparing the overall incidence before and after the move to RHC.

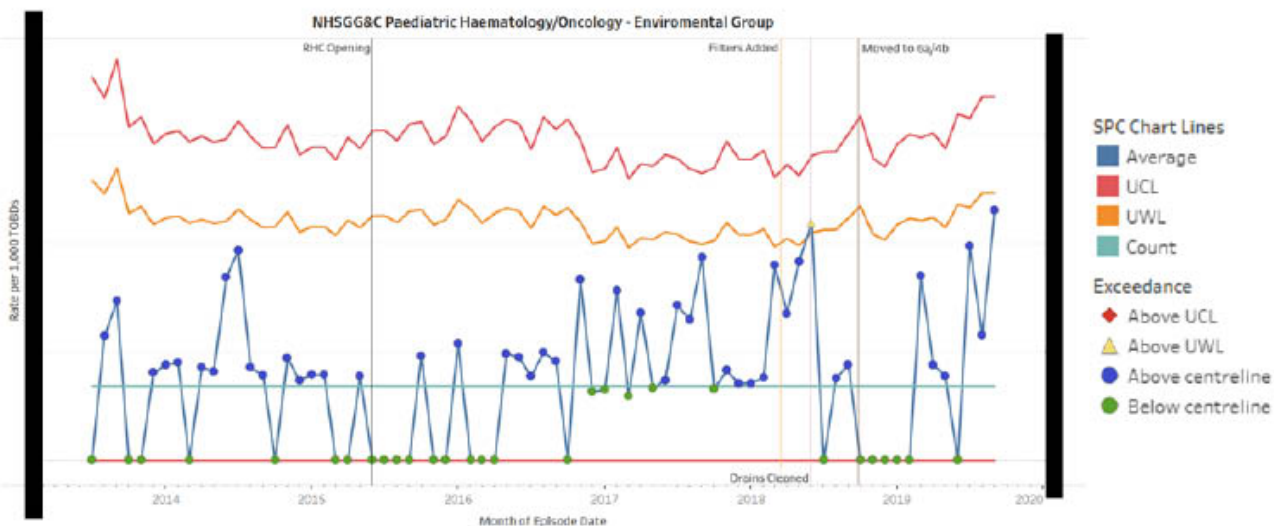


**Figure 4: SPC chart using the Gram-negative case definition for HPS data from the July 2013 to September 2019.<sup>1</sup>**



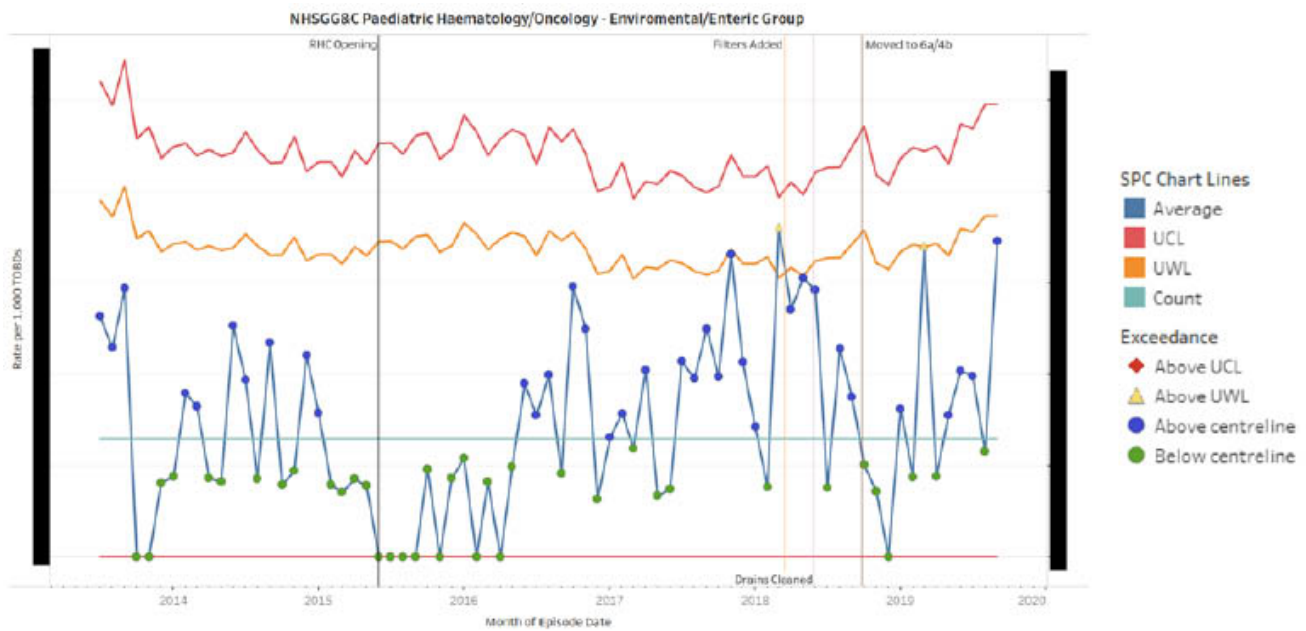
1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: from activity data provided by NHSGG&C.

**Figure 5: SPC chart using the environmental group case definition for HPS data from the July 2013 to September 2019.<sup>1</sup>**



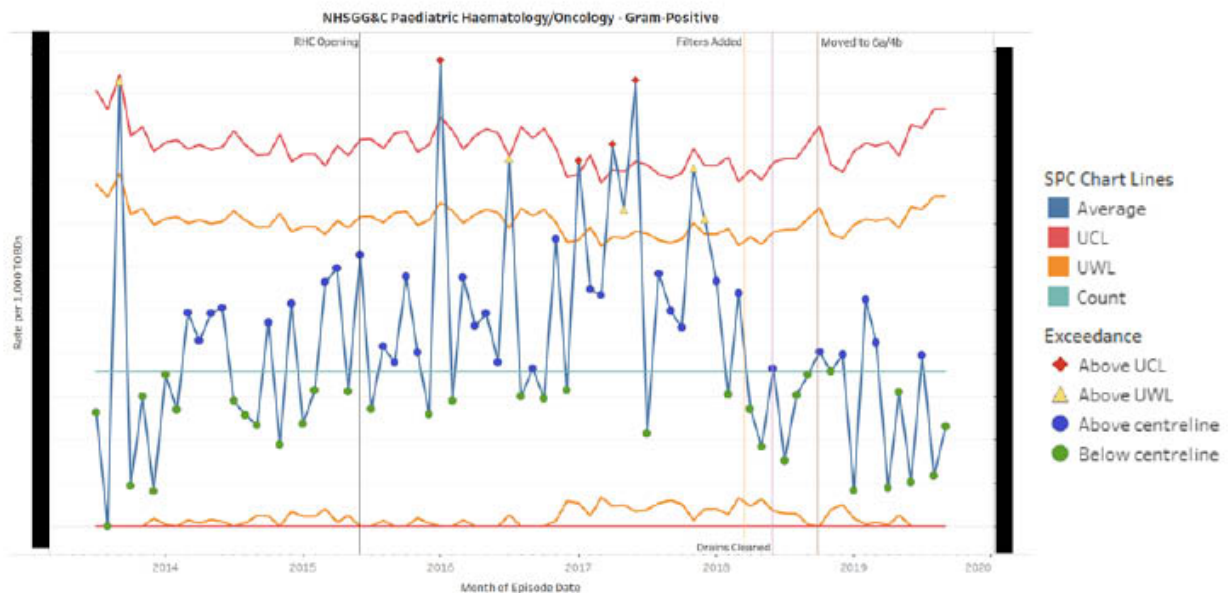
1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: from activity data provided by NHSGG&C.

**Figure 6: SPC chart using the environmental including enteric group case definition for HPS data from the July 2013 to September 2019.<sup>1</sup>**



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: from activity data provided by NHSGG&C.

**Figure 7: SPC chart using the Gram-positive case definition for HPS data from the July 2013 to September 2019.<sup>1</sup>**



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: from activity data provided by NHSGG&C.

**Table 4: Summary table listing SPC shifts, trigger points (UWL breach) and outliers(UCL breach) following the move to RHC using HPS data from July 2013 to September 2019.<sup>1</sup>**

Year	Gram-positive	Gram-negative	Environmental	Enviro/Enteric
2015				
2016	Jan 2016 (UCL)			
	July 2016 (UWL)			
2017	Jan 2017 (UCL)	Upward shift (Mar 2017 – Dec 2017)		
	April 2017 (UCL)	Aug 2017 (UWL)		
	May 2017 (UWL)			
	June 2017 (UCL)			
	Nov 2017 (UWL)			
	Dec 2017 (UWL)			
2018		March 2018 (UWL)	June 2018 (UWL)	March 2018 (UWL)
		May 2018 (UWL)		
2019		Sept 2019 (UWL)		March 2019 (UWL)

1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: from activity data provided by NHSGG&C.

## Comparison with other health boards

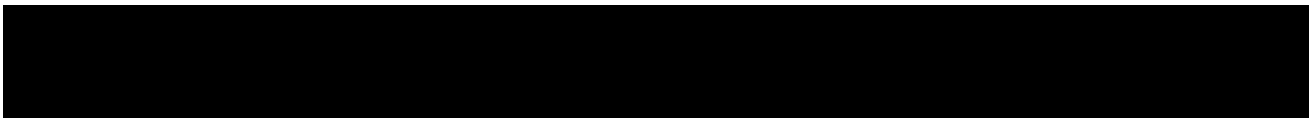
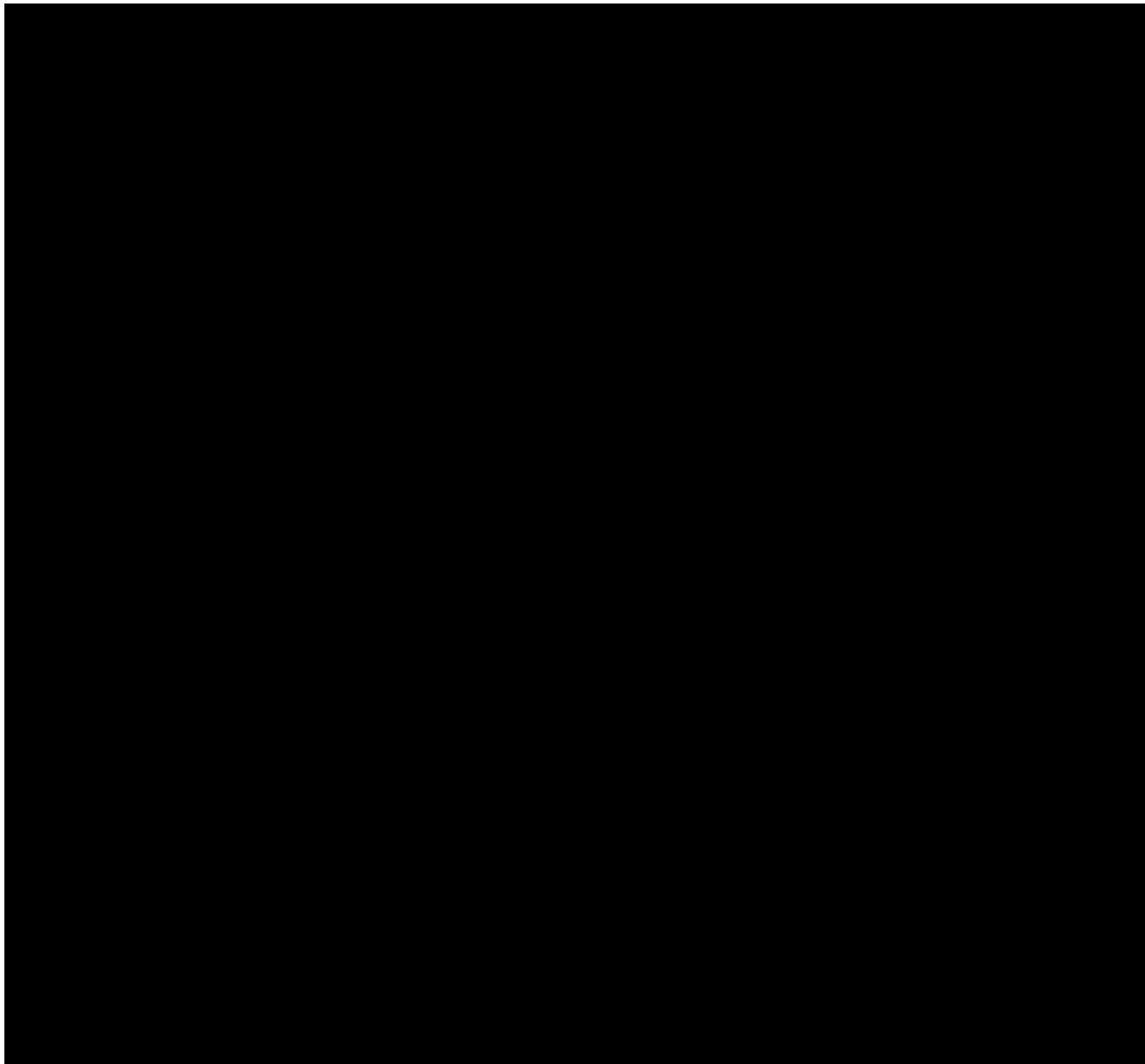
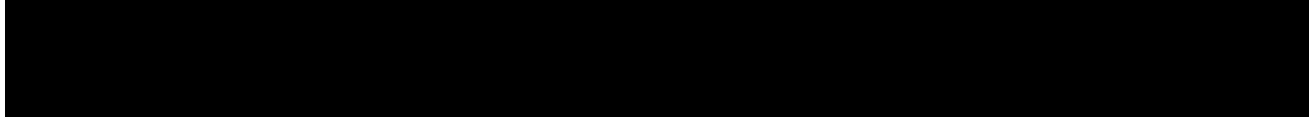
When comparing the overall hospital rate of positive blood cultures since the move to RHC (June 2015 to September 2019) to the combined rate of the other two Scottish children's hospitals (Royal Aberdeen Children's Hospital (NHS Grampian) and Royal Hospital for Sick Children (NHS Lothian)), the incidence of positive blood cultures, using the case definitions 2 to 5, was higher in RHC for environmental including enteric group (RR= 1.86 95%CI 1.42-2.47, p<0.001), but lower for Gram-positive group (RR=0.76, 95%CI 0.70-0.83, p<0.001). There was no difference in the rates of Gram-negative group (RR=1.18, 95%CI 0.96-1.42, p=0.07) or environmental group (RR=1.42, 95%CI 0.94-2.16, p=0.11).

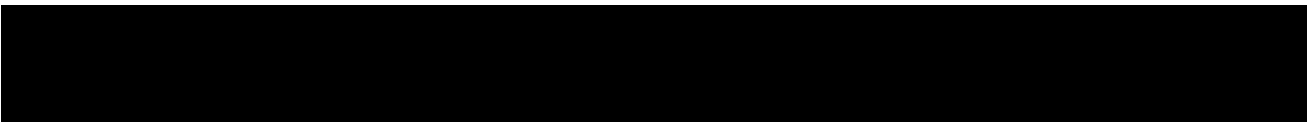
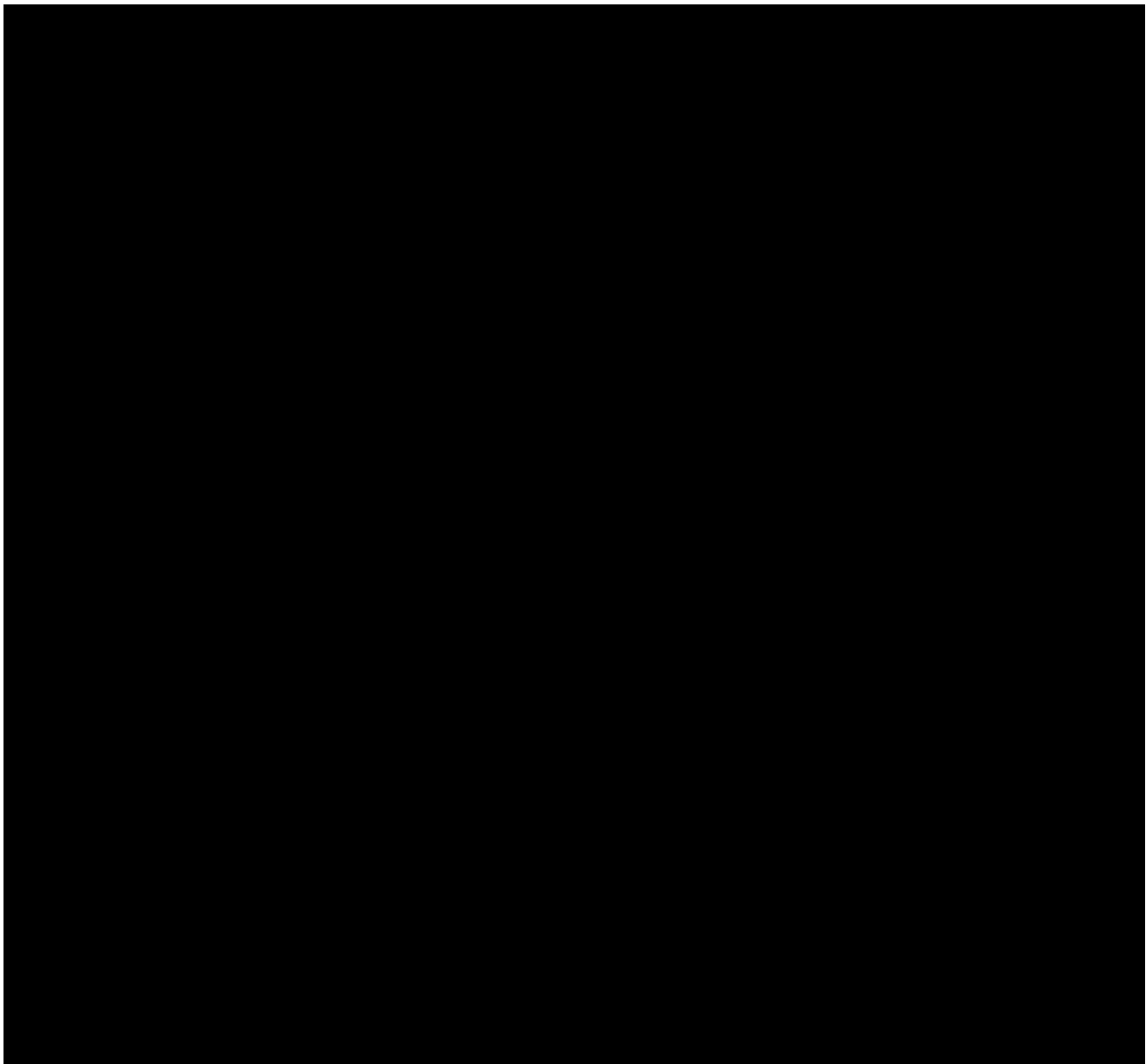
When compared over two years (October 2017 to September 2019), the rate of positive blood cultures was higher in RHC for environmental including the enteric group (RR=1.70, 95%CI 1.17-2.53, p<0.005) and Gram-negative group (RR=1.31, 95%CI 1.00-1.73, p=0.05) but lower for the Gram-positive group (RR=0.74, 95%CI 0.66-0.84, p<0.001). There was no difference in the rates of the environmental group (RR=1.36, 95%CI 0.77-2.52, p=0.39).

In the last year following the move to QEUH (October 2018 to September 2019) there was no difference in the rate for Gram-negative group (RR=1.23, 95%CI 0.85-1.80, p=0.30), environmental including the enteric group (RR=1.26, 95%CI 0.74-2.18, p=0.44) or environmental group (RR=0.93, 95%CI 0.41-2.23, p=1) however the rate was lower for the Gram-positive group (RR=0.77, 95%CI 0.64-0.93, p=0.005).

### Diversity of Environmental Organisms

The diversity of organisms isolated in the haemato-oncology unit prior and post move to RHC for the environmental group and the environmental including enteric group are shown in Figure 8 and Figure 9.





## Caveats

There are a number of limitations associated with the use of ECOSS blood culture data. Blood samples are non-validated records. The cases may include interim results, contaminants, and may include non-blood cases which are incorrectly mapped to a blood sample within either the laboratory system or within ECOSS. Location mappings within ECOSS records may also be prone to error and it may be difficult to capture all haemato-oncology patients admitted to other RHC or YH wards who subsequently had a positive blood culture. Gram-negative blood culture data may be incomplete for September 2019 and non tuberculous mycobacteria data may be incomplete from July 2019 onward as samples are still to be reported. Due to uncertainty over positive fungal blood samples coming into ECOSS they were excluded from this review.

Improvements in speciation, for example using MALDI-TOF technologies, may change the identification over time. Species level case definitions may result in a patient having more than one episode of positive blood culture in a 14 day period.

Environmental bacteria grouping include bacteria commonly found in the environment however they may also be associated with normal human microbiome and laboratory surveillance is unable to distinguish.

It is not possible to determine whether changes in episodes are confounded by changes in the patient population and their underlying medical conditions.

The rates used to compare the overall rate at RHC following the move to QEUH to the combined rate of the other two Scottish children's hospitals used an estimated denominator (Total Occupied Bed Days) for September 2018 by taking the proportion of days following the move.

In the monthly analysis of environmental bacteria positive blood cultures, the numbers are small and should be treated with caution.

The main reasons documented about discrepancies in the review of datasets were only the most likely reason and due to time constraints were not further investigated.

## Summary and Recommendations

This report provides a review of datasets currently being used in NHS GG&C and HPS to support the investigation of this incident; an updated description of trends in positive blood cultures; and a description of the diversity of organisms.

One of the key objectives of this review was to assess the NHS GG&C datasets and provide assurance that the data provides an accurate reflection of the current epidemiological situation in this patient population and where differences exist, to understand reasons and assist with the interpretation. The results from this exercise suggest that the datasets currently used by NHS GG&C provide important intelligence that is aligned with the microbiological data held nationally in ECOSS. There are pros and cons to each of the datasets. The ECOSS and LIMS microbiology datasets do not provide clinical information relating to the cases, without this it is difficult to ensure that the blood cultures are true cases of clinical bacteraemia and there is limited epidemiological and clinical information to support investigation. The CLABSI dataset includes clinical information but has strict case definitions that may exclude cases of bacteraemia associated with the haemato-oncology specialty including those presenting in the first 48 hours of admission and those where the line was inserted in another unit.

Reviewing monthly SPC charts has been shown to be an appropriate method in identifying triggers and outliers when a stable period can be used to set the mean. In this review, the crude incidence rates before and after the move did not reflect the variation in incidence over time within this population. The changes in activity, in particular the occupied bed days, have highlighted the importance of considering activity when interpreting charts and where possible to use incidence rates in SPC charts. The use of grouped case definitions have allowed the data to be reviewed without reporting bias of selecting significant organisms or over reporting when multiple organisms are isolated from the one patient.

The SPC charts included in this report describe that there has been instances of variation outside what would normally be expected in this patient population, the latest was a breach of an upper warning limit for Gram-negative blood culture episodes in September 2019. The characterisation of these cases alongside understanding in the context of environmental microbiology is critical to understanding and managing risk.

The purpose of developing triggers that identify areas where the number of cases is out with what would normally be expected due to random variation, is to identify when it is appropriate to instigate a local investigation into the possible increase in cases. In order to ensure that appropriate action is taken, high sensitivity where there is a high degree of suspicion for increased number of cases is important, particularly in such a vulnerable population. For this reason, the use of microbiological laboratory data rather than the CLABSI data would provide a more sensitive measure for identifying areas for local investigation.

Triggers for areas where there is a need to monitor infectious agents with a possible environmental source that are based on groups of organisms rather than single species triggers likely provides a better measure. This is due to the complex microbiology of



environmental sources. The data presented in this report provide a starting point for supporting the development of appropriate triggers for environmental pathogens. The organisms included in the environmental category can be reviewed following the comprehensive literature reviews being undertaken by HPS for Chapter 4 of the National IPC Manual.

These analyses also indicate that approximately a third of cases of positive blood culture of environmental organisms had a polymicrobial episode. This observation provides an indication of the complexity of the interpretation of microbiology data in the absence of clinical data for this patient population. In addition, there were patients who had multiple episodes of positive blood cultures with different organisms over extended periods of time. Again, the interpretation of the data requires clinical data collected systematically to support interpretation of both unusual clinical pictures and breaches in the limits in SPC charts. The microbiological and clinical data should also be set in the environmental context including the environmental microbiology results such as water and ventilation sampling.

The data presented in this report do not provide evidence of single point of exposure and there is a need to continually monitor the risk in this patient population. There is no immunity to the organisms under investigation, therefore all patients within this cohort are at risk from developing gram negative bacterium due to their co morbidities and treatment plan. The control measure of restricting clinical services for newly diagnosed patients over existing patients should now be reconsidered.

The following recommendations should be considered:

- NHS GG&C should systematically collect clinical data on cases to describe risk in this patient population and ensure ongoing monitoring is in place.
- NHS GG&C should further characterise of cases in terms of “person” and “place” to support understanding when there are more cases than normally expected.
- NHS GG&C should consider the epidemiological characterisation of cases in the context of environmental risks and incidents e.g. water testing results, ventilation testing results.
- NHS GG&C should consider the data provided in the context of the findings from the action plan
- NHS GG&C should consider current control measures around restriction on services for newly diagnosed patients as there is no evidence from the HPS review of the data that supports the continued restriction of services.
- HPS will review the categorisation of environmental organisms following the literature reviews for Chapter 4 of the [National Infection Prevention and Control Manual](#).
- HPS will further support the development of an appropriate trigger for ongoing monitoring.
- HPS should consider these findings when developing methods to support other boards in monitoring infection risk associated with environmental organisms.



## Glossary

BMT	Bone Marrow Transplant
CDC	Centers for Disease Control
CLABSI	Central line associated bloodstream infection
CI	Confidence intervals
DNA	Did not attend
ECOSS	Electronic Communication of Surveillance in Scotland
ENT	Enteric
HPS	Health Protection Scotland
ISD	Information Services Division
LIMS	Laboratory information management system
NHSGG&C	NHS Greater Glasgow and Clyde
QEUH	Queen Elizabeth University Hospital
RR	Rate ratios
RHC	Royal Hospital for Children
SPC	Statistical Process Control
TOBD	Total occupied bed days
UCL	Upper control limit
UWL	Upper warning limit
YH	Yorkhill Hospital

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## Appendices

### Appendix 1 – Background information

#### NHS GG&C supplied methods statement for Royal Hospital for Children Blood Stream infections for HPS review.

#### CLABSI

CLABSI data is prepared according to the following protocol, agreed by the RHC CLABSI Quality Improvement Group:

The QI group refer to CLABSI as defined according to the CDC classification as:

*‘A CLABSI is a primary BSI in a patient that had a central line within the 48-hour period before the development of the BSI and is not bloodstream related to an infection at another site. However, since some BSIs are secondary to other sources other than the central line (e.g., pancreatitis, mucositis) that may not be easily recognized, the CLABSI surveillance definition may overestimate the true incidence of CRBSI’*

The data includes all patients within the haemato-oncology cohort, so inclusive of those cared for at home by the outreach nurses, those attending day care and those who are inpatients in ward 2A including Bone Marrow Transplant, and teenage cancer patients.

CLABSI Data Collection Process:

- 1) ALL patients receiving a new central venous device at Yorkhill/Glasgow Royal Hospital for Children between January 2015 and July 2019 were collated (using Opera data to look at every operation done in every theatre every day in the Children's Hospital)
- 2) Out of this group, only the haematology/oncology patients were kept (searching for and confirming a diagnosis via Clinical Portal)
- 3) The total line day data was obtained by counting the number of days each line was in situ
- 4) Each patient was analysed monthly or twice monthly looking at positive microbiology culture results from either a central line or a peripheral venous sample whilst a central line was in situ (via Clinical Portal)
- 5) Any positive microbiology result with a concurrent illness (IE chest infection or urinary tract infection) was excluded (again via Clinical Portal and the electronic notes)
- 6) If a culture positive result occurred repeatedly in the 7 days following the first positive culture and the organism was the same, this was excluded (IE a patient with a Staph Aureus infection on 5/9/18 and a subsequent culture positive Staph Aureus on 7/9/18 was only counted as ONE infection); a second Staph Aureus infection on 13/9/18 would be counted as TWO infections in total as one would presume that a week of treatment should have effectively treated the first organism.

7) If, however, a second culture positive result occurred in the 7 days following the first positive culture and the organism was different, this was included (IE a patient with a Staph Aureus infection on 5/9/18 and a subsequent culture positive pseudomonas infection on 7/9/18 was counted as TWO infections in total).

8) Patients receiving their Hickman/Broviac Line, Port, or Haemodialysis line in a unit other than the Royal Hospital for Children in Glasgow were excluded. This point was discussed at the first CLABSI QI meeting and it was felt that these (few) patients that had lines inserted elsewhere but were treated in Glasgow could not be analyzed in the same fashion as those receiving the majority of their care (from line insertion to treatment to line removal) here in Glasgow.

9) Patients shared care in local district general hospitals who presented locally initially with a CLABSI and were subsequently transferred to Glasgow did not have that single line infection counted for similar reasons (we would be looking at the management of care in the district general hospital and thus would not be able to analyze them in the same methodology).

To produce the total CLABSI/Gram negative CLABSI chart as shown in the presentation, each line was checked to assign the organism to either gram positive, gram negative or fungus. The same denominator (line days) was used.

Where there were multiple organisms in a single line, the first named organism was used for classification. One organism was not classified, as it can exist as gram positive, gram negative or gram neutral.

### CLABSI funnel plot

The funnel plot was produced using the PHE fingertips funnel plot for rates tool. The data used was the gram negative counts, and line day denominator used in the other CLABSI charts. The plot was produced using the instructions included in the tool. As there is no long term stable average, and in recognition of the quality improvement project, the central line was set to the aim of 1 per 1000 line days.

### Epicurves

The ECOSS system was queried to obtain data on positive blood cultures for selected gram negative organisms reported from the GLA:SGH or GLA:GRI laboratories, age <16. The initial extract (during the water/drains incident 2018) was for date of report from July 2013 to June 2018. Further extracts were made periodically. The list of gram negatives was provided by the NHS GGC lead Infection Control Doctor, and is contained in the appendix to this document. This list is based on organisms identified during the water/drains incident. Following further discussion since the initial extract, *Citrobacter* and *Aeromonas* were added

to that list. To increase sensitivity, data were pulled from ECOSS on basis of genus, rather than species.

Following extraction, the following exclusions were applied:

- Results from neonatal, maternity and pathology removed
- Results from areas not part of RHSC/RHC

During initial screening, laboratory GLA:RAH was also included, however as no relevant results noted, this parameter was removed from the query.

CHI numbers were replaced with new unique ID, and patient identifiers deleted. It is therefore not possible to directly link more recent cases to those from previous extracts. To ensure that the rules below could be applied, and to capture any late inclusions in the ECOSS data base, the 3 months data prior to the new months was also extracted and cases cross checked. One additional late inclusion was detected in this way.

Each case was assigned to a specialty based on the following data points included in the ECOSS reports –

1. Ward sample was taken
2. Diagnosis/clinical history recorded on lab request
3. Requesting consultant.

If it was not possible to identify a specialty from information contained in the ECOSS report, then speciality was confirmed using electronic patient records.

Two separate counts were calculated, based on methodologies described by PHE and CDC:

- Organism count: Number of positive blood cultures per calendar month. Results within 14 days of a previous positive for the **same** organism in the same patient excluded.
- Case count: Number of positive blood cultures per calendar month results within 14 days of previous positive for **any** organism in the same patient excluded (ie only one positive per patient per 14 days)

In both cases the date of result was counted as day one.

Rates were then calculated using activity data produced by NHS GGC acute service information team.

Division of organisms between “environmental” and “non-environmental” was based on advice from GGC microbiologists.

Non-environmental: *Citrobacter*, *Enterobacter*, *Klebsiella*, *Pantoea*, *Serratia*.

Environmental: All other organisms.

### All gram negative positive blood cultures chart

An extraction from ICNet of blood cultures from RHSC Schiehallion, RHSC Schiehallion DCU, RHC 2A, RHC 2B & QEUH 6A, for patients under 18 years at time of BC aspiration for dates 01/11/2014 – 19/09/2019 (date of data extraction) was carried out by GGC IPCT surveillance team. Blood cultures were de-duplicated by 14 days i.e. new case on day 15 from previous isolate of the same organism in the same patient. More than one organism may have been isolated in the same blood culture specimen.

The counts were converted to rates using the occupied bed day data from NHS GGC acute services information team.

### NHSGG&C Appendix: list of selected gram negative organisms

Achromobacter xylosoxidans	Morganella morganii
Acinetobacter lwofii	Pantoea agglomerans
Acinetobacter ursingii	Paracoccus sp
Brevundimonas versicularis	Pseudomonas chlororaphis
Burkholderia cepacia	Pseudomonas fluorescens
Cedecea lapagei	Pseudomonas oryzihabitans
Chryseobacterium indologenes	Pseudomonas putida
Commamonas testosterone	Pseudoxanthomonas mexicana
Cupriavidus gilardii	Ralstonia picketii
Cupriavidus pauculus	Rhizobium radiobacter
Delftia acidovorans	Serratia fonticola
Elizabethkingia meningoseptica	Shewanella putrefaciens
Enterobacter cloacae	Sphingomonas species
Klebsiella pneumoniae	Stenotrophomonas maltophilia

## Organism comparison list

Table 5 and Table 6 detail the organisms isolated in the positive blood cultures and the groupings used in this report.

**Table 5: Organisms isolated from positive blood samples included in environmental groupings during the time period reviewed.<sup>1</sup>**

NHSGGC CLABSI surveillance	NHSGGC ECOSS selected Gram-negative organisms (GGC Selected GNeg)	NHSGGC Microbiology LIMS Surveillance	HPS ECOSS Under18 bloods RHC HaemOnc
Gram Negative Environmental (GN ENV)	Gram Negative Environmental (GN ENV)	Gram Negative Environmental (GN ENV)	Gram Negative Environmental (GN ENV)
<i>Achromobacter spp.</i>	<i>Acinetobacter baumannii</i>	<i>Achromobacter sp</i>	<i>Achromobacter spp.</i>
<i>Acinetobacter baumannii</i>		<i>Acinetobacter baumannii</i>	<i>Acinetobacter spp.</i>
<i>Acinetobacter ursingii</i>	<i>Acinetobacter ursingii</i>		<i>Aeromonas hydrophila</i>
<i>Aeromonas hydrophila</i>	<i>Aeromonas hydrophila</i>	<i>Acinetobacter ursingii</i>	<i>Brevundimonas spp.</i>
<i>Burkhold cepacia</i>	<i>Brevundimonas spp.</i>	<i>Aeromonas spp</i>	<i>Burkholderia cepacia</i>
<i>Chryseomonas indologenes</i>	<i>Burkholderia cepacia</i>	<i>Brev. spp.</i>	<i>Chryseobacterium indologenes</i>
<i>Chryseob. spp</i>	<i>Chryseobacterium indologenes</i>	<i>Burk. cepacia group</i>	<i>Chryseobacterium spp.</i>
<i>Cupriavidis pauculus</i>	<i>Chryseobacterium spp.</i>	<i>Chryseobacterium indologenes</i>	<i>Cupriavidus pauculus</i>
<i>Eliz. meningoseptica</i>	<i>Cupriavidus pauculus</i>	<i>Chryseomonas spp.</i>	<i>Delftia acidovorans</i>
<i>Elizabethkingia spp.</i>	<i>Delftia acidovorans</i>	<i>Cup. pauculus</i>	<i>Elizabethkingia meningoseptica</i>
<i>Delftia acidovorans</i>	<i>Elizabethkingia meningoseptica</i>	<i>Del. acidovorans</i>	<i>Elizabethkingia miricola</i>
<i>Pseudomonas spp.</i>	<i>Elizabethkingia spp.</i>	<i>Delftia spp.</i>	<i>Elizabethkingia spp.</i>
<i>Rhiz. radiobacter</i>	<i>Pseudomonas spp.</i>	<i>Elizabethkingia. spp.</i>	<i>Pseudomonas spp.</i>
<i>Roseomonas mucosa</i>	<i>Rhizobium radiobacter</i>	<i>Herbaspirillum sp</i>	<i>Raoultella planticola</i>
<i>Sphingomonas spp.</i>	<i>Sphingomonas paucimobilis</i>	<i>Pseudomonas spp.</i>	<i>Rhizobium radiobacter</i>
<i>Steno. maltophilia</i>	<i>Steno. maltophilia</i>	<i>R. planticola</i>	<i>Roseomonas mucosa</i>
		<i>R. radiobacter</i>	<i>Sphingomonas paucimobilis</i>
		<i>R. mucosa</i>	<i>Steno. maltophilia</i>
		<i>Sph. paucimobil</i>	



		<i>Steno. maltophilia</i>	
<b>Gram Negative Enteric /Environmental (GN ENT/ENV)</b>	<b>Gram Negative Enteric /Environmental (GN ENT/ENV)</b>	<b>Gram Negative Enteric /Environmental (GN ENT/ENV)</b>	<b>Gram Negative Enteric /Environmental (GN ENT/ENV)</b>
<i>Citrobacter spp.</i> <i>Enterobacter cloacae</i> <i>Klebsiella spp.</i> <i>Pantoea spp.</i> <i>Serratia liquefaciens</i> <i>Serratia marcescens</i>	<i>Citrobacter spp.</i> <i>Enterobacter spp.</i> <i>Klebsiella spp.</i> <i>Pantoea spp.</i> <i>Serratia liquefaciens</i> <i>Serratia marcescens</i>	<i>Citrobacter spp.</i> <i>Enterobacter spp.</i> <i>Klebsiella spp.</i> <i>Pantoea spp.</i> <i>Ser. liquefac.</i> <i>Ser. marcescens</i>	<i>Citrobacter spp.</i> <i>Enterobacter spp.</i> <i>Klebsiella spp.</i> <i>Pantoea spp.</i> <i>Serratia liquefaciens</i> <i>Serratia marcescens</i>
<b>Gram Positive Environmental (GP ENV)</b>	<b>Gram Positive Environmental (GP ENV)</b>	<b>Gram Positive Environmental (GP ENV)</b>	<b>Gram Positive Environmental (GP ENV)</b>
<i>Gordonia polyisoprenivorans</i>	N/A	<i>Gordonia polyisoprenivorans</i>	<i>Gordonia bronchialis</i>
<b>Acid Fast Environmental (AF ENV)</b>	<b>Acid Fast Environmental (AF ENV)</b>	<b>Acid Fast Environmental (AF ENV)</b>	<b>Acid Fast Environmental (AF ENV)</b>
<i>Mycobacterium chelonae</i>	N/A	<i>Myc. chelonae group</i> <i>Myco fortuitum</i> <i>Mycobacterium chelonae</i>	<i>Mycobacterium chelonae</i> <i>Mycobacterium spp.</i>
<b>Fungi Environmental (Fungi ENV)</b>	<b>Fungi Environmental (Fungi ENV)</b>	<b>Fungi Environmental (Fungi ENV)</b>	<b>Fungi Environmental (Fungi ENV)</b>

1. May not include every organism of interest if no cases were found during the time period.

**Table 6: Organisms isolated from positive blood samples included in non-environmental groupings during the time period reviewed.<sup>1</sup>**

NHSGGC CLABSI surveillance	NHSGGC ECOSS selected Gram-negative organisms (GGC Selected GNeg)	NHSGGC Microbiology LIMS Surveillance	HPS ECOSS Under18 bloods RHC HaemOnc
Gram Negative Non-environmental (GN NON-ENV)	Gram Negative Non-environmental (GN NON-ENV)	Gram Negative Non-environmental (GN NON-ENV)	Gram Negative Non-environmental (GN NON-ENV)
<i>Escherichia coli</i> <i>Fusobacterium nucleatum</i> <i>Proteus mirabilis</i>	N/A	<i>Bact. uniformis</i> <i>Cap. sputigena</i> <i>Escherichia coli</i> <i>Fuso. nucleatum</i> <i>Haemophilus influenzae</i> <i>Mor. catarrhalis</i> <i>Moraxella nonliquefaciens</i> <i>Moraxella osloensis</i> <i>Neis. subflava</i> <i>Proteus mirabilis</i>	<i>Bacteroides uniformis</i> <i>Capnocytophaga sputigena</i> <i>Escherichia coli</i> <i>Escherichia fergusonii</i> <i>Fusobacterium nucleatum</i> <i>Haemophilus influenzae</i> <i>Moraxella spp.</i> <i>Neisseria spp.</i> <i>Ochrobactrum anthropi</i> <i>Proteus mirabilis</i>
Gram Positive Non-environmental (GP NON-ENV)	Gram Positive Non-environmental (GP NON-ENV)	Gram Positive Non-environmental (GP NON-ENV)	Gram Positive Non-environmental (GP NON-ENV)
<i>Aerococcus viridans</i> <i>Clostridium spp.</i> <i>Corynebacterium spp.</i> <i>Dermacoccus nishinomiyaens</i> <i>Diphtheroids</i> <i>Enterococcus spp.</i> <i>Gemella Sanguinis</i> <i>Gordonia polyisoprenivorans</i>	N/A	<i>Aerococcus viridans</i> <i>Alpha strep</i> <i>Bacillus spp.</i> <i>C. perfiringens</i> <i>Coag Neg Staph.</i> <i>Corynebacterium spp</i> <i>Derm. nishinomiyaens</i> <i>Diphtheroids</i> <i>Enterococcus spp.</i>	<i>Abiotrophia defectiva</i> <i>Aerococcus viridans</i> <i>Bacillus spp.</i> <i>Clostridium perfringens</i> <i>Clostridium septicum</i> <i>Corynebacterium spp.</i> <i>Dermacoccus spp.</i> <i>Enterococcus spp.</i> <i>Gemella sanguinis</i>

Gram +ve bacilli		<i>Gemella.sanguinis</i>	<i>Granulicatella adiacens</i>
Gram Pos B		GPC-Strep	<i>Kocuria spp.</i>
Gram Pos C		Gram +ve bacilli	<i>Lactobacillus spp.</i>
Gran Adiac		Gram positive cocci	<i>Lactococcus lactis</i>
<i>Granulicatella adiacens</i>		Gran. adiacens	<i>Leuconostoc lactis</i>
<i>Kocuria rhizophilia</i>		<i>Kocuria rhizophilia</i>	<i>Micrococcus spp.</i>
<i>Lactobacilus</i>		<i>Lactobacillus spp</i>	<i>Paenibacillus spp.</i>
<i>Micrococcus spp.</i>		<i>Micrococcus spp.</i>	<i>Propionibacterium spp.</i>
<i>Paenibacillus durus</i>		<i>Paenibacillus spp.</i>	<i>Rothia spp.</i>
<i>Propionibacterium acnes</i>		<i>Propionibacterium acnes</i>	<i>Staphylococcus spp.</i>
<i>Rothia mucilaginosa</i>		<i>Rothia mucilaginosa</i>	<i>Streptococcus spp.</i>
<i>Staphylococcus spp.</i>		<i>Staphylococcus spp.</i>	
STCNS		<i>Streptococcus spp.</i>	
<i>Streptococcus spp.</i>			
<b>Acid Fast Non-environmental (AF NON-ENV)</b>	<b>Acid Fast Non-environmental (AF NON-ENV)</b>	<b>Acid Fast Non-environmental (AF NON-ENV)</b>	<b>Acid Fast Non-environmental (AF NON-ENV)</b>
Nil	N/A	Nil	Nil
<b>Fungi Non-environmental (Fungi NON-ENV)</b>	<b>Fungi Non-environmental (Fungi NON-ENV)</b>	<b>Fungi Non-environmental (Fungi NON-ENV)</b>	<b>Fungi Non-environmental (Fungi NON-ENV)</b>
<i>Candida spp.</i>	N/A	<i>Candida spp.</i>	<i>Candida spp.</i>
Yeasts			

1. May not include every organism of interest if no cases were found during the time period.

## Appendix 2 – Publication Metadata

Metadata Indicator	Description
Publication title	Review of NHSGG&C paediatric haemato- oncology data
Description	This management report provides information on paediatric haematology oncology related in NHS Greater Glasgow & Clyde (NHSGG&C)
Theme	Infections
Topic	Paediatric haematology oncology
Format	Management report and supplementary excel document
Data source(s)	Electronic Communication of Surveillance in Scotland (ECOSS) Total occupied bed days: Information Services Division ISD(S)1 Data provided by NHSGG&C
Date that data are acquired	ECOSS extract 07/10/2019
Release date	25 October 2019
Frequency	Ad hoc
Timeframe of data and timeliness	NA
Continuity of data	NA
Revisions statement	Case definitions have changed since previous reports (refer to methods section)
Revisions relevant to this publication	NA
Concepts and definitions	Covered in methods section.
Relevance and key uses of the statistics	NA
Accuracy	Laboratory data that has not been validation so treated with caution.
Completeness	Data not been validated
Comparability	Comparisons have been made to other Children's hospitals in Scotland however there may be differences in patient population so comparisons should be treated with caution.
Accessibility	It is the policy of HPS to make its web sites and products accessible according to <b>published guidelines</b> .
Coherence and clarity	NA
Value type and unit of measurement	Rate per 100,000 total occupied bed days (TOBDs) = (Number of cases of positive blood culture of given case definition in hospital(s) or speciality /TOBDs in hospital(s) or speciality x 100,000).
Disclosure	NA
Official Statistics designation	NA
UK Statistics Authority Assessment	NA
Last published	NA
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Date of first publication	NA
Help email	mailto:NSS.HPSHAIC@nhs.net
Date form completed	25/10/2019

## Appendix 3 – HPS and Official Statistics

### About HPS

HPS is a division of NHS National Services Scotland which works at the very heart of the health service across Scotland, delivering services critical to frontline patient care and supporting the efficient and effective operation of NHS Scotland.

HPS was established by the Scottish Government in 2005 to strengthen and coordinate health protection in Scotland. It is organised into three specialist groups with expertise provided by a multi-disciplinary workforce which includes doctors, nurses, scientists and information staff, all of whom are supported by core business and IM&T teams. The specialist groups are:

- Healthcare Associated Infections and Infection Control;
- Blood Borne Viruses and Sexually Transmitted Infections, Immunisation, and Respiratory and Vaccine Preventable Diseases;
- Gastrointestinal and Zoonoses Travel, and Environmental Public Health.

### Official Statistics

Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Official Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within NHS National Services Scotland.

Our statistical publications are currently classified as one of the following:

- National Statistics (ie assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (ie legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (ie still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

Further information on NHS National Services Scotland's statistics, including compliance with the Code of Practice for Official Statistics, and on the UK Statistics Authority, is available on the [ISD website](#).



## **GGI board insights paper 2:** the role of the Medical Director in the NHS

A document from the Good Governance Institute (GGI)

January 2017



*GGI exists to help create a fairer, better world. Our part in this is to support those who run the organisations that will affect how humanity uses resources, cares for the sick, educates future generations, develops our professionals, creates wealth, nurtures sporting excellence, inspires through the arts, communicates the news, ensures all have decent homes, transports people and goods, administers justice and the law, designs and introduces new technologies, produces and sells the food we eat - in short, all aspects of being human.*

*We work to make sure that organisations are run by the most talented, skilled and ethical leaders possible and work to fair systems that consider all, use evidence, are guided by ethics and thereby take the best decisions. Good governance of all organisations, from the smallest charity to the greatest public institution, benefits society as a whole. It enables organisations to play their part in building a sustainable, better future for all.*

## GGI board insights paper 2: the role of the Medical Director in the NHS

**Title:** GGI board insights paper 2: the role of the Medical Director in the NHS  
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**Date:** January 2017  
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This report is part of a growing series of reports developed by the Good Governance Institute (GGI) that consider issues contributing to the better governance of healthcare organisations. GGI is an independent organisation working to improve governance through both direct work with individual boards and governing bodies, and by promoting better practice through broader, national programmes and studies. We run board development programmes, undertake governance reviews and support organisations develop towards authorisation.

Other recent GGI reports and board development tools have considered board assurance, patient safety, clinical audit, quality and safety of telehealth services for people with long-term conditions, diabetes services, better practice in treatment decision-making, productive diversity, the board assurance framework, integrated governance, governance between organisations and of course good governance.

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# 1 Introduction

This paper explores the role of the Medical Director in acute trusts in the NHS, and is part of an insight series produced by GGI on the key board roles within the NHS.

With the increasing significance that has been attributed to clinical leadership over recent years, the role of the Medical Director is widely seen as more important than ever. Despite this, there appears to be a lack of clarity about the role, and also significant barriers to its uptake, most pertinently the issue of career progression and succession planning.

Therefore, this paper will examine the following aspects of the role:

- background to the role: definition, importance, perception and the route to becoming a medical director
- responsibilities of the Medical Director
- what makes an effective medical director?
- accountabilities and reporting lines and the wider team
- training for the role and career progression
- barriers and challenges

The findings will inform GGI's work in this area and will be further developed in GGI's forthcoming publications.

## 2 Methodology

The role of the Medical Director varies widely across different organisations and even trusts themselves. To inform our research, we conducted an in-depth literature review supported by benchmarking interviews with current and past Medical Directors. We approached twelve Medical Directors who had experience in the role in acute trusts across England. The interviews were carried out over the telephone with further comment provided via email. Although the trusts in our benchmarking sample varied in size, the interviews revealed similar themes regarding the challenges medical directors face. While our research specifically considered the role of the 'Executive' Medical Director as it is otherwise known, we hope it will be of relevance to other Medical Directors.

We would especially like to thank Dr Belinda Coker, Dr Nadeem Moghal, Professor Derek Bell, and Dr Andy Heeps for their feedback on various versions of this paper.

### 3 Background to the role

#### 3.1 Definition, importance, and perception

**3.1.1** A Medical Director is a member of the board of an NHS organisation with a clinical background. It is a role which the NHS Confederation states predates the 1983 Griffiths Report on NHS Management, and that has been growing in significance in the succeeding years. The growth in importance of the role is in line with the need to bridge the gap between management and doctors in the NHS,<sup>1</sup> described by Monitor, now NHS Improvement, as 'where clinical and financial governance meet,'<sup>2</sup> and also reflects research consistently referenced throughout the literature which suggests that organisations with engaged clinicians both deliver better care and respond to change more effectively.<sup>3</sup>

**3.1.2** The elevation of the role is evidenced in research by the King's Fund and Birmingham University, that demonstrates that 10-20% of consultants are now involved in formal leadership roles in most trusts.<sup>4</sup> Further, Monitor argues that the role will gain yet more importance in the years ahead due to the need for a sustainable leadership model.<sup>5</sup>

**3.1.3** In addition to this growth in the role, the literature notes that the role is one which is also evolving. Formerly a strictly medical role, it has now expanded to include managerial duties.<sup>6</sup> This was a theme also found in GGI's research with Medical Directors in NHS acute trusts, with one Medical Director at a university hospitals trust with 4,500 staff describing how the Medical Director used to be 'just a medical voice' on the board, but is now 'a fully integrated role'. These two aspects of the role, the medical and the managerial, present significant challenges for Medical Directors, including whether to maintain clinical practice and how to divide their time. This will be discussed more fully below.

**3.1.4** Despite the increasing growth and importance of the role, the literature is consistent in finding that often there is an unclear perception of the role and what it entails by both other board members, and even by Medical Directors themselves. This is compounded by the fact that the role has considerable diversity, with different responsibilities and challenges, making it hard to define and generalise.

The role has also changed considerably with the merging of trusts, increased managerialism, and the re-introduction of the internal market. With these new challenges, new skills are required.<sup>7</sup> Therefore there is a need for the role to be defined more clearly within a managerial code, so that both medical directors and other board members, and indeed clinicians, have a better understanding of the role as its significance continues to develop.

**3.1.5** The lack of clarity about the role was also confirmed in GGI's interviews, with one Medical Director describing how they had to 'search for the purpose' of the role, which they found to be striving to make the organisation the safest and best it could be. Better training and induction for Medical Directors, the issue of which will be discussed below, may also be helpful in clarifying the role for both Medical Directors themselves and other members of the board.

#### 3.2 What kind of people become Medical Directors?

**3.2.1** A Medical Director needs to have a background in clinical practice. Of the Medical Directors interviewed by GGI, all were consultants in fields varying from paediatrics, to HIV and sexual health, to haematology, to intensive care and anaesthetics. Many had also held other positions in leadership

1. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p1

2. Monitor, Supporting the role of Medical Director, 2014, p3

3. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p1

4. Chris Ham, Medical leadership is vital for quality patients care, Health Service Journal, 2013

5. Monitor, Supporting the role of Medical Director, 2014, p28

6. Antoine Kossaify, Boris Rasputin, Jean Claude Lahaid, The Function of a Medical Director in Healthcare Institutions: A Master or a Servant, Health Service Insights, published online October 14 2013 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4089725/>

7. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p2

before coming to the role of Medical Director. This was most often Clinical Director, although one had held the role of Socio-Medical Director for large division critical care, theatres, and medical specialties, and another had undertaken the roles of both Clinical Director and Director of Quality and Safety. Most displayed a desire to lead and drive change in their organisations, and one described how she came to the management role as she had become 'bored' with the clinical world.

**3.2.2** In the literature, NHS Confederation found that the route to becoming a Medical Director was generally through being a clinical director of a department of a directorate. However, it also found that there is no definite and systematic career path.<sup>8</sup> Interestingly, in research by Hunter Healthcare and the Faculty of Medical Leadership and Management (FMLM), many of the Medical Directors surveyed reported that they had not actually intended to become Medical Directors.<sup>9</sup> This reflects the gap in succession planning for Medical Directors, which will be discussed in more detail below.

8. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, p3  
9. Faculty of Medical Leadership and Management and Hunter Healthcare, What Makes a Top Medical Director?, Hunter Healthcare, 2016, p4

## 4 Responsibilities of the Medical Director

**4.1.1** The Integrated Governance Handbook states that although the Medical Director is the designated director for objectives related to care, the whole board should have collective responsibility for each objective.<sup>10</sup> Inevitably, the clinical aspect of leadership is often of great significance for Medical Directors, with Richard Giordano (King's Fund) finding that the top priority in his respondents' leadership agenda was improving clinical quality, safety, and patient experience in the face of reduced funding, with respondents suggesting that they see a direct link between clinical leadership and improved clinical outcomes.<sup>11</sup> Monitor supports this, finding that Medical Directors were most concerned about driving cultural change, leading the profession, and delivering quality governance and care despite the financial challenge.<sup>12</sup> Along with this being the priority of Medical Directors, Monitor argues that effective Medical Directors are 'critical to securing sustainable improvements in the quality of patient care', a pressing concern in today's NHS.<sup>13</sup>

**4.1.2** More specifically, NHS Confederation states the following as responsibilities which should be part of the role regardless of the variation it entails:

- Leading the formation and implementation of clinical strategy
- Taking a lead on clinical standards
- Providing clinical advice to the board
- Providing professional leadership and being a bridge between medical staff and the board
- Providing translation, assessing the mood and creating alignment between the organisation and doctors (which can be difficult, for example when challenging clinical colleagues)
- Outward facing work with external organisations

Other responsibilities which are sometimes delegated but often seen as belonging to the Medical Director include:

- Clinical governance
- Acting as Responsible Officer for revalidation
- Education
- Medical staffing planning
- Disciplinary issues concerning doctors<sup>14</sup>

**4.1.3** The findings in the literature about the responsibilities of the Medical Director are largely consistent with those reported by Medical Directors in GGI's research. Several of our respondents told us that their responsibilities included clinical strategy, quality and safety, management and development of the clinical body, and nurturing and training new medical leadership. The responsibility of creating and promoting a patient focused culture was also mentioned, which was also an aspect of the role expounded in the literature.<sup>15</sup> Several of the respondents had also spent time changing the committee structure of their organisations. However, although the NHS Confederation states that the responsibilities of the Medical Director should include outward facing work, our research found a notable variation in the level of outward facing work reported. While several reported working closely with the local Clinical Commissioning Group (CCG), and some also with local social care and public health services, one Medical Director told us that she does not work with any local organisations, complaining that these organisations are very slow in integrating with the NHS. Even those that did report working closely with local organisations thought this interaction was limited. However, as one of our respondents pointed out, outward facing work with local organisations will become increasingly important as progress is made with Sustainability and Transformation Plans (STPs).

10. John Bullivant & Michael Deighan, Integrated Governance Handbook: A handbook for executives and non-executives in healthcare organisations, Department of Health, 2006, p47

11. Richard Giordano, Leadership Needs of Medical Directors and Clinical Directors, The King's Fund, 2010, p3

12. Monitor, Supporting the role of Medical Director, 2014, p4

13. Ibid p3

14. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p2

15. Antoine Kossaify, Boris Rasputin, Jean Claude Lahaid, The Function of a Medical Director in Healthcare Institutions: A Master or a Servant, Health Service Insights published online October 14 2013 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4089725/>

**4.1.4** Further to these responsibilities, the literature addresses the question of whether or not a Medical Director should retain some clinical practice, and how they should divide their time between clinical and managerial duties. The Faculty of Medical Leadership and Management (FMLM) states that the role 'inevitably means having a foot in both camps',<sup>16</sup> and, although views vary, the literature seems to agree that most Medical Directors prefer to retain at least some clinical practice. The benefits of this include maintaining credibility, providing a link to clinical realities, and allowing a route back to clinical practice.<sup>17</sup> This includes keeping up to date with and maintaining first-hand experience of patient care and perspectives, and the fact that, as they are fundamentally clinicians, Medical Directors enjoy clinical work and believe it keeps them balanced.<sup>18</sup> However, the literature also states disadvantages, with the NHS Confederation finding that there was a danger that maintaining clinical practice risked sending a message that the role of Medical Director is not important enough to be doing full time.<sup>19</sup> Furthermore, FMLM also found that retaining clinical practice could result in a fragmented working experience, with one Medical Director, describing 'being pulled in different directions'.<sup>20</sup> In larger trusts, maintaining clinical practice could be seen as an 'overcommitment'.<sup>21</sup> Despite these problems FMLM concludes that 'the benefits are clear', a view stated throughout the literature and in our own interviews.<sup>22</sup> Multiple respondents told us that maintaining practice helps them 'keep their feet on the ground' and maintain an important link with the clinical aspect of the work.

16. Faculty of Medical Leadership and Management and Hunter, What Makes a Top Medical Director?, Hunter Healthcare, 2016, p5  
17. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p4  
18. Faculty of Medical Leadership and Management and Hunter, What Makes a Top Medical Director?, Hunter Healthcare, 2016, p6-7  
19. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p4  
20. Faculty of Medical Leadership and Management and Hunter, What Makes a Top Medical Director?, Hunter Healthcare, 2016, p5  
21. Ibid p8  
22. **A50258433**

## 5 What makes an effective Medical Director?

**5.1.0** FMLM found that Medical Directors believed that the most important qualities and behaviours needed to carry out the role successfully were personal resilience, integrity, honesty and openness, communication skills, and compassion.<sup>23</sup> In terms of the most important management approaches, respondents listed the following:

- Not being afraid to have difficult conversations and honest dialogue (64%)
- Holding colleagues to account (59%)
- Spending time networking and influencing colleagues to drive change (59%)
- Being able to identify the most important factor when faced with multiple (54%)<sup>24</sup>

Reinforcing this research, Giordano's surveying of Medical Directors found that they have high levels of confidence in their skills in influencing, negotiation and communication, and furthermore, in their ability to use resources to maintain quality of care.<sup>25</sup> This final point seems particularly relevant considering the responsibility of Medical Directors to be the driving force behind high quality care despite the financial pressures on the NHS.

**5.1.2** Giordano also reports a point of variation among Medical Directors about whether they need to master the tools often used by managers, with some believing they should understand and use them, some arguing that they are simply needed to appreciate and be able to work with those who do, and finally some suggesting that they should simply know enough to ensure the work is being done properly. Giordano concludes that Medical Directors do not necessarily have to have these skills, but need the ability to move from clinical work to engagement with the board.<sup>26</sup> However, the tension Medical Directors feel between their work in the clinical body and the governing body is something apparent both in the literature and in GGI's own research. In line with the literature, our interviewees held widely varying views on the need to obtain managerial qualifications based on their individual experience.

**5.1.3** In addition to being highlighted in the literature as an important quality for a Medical Director, nearly all of the Medical Directors we spoke to felt that resilience was required to become a successful Medical Director. This often came alongside communication skills, because, as several of the respondents pointed out, it is not always easy to build consensus in reconciling the clinical with the managerial. Other qualities mentioned were confidence, humility, empathy, and professional knowledge and experience. Finally, several Medical Directors noted the importance of being, in the words of one respondent, 'available, approachable, and visible', especially to senior clinicians. This included being on the front line and meeting staff. In this regard, maintaining clinical practice is conducive to developing this visibility and building relationships with the clinical staff.

23. Faculty of Medical Leadership and Management and Hunter, What Makes a Top Medical Director?, Hunter Healthcare, 2016, p10-12

24. Ibid p11

25. Richard Giordano, Leadership Needs of Medical Directors and Clinical Directors, The King's Fund, 2010, p1

26. Ibid p7-8

## 6 The Medical Director and others

### 6.1 Accountabilities and reporting lines

**6.1.1** As a member of the executive team, the Medical Director reports to the Chief Executive. The Medical Director along with the Director of Nursing are usually the only clinicians on the Executive Board of acute trusts.

### 6.2 Working with others on the board

**6.2.1** The nature of the working relationship between the Medical Director and other board members will be vital in determining the quality of governance. Giordano found that Medical Directors were keen to work with managerial colleagues as equal partners, arguing it is important that Medical Directors get the support they need to do this effectively.<sup>27</sup> He also found that currently this support largely comes through discussions with the Chief Executive, which 71% of respondents reported. One respondent described how these high level discussions allow a common understanding to develop between clinicians and managers.<sup>28</sup> Monitor expanded upon Giordano's research by reviewing the relationships with individual positions in the board, with that of the Non-Executive Director (NED) being of particular significance. As introduced earlier, there seems to be a tendency for NEDs to view the role of Medical Director as primarily operational and a link with the consultant body, thus undervaluing the strategic contribution of the role.<sup>29</sup> However, when developed and maintained, this relationship is regarded as important in delivering high performance through the following:

- Constructive challenge
- Supportive culture
- Acting as a 'critical friend'
- Trust and confidence
- Rating medical expertise
- Not a 'them and us' attitude<sup>30</sup>

**6.2.2** Monitor also examined the relationship between the Medical Director and the Chief Executive, with many Medical Directors holding the view that a clear strategic vision and effective leadership from the Chief Executive is important in developing clinical engagement. That said, Kossaify et al. noted that despite the relationship between the Medical Director and the Chief Executive being crucial, it is important for the Medical Director to maintain a high degree of visibility with both clinical and non-clinical staff.<sup>31</sup> Regarding the board more generally, the research found that Medical Directors valued a board that supported:

- Team working
- Openness and honesty
- A focus on quality, patient care, clinical information and data
- Stability
- Reflective learning
- A unified vision<sup>32</sup>

**6.2.3** In our research, respondents reported that they rely on both the Chief Executive and Deputy Chief Executive in enabling strategy implementation. Executive colleagues in general were also mentioned, however, echoing Giordano's research above, none of the Medical Directors reported working closely with individual NEDs. This could be due to a lack of understanding of each other's roles or lack of appropriate induction processes to obtain this information. Other figures mentioned were the Director of Planning, Director of Strategy, Chair, and Director of Nursing.

27. Richard Giordano, Leadership Needs of Medical Directors and Clinical Directors, The King's Fund, 2010, p1

28. Ibid p4-5

29. Monitor, Supporting the role of Medical Director, 2014, p10

30. Ibid p16

31. Antoine Kossaify, Boris Rasputin, Jean Claude Lahaid, The Function of a Medical Director in Healthcare Institutions: A Master or a Servant, Health Service Insights, published online October 14 2013 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4089725/>

32. Monitor, Supporting the role of Medical Director, 2014, p16



## 6.3 The Medical Director and the Clinical Body

- 6.3.1** Tensions can arise between the Medical Director and the Clinical body. There exists a perception among clinicians that by moving into a management role, a Medical Director has 'gone over to the dark side'.<sup>33</sup> This seems indicative of a tension between management and frontline staff which perhaps could be relieved by promoting further clinical engagement in the governing body of an NHS organisation. Furthermore, FMLM found that some doctors perceive the role of Medical Director as that of a 'trade union style representative', something echoed elsewhere \ in the literature. Medical Directors are not intended to undertake this role, but at the same time FMLM noted that without the respect of the medical body a Medical Director will be unable to succeed in the role. One Medical Director in the research suggested that this was symptomatic of a failure to clearly define the role within the system, rather than the misconceptions of doctors themselves.<sup>34</sup>

33. Health Service Journal (HSJ), The Making of a Medical Director, 1 March 2016

34. [https://www.fmlm.org.uk/2016/05/05/clinical-leadership-and-management-and-hunter-what-makes-a-top-medical-director/](#), Hunter Healthcare, 2016, p6

## 7 Training for the role and career progression

### 7.1 Training and qualifications

**7.1.1** A significant issue with the role of Medical Director is that there is no clear and systematic career path. In terms of preparation and training for the role, the NHS Confederation argues that although there is some value in formal management courses, more advantageous are courses which deal with actual issues encountered on the job rather than simply management theory. Practical opportunities are also mentioned, including mentorship, coaching, and shadowing and secondment to other organisations.<sup>35</sup> In addition to these, Medical Directors in Giordano's research reported receiving support in the form of budgeting workshops, stakeholder planning and contingency planning.<sup>36</sup> Monitor found that a number of their respondents reported undertaking training programmes with the King's Fund, which were also the most often recommended.<sup>37</sup> In terms of additional support and resources, newly established Medical Directors demonstrated an 'overwhelming support' for mentoring and coaching, echoing NHS Confederation, while those who were more established in their post sought support from the board, Chief Executive and medical team, experience in other industries, action learning sets, peer networks and coaching, and career planning.<sup>38</sup>

**7.1.2** The training of the Medical Directors we interviewed varied widely and hence their take on what constitutes the best career path. Most had completed at least a few courses or received certificates in leadership or corporate governance. Experiences ranged from a Strategic Medical Director course at the King's Fund to secondments at organisations such as the NHS Institute for Innovation and Improvement. Although most spoke positively of their experiences, there was also a perception that additional courses are not always very practical in attaining the day to day skills needed to be a Medical Director. In the words of one of our respondents: 'No courses can prepare you to be a leader. You have to learn by example, be encouraged, and have the desire to lead.'

**7.1.3** One of the Medical Directors we interviewed had undertaken a large variety of different courses, including an MBA, secondments, and work at the Harvard Kennedy School of Governance. He believed that this education had greatly helped him but conceded that he had been lucky in his opportunities. A few of our respondents said that they would be keen to undertake an MBA, but did not feel they would be able to balance it with existing work and family commitments. It may therefore be necessary to offer more support to Medical Directors seeking training opportunities.

**7.1.4** Finally, there is also the question of where to go next. There is not a strong tradition of Medical Directors moving between organisations, and there is feeling that a return to clinical practice will be difficult, something that could potentially put off budding Medical Directors.<sup>39</sup> Just as there is no defined career path to becoming a Medical Director, what those in the role choose to do after varies widely.

### 7.2 Succession Planning

**7.2.1** Succession planning, or rather the lack of it, has also been identified as a key issue, and one which, we understand, is putting off junior doctors from seeking leadership roles. Monitor found that a significant number of its respondents either had no plans for succession planning, or were in the early stages of planning how to go about identifying and developing successors. Common methods for identification included learning and development programmes for deputy, associate, or clinical directors.<sup>40</sup> Despite this, FMLM found that often Medical Directors are creating opportunities to engage clinicians with the role and prepare them for it. Methods employed by respondents in this research included sending clinical directors on King's Fund training programmes, setting up a medical leadership programme with Warwick Business School, and offering training courses to staff.<sup>41</sup>

35. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p3

36. Richard Giordano, Leadership Needs of Medical Directors and Clinical Directors, The King's Fund, 2010, p5

37. Monitor, Supporting the role of Medical Director, 2014, p22-3

38. Ibid p24-5

39. NHS Confederation, Future of Leadership Paper 2: Developing NHS Leadership: The Role of the Trust Medical Director, NHS Confederation, 2009, p5

40. Monitor, Supporting the role of Medical Director, 2014, p22-3

41. Faculty of Medical Leadership and Management and Hunter, What Makes a Top Medical Director?, Hunter Healthcare, 2016, p20-21

**7.2.3** One of the Medical Directors we spoke to said that when she was first considering taking on the role, she felt unprepared and was concerned that she would not have 'what it takes'. This sentiment is shared by many Medical Directors who, before taking on the job, have no exposure to the board and little understanding of what is required of them.<sup>42</sup> However, as in the literature, several of our respondents were taking steps to improve succession planning in their organisation by identifying clinicians with leadership capabilities and nurturing and training them internally, and combining this with external courses. 'Leading by example' and implementing a more 'clinical-led' structure were both identified as being conducive to achieving this. One of the Medical Directors believed that having more clinicians on the board is one way to ensure that in 50 years' time the NHS is thriving, and believed succession planning and continuity of leadership was key to this.

<sup>42</sup> NHS, *The Making of a Medical Director*, 1 April 2016

## 8 Barriers and challenges of the role

**8.1.1** Along with the issue of succession planning, Monitor identifies a 'common narrative' among Medical Directors about potential barriers to taking up the role:

- Lack of recognition for time and effort, often under-resourced, with unrealistic demands and expectations
- Giving up private practice and the commercial sector (which can offer better remuneration)
- Perceived to have less respect and support than academic roles
- Lack of development and career structure: why do it early on in a career?

Other issues included a lack of interest from the board and both internal and external stakeholders being unwilling to consider the necessary changes.<sup>43</sup> This 'common narrative' of issues exists throughout the literature. Points raised elsewhere include the regulatory burden and workload being too high (raised by 67% and 62% of respondents respectively in FMLM's research)<sup>44</sup>, and the presence of 'tribalism' in the NHS which makes it difficult for Medical Directors to bridge two cultures.<sup>45</sup> Another problem facing Medical Directors is the growth of managerialism, with successive governments relying on general managers to implement healthcare reform, resulting in substantial investment to support the leadership development of general managers, whilst not replicating this to support doctors to become leaders.<sup>46</sup>

**8.1.2** The transition itself from purely clinical work to leadership brings with it challenges, as shown by Monitor:

- Understanding how the board works and the breadth of individual and corporate responsibility
- Strategy and finance
- Relationships with the general body of clinicians (see above)
- Volume of work and time management
- Resilience needed to cope with scrutiny and isolation<sup>47</sup>

**8.1.3** The problem of relationships with peers, particularly clinicians, was also discussed by our respondents. One Medical Director had even been referred by consultants to the General Medical Council (GMC) for investigations, which were unfounded but resulted from poor relationships. On the other hand, other Medical Directors commented that maintaining relationships with under-performing clinicians was difficult, with investigations being difficult and time consuming. One believed that the key to developing positive relationships was to demonstrate that as a leader, you are doing good for the whole organisation, not just the management.

**8.1.4** Practical issues such as workload, too many meetings, and financial barriers to investing in quality and safety were also cited as major challenges, as was a lack of support and feeling isolated, and needing to be 'all things to all people'.

43. Monitor, Supporting the role of Medical Director, 2014, p1

44. Faculty of Medical Leadership and Management and Hunter, What Makes a Top Medical Director?, Hunter Healthcare, 2016, p9

45. Chris Ham and Helen Dickinson, Engaging Doctors in Leadership: What can we learn from international experience and research evidence?, NHS Institute for Innovation and Improvement, 2008, p16

46. HSJ, Medical leadership is vital for quality patients care, 30 April 2013

47. Monitor, Supporting the role of Medical Director, 2014, p14

## 9 Conclusions and recommendations

9.1.1 Despite the variations in the role across organisations, some common themes can be identified around responsibilities and challenges faced by Medical Directors. More in depth understanding of the role by members of the board, as well as clinicians themselves, can go a long way in making the role more effective. The NHS has not yet produced an up-to-date code distinctly outlining the role and its expectations which would clarify the role for Medical Directors and others. We recommend that each trust develop and disseminate its own set of induction materials where the role of the Medical Director is explored and clearly outlined within the context of the organisation. This would be conducive to improving some of the challenges faced by Medical Directors described in this paper and to developing good working relationships.

When it comes to the future of the role more generally, we recommend:

- Developing clearer training and career pathways for both potential and current Medical Directors and succession planning. This should go hand in hand with a wider policy of increasing clinician recruitment for leadership roles.
- Giving Medical Directors more freedom to retain clinical practice, and having the opportunity to return to it, particularly in the same organisation. Clinicians should not have to make a choice between clinical practice and managerialism. Striving to find a middle ground would contribute to more effective clinical leadership.
- Better understanding of the role by other board members, particularly its strategic aspects. Our research found that NEDs especially often lack an understanding about the role and may benefit significantly from better induction processes. Both NEDs and MDs stand to gain from developing a stronger working relationship on the board.
- Developing an enhanced understanding of the leadership elements of the role by the clinical body. Understanding the role within everyday realities of the organisation may help an MD win the support of the clinical body. Clearer guidelines on the role disseminated by the trust can help increase understanding and encourage young doctors to become interested in the role early on in their careers.

## 10 Acknowledgements and references

10.1.1 GGI would like to thank those Medical Directors who freely gave their time and input to this paper.

10.1.2 Blackburn, S. et al., *Integrated Governance Handbook: A handbook for executives and non-executives in healthcare organisations*, Department of Health, 2006

Bohmer, R. *The instrumental value of medical leadership*, The King's Fund, 2012

Bullivant, J. et al., *Good Governance Handbook*, GGI/HQIP, 2015

Faculty of Medical Leadership and Management and Hunter Healthcare, *What Makes a Top Medical Director?* Hunter Healthcare, 2016-07-29

Giordano, R. *Leadership Needs of Medical Directors and Clinical Directors*, The King's Fund, 2010

Ham, C. and Dickinson, H. *Engaging Doctors in Leadership: What can we learn from international experience and research evidence?*, NHS Institute for Innovation and Improvement, 2008

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## NICU Meeting

### Notes of Meeting held in NICU Meeting Room Royal Hospital for Children

Friday 27 December 2019 at 12.00 noon

#### Present

Sandra Devine (Chair)	Acting Infection Control Manager
Prof Alistair Leanord (Teleconference)	Clinical Lead Microbiology / Infection Control Doctor
Kate Hamilton	Acting Nurse Consultant
Angela Johnson	Senior Infection Control Nurse
Kathleen O'Reilly	Consultant Neonatologist
Karen Walsh	Consultant Neonatologist
Jonathan Coutts	Consultant Neonatal and Respiratory Paediatrician
Patricia Friel	Lead Nurse
Sharron McMonagle	Senior Charge Nurse

#### In Attendance

Ann Lang (minutes)	PA, Infection Prevention and Control
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Item	Action
<p><b>1. Introduction</b>            Sandra Devine welcomed everyone to the meeting to discuss <i>Serratia marcescens</i> in NICU, RHC and round the table introductions were made. She asked the group if they were happy to proceed with her as host and Professor Leanord on teleconference as the chair of this meeting and the group agreed.</p>	
<p><b>2. Reminder of Confidentiality</b>            The group were informed of the need for patient confidentiality as patient identifiable material will be discussed.</p>	
<p><b>3. Incident Update</b></p> <ul style="list-style-type: none"> <li>• <b>General situation statement / Patient Report</b>              Kate Hamilton updated on the general situation and informed that a PAG was held on 20<sup>th</sup> December. She said there were two patients with <i>Serratia marcescens</i> and a third case was identified on 22<sup>nd</sup> December 2019. She provided the following update:-</li> <li>- Patient 1 [REDACTED] was in Room 5, NICU on 17<sup>th</sup> November and transferred to Room 9, NICU on 13<sup>th</sup> December and was positive for <i>Serratia marcescens</i> on 11<sup>th</sup> December.</li> <li>- Patient 2 [REDACTED] was in Room 5, NICU after being transferred from Edinburgh. Patient transferred back to Edinburgh on 26<sup>th</sup> October and was readmitted to Room 5, NICU on 6<sup>th</sup> November. Then was transferred to Room 4, NICU on 9<sup>th</sup> November and was positive for <i>Serratia marcescens</i> on 15<sup>th</sup> December 2019. No colonisation was reported when the patient was transferred from Edinburgh.</li> </ul>	



Item	Action
<p>- Patient 3 [REDACTED] was [REDACTED] on [REDACTED] and was placed in Room 4, NICU and was positive for <i>Serratia marcescens</i> on 22<sup>nd</sup> December.</p> <p>As of today, one patient remains in NICU and is in isolation on the ward with 1:1 nursing. Mr Coutts said the baby is unwell but for reasons unrelated to <i>Serratia marcescens</i> colonisation. He felt there was an issue with their PICC line.</p> <ul style="list-style-type: none"> <li>• <b>Microbiology report</b>            Professor Leanord reported that no other microbiology is available and all isolates have been sent for typing.</li> </ul> <p><b>4. Risk Management/Control Measures</b></p> <ul style="list-style-type: none"> <li>• <b>Patients</b>            One patient remains on the ward and is isolated.</li> <li>• <b>General</b>            It was agreed to have rooms 4 and 5 terminally cleaned and Kate Hamilton will organise this. As the ward is not too busy Dr Coutts and Sharron McMonagle confirmed that they can decant patients to other rooms whilst rooms 4 and 5 are being terminally cleaned.</li> </ul> <p>A hand hygiene audit was carried out with a score of 100% for compliance and 90% for overall compliance. A couple of technique failures were identified but this has been addressed and the SPE section of the IPCAT was carried out in NICU and SCBU with scores of 82% and 86% respectively.</p> <p>Sandra Devine suggested to look at equipment that is shared e.g. Echo machine and frame. It was agreed that these will be cleaned.</p> <p><b>5. Further Investigation</b>            A further hand hygiene audit will be carried out next week.</p> <p>Sandra Devine asked Professor Leanord if environmental sampling should be undertaken. Professor Leanord suggested to leave this at the moment but stated that if there is another case this can be reviewed.</p> <p><b>6. Healthcare Infection Incident Assessment Tool (HIIAT)</b>            A copy of the HIIAT was distributed to the group. Sandra Devine reported that this is a national assessment tool and there is a requirement for us to complete this.</p> <p>The HIIAT assessment was agreed as <b>GREEN</b>.</p> <p>Severity of illness – MINOR            Impact on Services – MINOR            Risk of Transmission – MINOR            Public Anxiety – MODERATE</p>	<p>KH</p>

Item	Action
<p><b>7. Communications</b></p> <ul style="list-style-type: none"> <li>• <b>Advice to Patients/Parents</b> Parents have been informed.</li>   <li>• <b>Duty of Candour</b> Noted.</li>   <li>• <b>Advice to staff</b> Staff are aware of the patient cases.</li>   <li>• <b>Media</b> Sandra Devine advised that she will inform the Press Office in case there are any press enquiries.</li>   <li>• <b>HPS / SG HAI Policy Unit</b> Sandra Devine will update HPS with the number of cases.</li> </ul>	<p></p> <p></p> <p></p> <p><b>SD</b></p> <p><b>SD</b></p>
<p><b>8. AOCB</b> Nil.</p>	<p></p>
<p><b>9. Date and Time of Next Meeting</b> No further date for a meeting was set.</p>	<p></p>



SCOTTISH HOSPITALS INQUIRY  
**Bundle of documents for Oral hearings commencing from 19 August 2024 in  
relation to the Queen Elizabeth University Hospital and the Royal Hospital for  
Children, Glasgow**  
**Bundle 27 - Miscellaneous Documents - Volume 10**