

NHS GREATER GLASGOW & CLYDE  
STANDARD OPERATING PROCEDURE (SOP)

**FOR MINIMISING THE RISK OF *Pseudomonas aeruginosa* INFECTION FROM WATER**

Applicable in all adult and paediatric intensive care units and neonatal units (Levels 1, 2 and 3)

Effective from: July 2021

Review date: July 2023

Version: 5

This SOP applies to all staff employed by NHS Greater Glasgow & Clyde and locum staff on fixed term contracts and volunteer staff.

**SOP Objective**

To minimise the risk of *Pseudomonas aeruginosa* infection in healthcare premises from water.

Key changes from previous version:

1. Reference update
2. Revised PA audit / checklist to include identification of water ingress/ estates works at time of incident

**Document Control Summary**

Approved by and date	Board Water Safety Group, NHS GGC Tabled at Board Infection Control Committee, NHS GGC
Date of Publication	July 2021
Developed by	IPCT
Related Documents	Standard Infection Control Precautions (SICPs) - (NIPCM) NHS GGC Water Safety Policy
Distribution/Availability	NHSGGC Infection Prevention and Control web page <a href="http://www.nhsggc.scot/hospitals-services/services-a-to-z/infection-prevention-and-control">www.nhsggc.scot/hospitals-services/services-a-to-z/infection-prevention-and-control</a>
Lead Manager	Board Infection Control Manager
Responsible Director	Board Medical Director

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## Introduction

This SOP provides direction and guidance for ward based staff to meet their responsibilities as stated in *HPS(2018) Draft Guidance for neonatal units (NNUs) (levels 1,2&3), adult and paediatric intensive care units (ICUs) in Scotland to minimise the risk of Pseudomonas aeruginosa infection from water*. This document refers to critical control points 2 – 4 (inclusive) only. (Critical points 1, 5 and 6 are considered in the NHSGGC Water Safety Policy and Written Scheme).

All wards / departments listed in the risk assessment for additional control measures to minimise the risk of *Pseudomonas aeruginosa* infection from water should be included in this guidance.

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## 1. Responsibilities

### **Senior Charge Nurses (SCNs) must:**

- Follow this SOP.
- Undertake flushing of taps on clinical hand wash basins in clinical areas on days when the Facilities exception reports highlight that daily cleaning of those sinks has not been possible.
- Keep records of flushing of these taps for at least one month.
- Inform a member of the local Estates Team if this SOP cannot be followed in relation to flushing water outlets.
- Inform a member of the local Estates Team of infrequently used outlets which could be removed.
- Allow members of the local Estates Team access to complete maintenance as appropriate.

### **Estates must:**

- Support the Board Water safety Plan for all areas of NHS GGC
- Undertake actions deemed the responsibility of the local Estates Department as per the Water Safety Policy and Written Scheme.
- Keep a record of outlets reported that are deemed to be infrequently used and actions taken by them to remove this risk.
- Provide a report of maintenance actions and issues/ anomalies to the Sector Water Safety Group.
- Support staff locally to undertake their responsibilities in terms of reducing risk associated with pseudomonas.

### **Managers must:**

- Make this SOP available to their staff.
- Support SCNs in following this SOP.

### **Board Water Systems Safety Group must:**

- Keep this SOP up-to-date.
- Audit compliance with this SOP.
- Provide guidance via the Water Systems Safety Policy
- Monitor application of the Board Water Safety Plan and review annually

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## **2. Critical Point 2: Flushing Water Outlets to reduce the risk of Pipework System Contamination**

Flushing of water outlets is necessary to control the build-up of biofilm in water systems to reduce the risk of transmission of pathogens via the environment and equipment to patients.

The Senior Charge Nurse (SCN) in each unit has responsibility (under current guidance) to ensure that the following recommendations are complied with in their area. The SCN should ensure that:

- 1.1** All water outlets are flushed in high-risk environments (patient areas and areas where clinical procedures are prepared or performed) daily, first thing in am for 1 minute at full flow (but not so that splashing goes beyond the basin). This must be recorded. In practice this will be assigned to the Facilities department as part of the local cleaning schedule. Where this has not been possible e.g. access issues, then the flushing will be carried out by the SCN and a record kept (See Appendix 2).
- 1.2** Any problems or concerns relating to the safety, maintenance, reduced usage, any changes in use and cleanliness of all water outlets must be identified and reported to the ICT and the Estates Department as relevant.

## **3. Critical Points 3 -4**

The check list at **Appendix 1** should be used by the SCN as a guide and assessment tool to provide assurance that risks from contamination by *P. aeruginosa* are managed as far as possible by ward staff in high risk areas.

Where units do not meet the guidance, an action plan should be developed to remedy any risks identified through this process.

Those high risk areas in NHS GGC which have flow straighteners on water outlets in patient areas, will be subject to 6 monthly water sampling for PA as per regime outlined in **Appendix 3**

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#### **4. Critical Control Point 5: Surveillance and preparedness**

IPCTs will:

- Include *Pseudomonas aeruginosa* from all specimen types as an alert organism from all in-patient areas.
- Liaise with microbiology if further water testing required (e.g. suspected / confirmed outbreak)

Clinical Managers will:

- Support IPCT to undertake an assessment of the patients and ward
- Have a contingency plan for NICUs, PICU and ICUs to continue safe patient care without use of tap water, if identified as a source.

#### **5. Critical Control Point 6: Investigation and control measures for clinical incidents**

Where alert surveillance identifies *Pseudomonas aeruginosa* bacteraemia in one of the adult high risk areas, or in any specimen from NICUs and PICU, the IPCT will undertake immediate assessment to determine if this is healthcare associated. Consideration should be given to: previous colonisation / infection with PA; review of patient's care; possible reservoirs in the clinical area and all relevant microbiology results. The following action should be undertaken:

1 isolate of PA in a high risk unit: The IPCT will undertake an audit using the PA Ward Audit Checklist (Appendix 1). If no issues, then no further action. If actions required, liaison with SCN to support remedial action. Summarise actions in SBAR for IPCT and SCN.

2 isolates of PA in 2 patients in 2 weeks

The IPCT will undertake an audit using the PA Ward Audit Checklist (Appendix 1). An incident meeting will be arranged with IPCT, clinical team and relevant staff, including estates and or microbiology to agree investigation and action required. Minutes should be kept and the incident summarised in an SBAR for IPCT and Sector Management Team.

NB: If there is an indication of an association with water or water-related equipment, consideration should be given to conducting environmental sampling (including water testing).

#### **6. References**

HPS (2018) Draft Guidance for neonatal units (NNUs) (levels 1, 2 &3), adult and paediatric intensive care units (ICUs) in Scotland to minimise the risk of *Pseudomonas aeruginosa* from water.

NIPCM: Interim Guidance. Prevention and management of healthcare water – associated infection incidents/outbreaks (August 2019)

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**Appendix 1: PA Ward Audit Checklist / Assessment Tool:**

<b>Critical Control Point 3: Preventing Direct Water Usage Colonising / Infecting Vulnerable Patients</b>		<b>Requirement met Yes/No</b>	<b>Actions required/ completed</b>
<b>1.1</b>	<p><b>Washing Babies and high risk patients:</b> Patients are washed (inc. face, body wash, top &amp; tail, bed bath, nappy change and immersion bath) using clean, fresh tap water/ commercial wipes.</p>		
<b>1.2</b>	<p><b>Defrosting Breast Milk:</b> Breast milk is defrosted either:</p> <ul style="list-style-type: none"> <li>• in a designated milk fridge</li> <li>• outside fridge at room temperature OR</li> <li>• using a warming/ defrosting device designed to ensure no direct contact with the bottle/ syringe with non-sterile water.</li> <li>• Using sterile water warmed in a warming cabinet</li> </ul> <p>NB: Discard any milk not used once defrosted DO NOT USE WARM TAP WATER</p>		
<b>1.3</b>	<p><b>Warming Breast/ Formula Milk:</b></p> <ul style="list-style-type: none"> <li>• Milk is taken out of fridge one hour prior to use OR</li> <li>• Milk is warmed using a warming device designed to ensure no direct contact with the bottle/ syringe with non-sterile water.</li> <li>• Use warmed (in warming cabinet ), sterile water</li> </ul>		
<b>1.4</b>	<p><b>Use of Ice:</b></p> <ul style="list-style-type: none"> <li>• Ice is not used for direct baby care in NNUs (all levels).</li> <li>• Ice for consumption by severely immunocompromised patients should be made with sterile water and not taken from an ice machine.</li> </ul>		

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<b>Critical Control Point 4: Preventing Indirect Contact with <i>P. aeruginosa</i> from Colonised/ Infected Patients</b>	<b>Requirement met Yes/No</b>
<p><b>2.1 Hand Wash Stations:</b></p> <ul style="list-style-type: none"> <li>• Clinical hand wash sinks are used for hand washing only.</li> <li>• Clinical Hand wash sinks are cleaned at least daily as per National Cleaning Specification.</li> <li>• Hand hygiene product bottles are never topped up</li> <li>• Hand hygiene should be undertaken as per National Infection Prevention and Control Manual (NIPCM)</li> <li>• Clinical hand wash sinks are cleaned daily as per National Cleaning Specification</li> </ul>	
<p><b>2.2 Aseptic Procedures:</b></p> <ul style="list-style-type: none"> <li>• Aseptic procedures are prepared and/ or performed in an area where there are no concurrent procedures being undertaken that generate splashing which could contaminate a sterile surface.</li> <li>• Decontaminate all aseptic procedure surfaces with a detergent or alcohol wipe</li> </ul>	
<p><b>2.3 Aerosol Generating Procedures:</b> Existing guidance in the NIPCM for aerosol generating procedures is followed.</p>	
<p><b>2.4 Discarding Potentially Contaminated water/ fluids:</b></p> <ul style="list-style-type: none"> <li>• Small volumes of fluid, e.g. ET/ ventilator condensate, are discarded into clinical waste bags.</li> <li>• Larger volumes, e.g. bath water etc, are safely transported to a sink (not a hand wash sink) or sluice.</li> </ul>	

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<b>Critical Control Point 4: Preventing Indirect Contact with <i>P. aeruginosa</i> from Colonised/ Infected Patients</b>	<b>Requirement met Yes/No</b>	
<p><b>2.5 Suction/ Chest Drain Bottles:</b> Disposable suction container liners are sealed and discarded in a suitable container or solidifying gel is used prior to discarding in healthcare waste.</p>		
<p><b>2.6 Equipment Decontamination: Incubators</b> All re-usable equipment is thoroughly dried including mattress and all other parts, following decontamination.</p>		
<p><b>2.7 Humidifiers:</b></p> <ul style="list-style-type: none"> <li>• Humidifiers on incubators: Only sterile or distilled water is used to fill and top up.</li> <li>• Re-usable humidifiers are decontaminated in a Central Decontamination unit (CDU). If not able to withstand reprocessing in a CDU, then manufacturer's instructions must be followed.</li> </ul>		
<p><b>2.8 Storage of Equipment:</b> Patient equipment is not stored where they may be exposed to splash contamination.</p>		
<p><b>2.9 Non-Clinical Procedures that create a spray:</b></p> <ul style="list-style-type: none"> <li>• No fluid containers are topped up</li> <li>• Spray bottles are not used for cleaning solutions and in areas where aseptic procedures are being prepared or are ongoing.</li> </ul>		
<p><b>3.0 Water Ingress/ Ongoing repairs</b> There have been no water ingress or ongoing repairs in the patient environment</p>		



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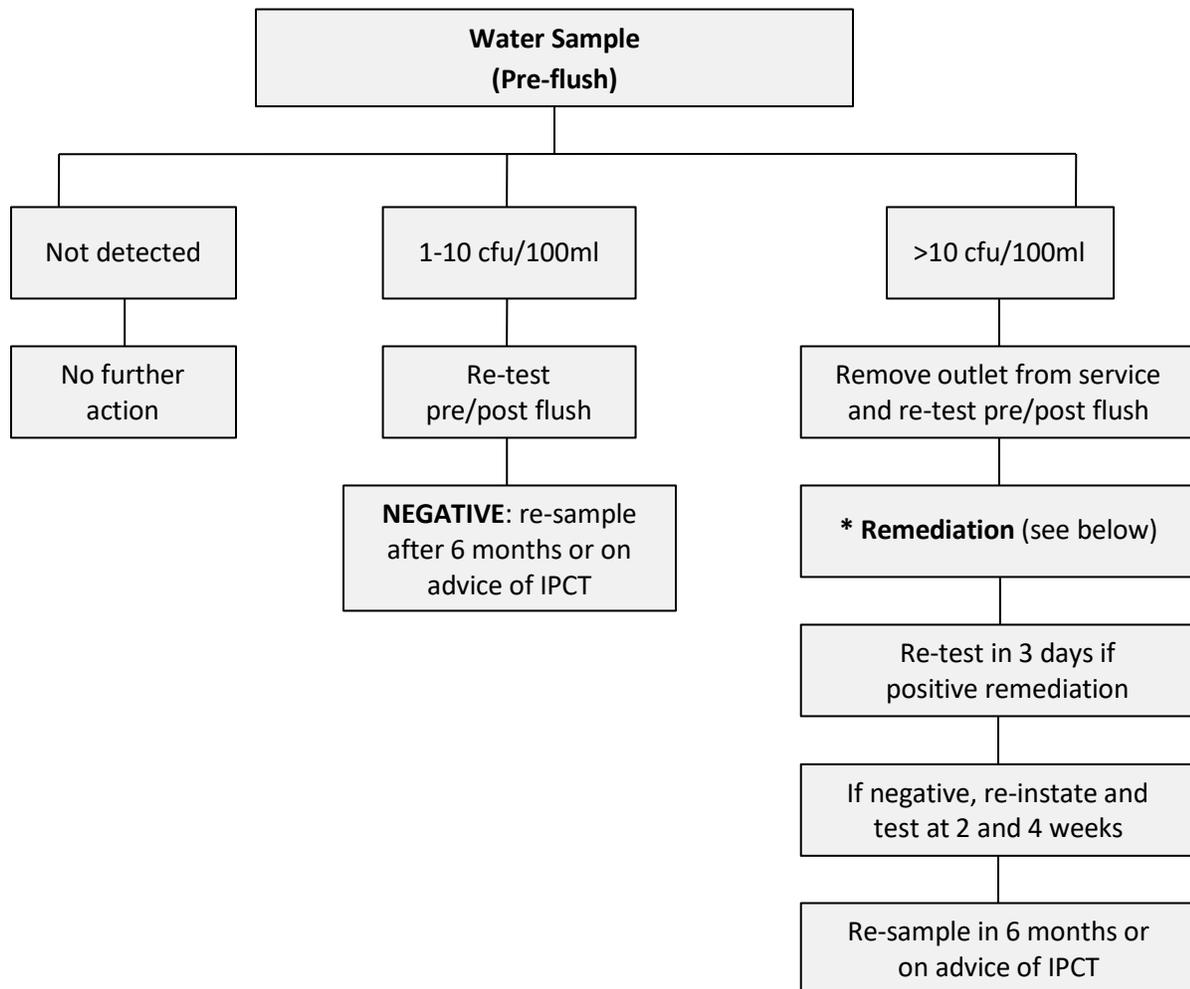
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**Appendix 3: Water testing protocol for *Pseudomonas aeruginosa* in NICU**

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

Water outlets which should be sampled include those with supply water that have:

- direct contact with patients
- used to wash staff hands before and after clinical procedures
- used to clean equipment that will have contact with patients



**\* Remedial measures**

Consider the following:

- Continue daily flushing while out of use
- If practical consider removal of flow straighteners
- Hand washing should be supplemented by the use of alcohol gel

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- Check unit for little-used outlets and if possible remove
- Check pipework for deadlegs and blind ends
- Consider disinfection e.g. chlorine dioxide
- Consider replacement taps
- Ensure best practice in relation to handwash basins
- Use bottled water for baby bathing until re-test –ve

**Interpreting pre and post flush counts**

High counts pre-flush (> 10 cfu/100ml) and low post flush (<10cfu/100ml) suggests local water outlet problem.

High count pre and post flush (> 10cfu/100ml) suggests wider problem with the water supply. In this situation most outlets are likely to be positive and other points in the water system should be sampled.