National Neonatal Network Guideline

A best practice statement: Optimal decontamination of breast pump equipment in hospital

Scottish Perinatal Network NEONATAL

Document Control Sheet

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Disclaimer

The recommendations in this guideline represent the view of the National Neonatal Network Guideline Development Group, arrived at after careful consideration of the evidence available. When exercising their clinical judgement, healthcare professionals are expected to take this guidance fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to follow the guideline recommendations and it remains the responsibility of the healthcare professional to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

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1. Introduction

1.1 Purpose

Across NHS Scotland, there are various practices currently used to decontaminate breast pump equipment used for expressing breast milk in hospital. The inconsistencies cause confusion and anxiety for families who often experience care in more than one neonatal unit and this is also challenging for staff. It was agreed following review, by a short life working group was agreed that a best practice statement underpinned by expert consensus would help streamline practice and alleviate some of these concerns.

The purpose of this document is to produce a best practice statement for the optimal method of decontamination of breast pump equipment in hospital, including neonatal units, postnatal wards and children's hospital setting based on professional consensus from a group of experts.

There is limited good quality published evidence available and much of the guidance represents good practice based on the consensus view of the working group. This group was a collaboration of representatives from the Perinatal Network, ARHAI Scotland and Infection prevention control leads as well as clinical experts from neonatology, the Scottish donor milk bank co-ordinator and infant feeding advisors from across the country.

2. Method

2.1 Evidence review

A rapid review was undertaken using MEDLINE and a survey of all neonatal units in NHS Scotland to establish the evidence base and review current practice. Due to lack of current evidence identified from scientific literature, where evidence was lacking best practise statements were informed based on expert opinion via a series of consensus agreed discussions. This document pulls together all this work and is endorsed by our multi professional group of experts.

2.2 Practice review

The short life working group considered the following decontamination methods:

1. Single use only – new disposable sterile equipment is provided for every use;

2. Routine cleaning in a solution of warm water with detergent, rinse thoroughly in potable drinking water, dry thoroughly using disposable paper towels or single use cloth and storing the equipment dry in a clean plastic lidded container to prevent risk from environmental contamination

3. Clean and rinse as above followed by an additional decontamination method

» Heat disinfection from atmospheric pressure steam using a freestanding electrical unit (steam sterilising), or microwave bags

» Chemical disinfection by immersion in a prepared solution of sodium hypochlorite.

3. Recommendations

3.1 Decontamination of breast pump collection equipment

Any decontamination method used should always be a method which is compatible with the manufacturer's instructions.

In all neonatal units in NHSScotland, mothers are provided with single patient use breast pump collection kits and they are discarded when no longer required. In the home and hospital, potable (drinking quality) water should be used for cleaning and rinsing breast feeding equipment. **Where there are concerns about water quality, then boards should work in partnership with their estates and ICPT to ensure that this is not a barrier to meeting best practice recommendations for decontamination of breast pump equipment. See** HACCP **document for guidance.**

Correct hand hygiene technique including thorough drying of hands, should be used prior to expressing breastmilk (1). Follow NHS Scotland recommendations available here.

Breast pumps should be wiped before and after use with hospital grade detergent wipes as per manufacturer's instructions. Breast pump collection kits can consist of several parts, some of which are quite small and delicate. New kits not marked as sterile, should be decontaminated before first use by washing in hot soapy water from a potable water source, rinsed and dried. (3) The kits must be completely dismantled and decontaminated after every use. All parts excluding tubing should be immersed in warm water with detergent and washed thoroughly removing all milk debris. They should then be rinsed in warm water. Tubing should be wiped down with hospital grade detergent wipes. All components of the equipment must be dried using disposable paper towels or a single use cloth and stored in a sealed container to reduce the risk of bacterial growth which may be hazardous to the baby. If there is any water or breastmilk in the tubing the set should be discarded and a new set used.

Decontaminating the kits is usually carried out by the mother. This requires clear instructions and demonstration which should be supported by a detailed guide click here

Supportive demonstrative instructions should be provided by a member of staff with the appropriate competencies prior to the mother commencing decontamination and recorded appropriately. The importance of drying equipment thoroughly should be emphasised to mothers (2)

For routine decontamination of kits reused by the same mother, the SLWG recommends the method 1 of cleaning with warm water and detergent, rinsing in

running water, drying thoroughly and storing items in a clean, dry container with a lid. This provides an acceptable level of decontamination if performed correctly, for use in most circumstances.

3.2 Additional decontamination methods

Decontamination methods in addition to the wash, rinse and dry process are only required where risk has been identified by Infection Prevention and Control Team and/or triggered by an Incident Management Team (IMT). See HACCP document for more information. The use of additional methods should be in accordance with a plan formulated by Infection Prevention and Control Team and/or IMT. This plan should be regularly reviewed with discontinuation of additional measures as soon as it is safe to do so.

Where an additional method is indicated, the additional method recommended by the working group is a heat treatment method using either steam steriliser or microwave bags. This method should only be used where it is identified as safe by the manufacturer's instructions.

Heat methods have higher quality assurance than chemical methods for disinfection. For both heat and chemical methods, thorough washing and rinsing of the items should occur first. However**, neither steam nor chemical disinfection will sterilise the kits.**

Heat disinfection

A local risk analysis should be carried out to determine suitability of using heat disinfection equipment in the clinical setting prior to use.

For all decontamination methods involving heat, water will be present on the kits after completing the process. After any excess water has been shaken off, kits should be thoroughly dried with paper towels..

Microwavable bags are intended to be used by only one mother. Use according to manufacturer's instructions with the number of times used before being discarded, monitored and recorded locally. In hospital, steam steriliser units may be used by more than one mother with a risk that parts of kits belonging to different mothers being mixed up.

The working group consider that if these units are used communally, the individual kits should be identified to a particular mother and processed separately each time.

Chemical disinfection

Chemical disinfection has lower quality assurance compared with heat disinfection. Our expert group recommends that where additional measures of decontamination are required as per HACCP guidance/ICPT request that heat disinfection is the only recommended method.

In hospital chemical disinfection should only be used if the local IPCT has given approval of the method and quality assurance of its use.

The tablet form of the hypochlorite-based chemical is very stable on dry storage, whilst liquid hypochlorite is unstable and should be stored avoiding excess heat and with care to avoid any extraneous material being introduced into the bulk storage container. Both preparations need correct dilution prior to use. Use of inappropriate containers for making up the disinfectant may increase the possibility of user dilution errors. Concentrations which are too low may increase the risk of microbial survival.

Incorrect technique such as inadequate pre-cleaning, failure to fully disassemble equipment, incomplete submerging of articles and 'topping-up' of disinfectant tanks increases the risk of ineffective decontamination and bacterial growth (5)(10). Tanks should be washed daily with detergent and rinsed prior to filling with fresh solution. This should be monitored and recorded locally.

Use of chemical disinfectants may also give a false sense of security and distract attention from thorough initial washing (6).

Where used on a NNU many individual chemical tanks are needed. As well as giving storage problems, there is a risk that kits belonging to different mothers may become mixed up.

Disinfectants have a very strong smell and this may persist on a dummy or teat when removed from the fluid. Babies have a very well developed sense of smell and strong smells can cause additional stress. Infant developmental care recommendations include avoiding unpleasant tastes and odours (7).

Further work is also needed to determine whether continued regular exposure to disinfectant at an early age could influence the development of the protective normal flora of the skin, mouth and gut (8). Some manufacturers have included rinsing in their decontamination guidance but others do not recommend it. Where rinsing is recommended it should be with sterile water.

Practice varies in terms of rinsing equipment before use. If items are removed from the disinfectant without rinsing, a small volume of the disinfectant will remain on the surface of the equipment. Colostrum or breast milk could become contaminated with disinfectant from the equipment surface and it may be fed directly to the infant. The risk of an adverse effect on the constitution of the milk or on a pre-term infant's digestive system has been raised (6**).**

If chemical disinfection is considered necessary, the working group recommend that kits should be rinsed with sterile water and dried after removal from the disinfectant.

4. Conclusions

Safe methods of decontamination of breast milk collection kits are essential to ensure safe management across neonatal services. By considering the practical needs of mothers and ensuring assessment of any IPC risks, correct methods employed will minimise any risks of contamination to equipment and ensure a consistent approach across neonatal services.

Embedding supportive education in the practical methods from hospital admission sets out best practice for ongoing care. The following recommendations were based on best practice and consensus agreed expert opinion.

The working group's recommendations are based mainly on good practice together with expert opinion.

Breastmilk is not expected to be sterile. However, if the decontamination instructions in the Appendix are followed, any additional bacterial load from equipment used for expression should be reduced. When correctly carried out, these processes should achieve appropriate decontamination in a practical time frame with readily available resources.

Although it is still the preferred method in some hospital units, the working group did not consider that it was essential to provide sterile breast pump milk collection equipment every time milk is expressed by the same mother. If decontamination is carried out correctly it should not be necessary. All methods, including the standard wash, rinse and dry method, require appropriate training for each stage of the process, together with follow-up instruction where needed.

Given the lower quality assurance of chemical disinfection compared with heat disinfection, the working group recommend that heat disinfection is the method of choice where disinfection is necessary.

5. Key recommendations

- **Breast pump collection kits can be reused by the same mother unless there is evidence of wear and tear causing kit malfunction if key recommendations in this guidance are followed**
- **A detergent wash followed by thorough rinsing and drying after each use gives an acceptable decontamination for most circumstances including where the infant is within the neonatal unit, if it is performed correctly**
- **Chemical disinfection has lower quality assurance compared with heat disinfection. Our expert group recommends that where additional measures of decontamination are required as per HACCP guidance/ICPT that chemical disinfection is not recommend.**

- Good hygiene is required throughout the expressing process including thorough hand washing
- Thoroughly using detergent wipes to clean equipment before expressing 1
- Each mother must have her own breast pump collection equipment
- All breast pump collection equipment must be completely dismantled and decontaminated after each use

6. Definitions used by Group

Cleaning is the physical removal of any visible debris, body fluids (blood, vomit) etc by use of an appropriate cleaning agent such as detergent**.** Decontamination is the process of removing or killing pathogens on an item or surface to make it safe for handling, re-use or disposal, by cleaning, disinfection and/or sterilisation.

Disinfection is using physical or chemical means e.g chemical disinfectant to reduce the number of infectious agents.

Sterilisation is a procedure required to render an item free of all microorganisms (usually by heat or chemical means).

7. Contributors

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