

Toileting Aids in Hospitals

– Reuse or Dispose?



Introduction

The management of human waste is recognised as a high risk for transmission of infections. Faeces contain just about every group of human pathogen such as *Clostridium difficile* (*C. difficile*), Vancomycin-Resistant Enterococci (VRE), multi drug-resistant Gram-negatives (MDR Gram-negatives), Meticillin-resistant *Staphylococcus aureus* (MRSA) and Norovirus, which are significant to and commonly encountered in healthcare environments.

In healthcare settings, *C. difficile* infection is usually spread via the hands of staff and those who come into contact with infected patients or with environmental surfaces like floors, reusable bedpans and toilets that have been contaminated with the bacteria or its spores. The bacteria and spores are extremely hardy, and some pathogens can survive on dry surfaces such as clothes and environmental surfaces for months.^[1]

In a 2011 survey by the US Centers for Disease Control and Prevention (CDC), it was found that on any given day, about 1 in 25 hospital patients has at least one healthcare-associated infection (HCAI). This is an estimated 722,000 HCAs in US acute care hospitals. 123,000 (17%) had gastrointestinal infections, and 93,000 (13%) suffered from urinary tract infections. About 75,000 (10%) hospital patients with HCAs died during their hospitalisations.^[2]

Despite evidence linking transmission of multi-drug resistant pathogens in hospital settings, little is known about the handling of faeces and urine in hospitals worldwide. There is also hardly any published literature to be found concerning correct bedpan management procedures, demonstrating that it is either not thought of as an issue, or not significant enough of a problem.

Items that become contaminated with human faeces, such as bedpans, are categorised as non-critical devices defined as items that come into contact with intact skin, as opposed to critical items that enter sterile tissue or the vascular system.^[3] As a result, surprisingly little attention appears to be paid to the risks of disease transmission and environmental contamination, both of which are particularly likely to occur during diarrhoea episodes. Safe management of contaminated human waste therefore has the potential to reduce HCAI through the employment of better hygiene and infection prevention measures.

Current Solutions

There are a number of chemical, physical and mechanical toileting aids and human waste disposal solutions in healthcare environments for immobile patients. These include:

- Reusable plastic/metal bedpans and implements that are manually cleaned using unvalidated methods and without testing of efficacy
- Reusable plastic/metal bedpans and implements that are cleaned in local washer disinfectors
- Single-use bedpans and implements that are processed in disposal units

Other more invasive solutions include urinary catheterisation, which is the insertion of a tube to drain the patient's bladder of urine. However, such a procedure should only be undertaken if there is no other option, as it introduces the (sometimes unnecessary) risk of catheter-acquired urinary tract infection (CAUTI). Single-use urinals are a safe and alternative toileting option for patients who are unable to use conventional toileting methods and do not require catheterisation.

1 IN 25
HOSPITAL
PATIENTS
HAS
AT LEAST 1
HCAI

Waste disposal practices

Practices with regard to human waste disposal in health-care environments vary in different parts of the world:

- In countries such as India, South Africa and Poland, manually washing reusable bedpans is a commonly accepted practice
- In the UK, 94% of hospitals use a single-use pulp disposable system
- In the US, the preferred method is a single-use patient plastic bedpan
- In Australia, it is a combination of single-use pulp macerator systems and bedpan washer disinfectors

But the most common practice worldwide is reusable plastic containers reprocessed in washer disinfectors.^[4]

Taking a closer look at each solution

1. Reusable bedpans and utensils that are manually washed

Although considered a somewhat acceptable practice, it has been found that manual washing poses extremely high health risks to both patients and healthcare workers. In a survey undertaken by the International Federation of Infection Control (IFIC), it was found that when bedpans are cleaned manually, 44% of the time it is done in the patient's bathroom.^[5]

In the cases of manual cleaning, “cleaning” typically means just rinsing or spraying with cold water, often with bedpan sprayers or “wands”, which often results in splashing and the aerosolisation of faecal material. Manual handling also causes visible splashes and splatters on hands and surrounding items.

There is also a lack of standardisation in validation, testing and monitoring of methods, particularly with regard to effectiveness. Disinfection is often carried out without the observation of correct procedures, if it is carried out at all. Survey findings from Belgium, Canada and the US found that even though healthcare workers were aware of the advisory from the WHO Infection Prevention and Control (IPC) that bedpans have to be cleaned and disinfected after each use, nurses often only do it with water because of their workload, only sometimes following up by wiping or spraying with disinfectant. This cleaning method fails to fully eliminate bacterial and spore loads and is believed to be a contributing factor in increased numbers of *C. difficile* infection. A Canadian study showed the infection rate dropped by as much as 50% when a disposable bedpan system and other interventions were introduced. In addition, meticillin-resistant *Staphylococcus aureus* (MRSA) rates also dropped by 30 – 50%.^[6] Additional issues for consideration identified in this study included staff exposure to chemicals, local reconstitution of disinfectants leading to potential system failures and a lack of validation, monitoring and quality assurance across waste management processes.

2. Reusable bedpans and utensils that are reprocessed in washer disinfectors

The reusable bedpan washer system is used in combination with plastic and stainless steel bedpans and urinals used for patient toileting. Pre- and full washes last for an average of 5-8 minutes, with pre-wash and rinses using hot and cold water before being washed between 80-85 degrees for 60 seconds. Thermal disinfection and detergents are required to reduce the load of pathogens to a level thought to be safe given the Spaulding classification of ‘low’ risk.



**44%
OF MANUAL
BEDPAN
CLEANING
OCCURS IN
PATIENTS'
BATHROOMS**

The benefits of this system include the one-off capital and installation costs, with limited consumable costs thereafter, and a standard operating procedure that ensures continuous monitoring when fitted to the machine. It can be used to clean a range of utensils other than bedpans, and ensures low exposure of chemicals to healthcare workers.

However, a recent study found that 7.6% to 33% of reusable items failed an audit due to visible faecal soiling after processing in a bedpan washer disinfectant.^[7] Even though heat and disinfection might reduce pathogens, another study found that “the current accepted thermal decontamination parameters for all bedpan washer disinfectants (i.e. 80°C for one minute) are not adequate to eliminate *C. difficile* spores from bedpans”.^[8] Inadequate disinfection of bedpans was also associated with cross-infection by VRE^[9] and has also been linked with transmission of VRE. There is a potential for recontamination of the item as soon as it is removed from the machine if procedures are inadequate. Reusable bedpan washers also required periodic validation as well as revalidation following repair or servicing. Some have a lack of warning systems when the machine is not functioning correctly, giving rise to ineffective function if detergent or rinse aid run out.

3. Single-use system

The single-use system comprises the use of a disposal unit and single-use paper-based utensils. The single-use items are broken down into a fine watery slurry using only cold water. Each cycle takes two minutes, reducing instances where there is the potential for a stockpile of soiled bedpans and waste matter is left to dry and solidify, leaving residual soil even after the wash and disinfection cycle.

From an engineering standpoint, the time spent on maintaining disposal units is half of that required to maintain washer disinfectants,^[10] and when all costs are considered, the single-use system can be up to 39.4% cheaper to maintain than alternative systems.

Features comparison chart

Features	Reusable utensils reprocessed in washer disinfectors	Single-use system
Cycle time	Model-dependent, typically 5-10 minutes	2 minutes
Water consumption per cycle	Model-dependent, typically 33-51 litres	24 litres
Energy consumption per cycle	Model-dependent	0.020 Kwh
Capacity	Model-dependent, typically 2 bedpans	Up to 4 items
Running costs	<ul style="list-style-type: none"> Minimal on-going consumables Detergent costs, around £700 per annum Utilities (water and energy) Engineering time: Periodic (annual) validation and revalidation required 	<ul style="list-style-type: none"> On-going pulp consumable costs Utilities (water and energy)



**UP TO
33%**
OF
**REUSEABLE
ITEMS FAILED
AN AUDIT**

**UP TO
39.4%**
CHEAPER

Benefits in practice

Eliminating the need to share and reuse bedpans is the biggest advantage of adopting the single-use system approach. This leads to improved labour productivity, reduced utilities consumption, better patient satisfaction and reduced risk of hospital acquired infection. One third of nursing man-hours can be saved across a year and cleaning tasks attributed to housekeeping hours can free up almost 8,500 hours.^[11] In addition, water consumption can be reduced by up to 50% and the power required can be almost 100% less than that required for traditional bedpan sanitizers.^[12] From an operating environment perspective, there is reduced odour emitted from the utility room. Patients are also reassured and more comfortable using a new disposable receptacle each time.

Conclusion

There are comparable benefits to both washer disinfectant and single-use systems, but due to the high risk of HAIs to both patients and healthcare workers, the choice for toileting aid and human waste management solutions and systems in healthcare facilities needs to be carefully considered. Both systems require training and can still be subject to the risk of operator error.

Even though the use of reusable bedpans and utensils reprocessed in washer disinfectors has been a widely-accepted practice, the fact is that the currently accepted thermal decontamination parameters, such as 80°C for one minute, are simply not adequate to eliminate *C. difficile* spores and VRE from bedpans.

Environmentally, Vernacare's single-use products are manufactured using excess and otherwise wasted clean newspaper. No bleach colouring is added, ensuring products are as environmentally-friendly as possible, and the biodegradable slurry is then safely washed down the drain.

Vernacare's single-use disposable systems have been proven to increase patient and healthcare worker safety by contributing to the reduction in *C. difficile* infections by as much as 56%,^[13] thus breaking the chain of infection. As part of a portfolio of infection control and waste management measures, it contributes to saving nurse time and improving working conditions, helps preserve patient dignity and enhances the patient experience by providing them with a clean product every time.

If you are interested in learning more about single-use disposal systems, please contact:

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**A
 SINGLE-USE
 SYSTEM
 APPROACH
 CAN FREE UP
 8,500
 HOURS**



**OF HOSPITALS
 USE A
 SINGLE-USE PULP
 DISPOSABLE
 SYSTEM**

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