

# Safe handling and disposal of human excreta, protecting the nurse, and the patient

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## Introduction

Understanding the human body's elimination of waste is an integral part of basic nursing training and education.

Elimination is a basic physiological need and a process whereby the human body rids itself of waste products. There are four mechanisms that the body uses to eliminate waste, including sweating, expiration via the lungs, excretion of urine and expulsion of faeces.<sup>1</sup>

A nurse has a responsibility to:

- Assist a patient with elimination as and when required.
- Treat a patient with dignity and respect whilst facilitating elimination.
- Note and record a patient's intake and output.
- Assess, note, record, and report any abnormalities related to elimination.

According to Geyer et al.<sup>1</sup> failure to note and record elimination abnormalities may lead to an incorrect diagnosis. Elimination abnormalities may indicate a change in a patient's condition. The nurse is often required to observe, at times obtain specimens of and dispose of human excreta. These tasks can pose a risk to the nurse, to the environment and consequently to other patients.

## Human excreta and healthcare-associated infections

Many pathogenic microorganisms are found in human excreta, including *Clostridium difficile*, Norovirus, *Pseudomonas aeruginosa* and multidrug-resistant Enterobacteriaceae.<sup>2</sup> Studies have shown that flushing a toilet with the lid open can cause the aerosolisation of *C. difficile*, for example. *C. difficile* was detected in the air 25 cm above a toilet bowl after flushing.<sup>3</sup>

We now need to also be concerned about the infectious waste from patient's with COVID-19 who are nursed in



**Figure 1:** Aerosolisation of a toilet flush without closing the lid<sup>4</sup>

Did you know that even a low number of highly virulent microorganisms on a bedpan that comes into contact with a patient who has a very weak immune system can pose a high risk of infection?<sup>5</sup>

isolation wards in our hospitals. Digestive symptoms are common in patients with COVID-19; viral RNA has been found in the stool of 53% of COVID-19 patients, which suggests the possibility of faecal–oral transmission.<sup>6</sup>

Infectious waste is defined as waste containing blood or bodily fluid from a patient who is deemed infectious and is being nursed in isolation.<sup>2</sup> Staff need to dispose of infectious waste (patient excreta). Potentially infectious excreta would include urine, faeces, vomitus, and wound drainage.

There is a high risk of splashing when disposing of excreta, and it increases the possibility of spreading pathogenic microorganisms either from patient to patient via the nurse or via the environment.<sup>5</sup>

## Managing the disposal of human excreta

Once a nurse has assisted a patient as required with the important function of eliminating waste, the waste itself must be disposed of. The waste will need to be transported safely

and discreetly to a designated area where it is disposed of. All waste receptacles, including receivers, bedpans, urinals, and jugs used for emptying urine catheter bags or wound draining, must be covered during transport. It goes without saying that safe transport includes wearing the required personal protective equipment (PPE). Nurses are sometimes tempted to dispose of waste in the nearest toilet (or hand basin) instead of transporting it to the designated area, dirty utility room or sluice room as it is commonly known as in South Africa.

Sluice hoppers are usually installed in the dirty utility room, and those hoppers do not have lids. Flushing of a sluice hopper can therefore cause aerosolisation and splashing of pathogenic microorganisms. Clean bedpans and urinals are often stored in the sluice room and can easily become contaminated if nurses follow incorrect practices. It is not surprising that *C. difficile* has been found on sluice room door handles.<sup>3</sup> If nurses do not don the correct PPE, remove their PPE correctly or wash their hands correctly, there is a great potential to contaminate their hands and/or their uniforms. This places the nurse at risk, and patients at risk for developing a hospital-acquired infection.

There are now newer ways of managing and disposing of human excreta. They can be divided into methods that use disposable or reusable bedpans or urinals.<sup>5</sup> As with most things in life, there are pros and cons to both methods.

### Managing excreta disposal using disposable bedpans and urinals

Systems exist that make use of bedpans, urinals and receivers manufactured from paper-based or biobased disposable materials. The used containers are then disposed of in a device that macerates or grinds up the container and is then disposed of in the sewer system.<sup>5</sup> This system removes the need to decontaminate waste containers. The pulp-based bedpans may require a reusable support that must be decontaminated between uses.

### Managing excreta disposal using reusable bedpans and urinals

Like the washer-disinfectors used in a central sterilisation department (CSSD), hospitals can use bedpan washer-disinfectors. Plastic or stainless-steel reusable bedpans and urinals are emptied, washed, and disinfected by these washers. The waste is also disposed of in the sewer system.<sup>5</sup>

Bedpan washers are regarded as medical devices and must be manufactured according to strict regulations contained in the ISO standard 15883. The standard consists of several parts. Part 1 covers the general requirement for all types of washers-disinfectors used in healthcare. Automated washer-disinfectors used in a CSSD conform to part 2, and those used to reprocess endoscopes conform to part 4.<sup>7</sup>

Bedpan washer-disinfectors conform to part 3 of this standard. Part 3, titled Requirements for washer-disinfectors employing thermal disinfection for human waste containers, was reviewed in 2016. Bedpans, urinals, receivers, and suction bottles can be reprocessed in washer-disinfectors manufactured according to this standard.<sup>8</sup>

For safety, as per ISO15883,<sup>8</sup> this standard specifies that human waste container washer-disinfectors must:

- Ensure no spillage of contents or discharge of aerosols when emptying.
- Have a flush cycle that removes gross soiling.
- Wash both the inner and outer surfaces of waste containers.
- Have an alarm if for any reason detergent was not dispensed.
- Thermally disinfect containers making them safe to handle upon removal.

Parts 1, 2 and 4 have already been adopted as South African National Standards.<sup>9</sup> The South African Bureau of Standards (SABS) technical committee TC1039 plans to motivate to have ISO 15883 part 3 (human waste containers) adopted as well.

Once a waste container (bedpan, urinal, etc.) has been processed, it will need to be removed from the washer and stored safely. As mentioned previously, cleaned and disinfected bedpans and urinals can be contaminated if stored incorrectly. They should be stored in an inverted position on an appropriate rack, a safe distance from any area where splashing and aerosols could re-contaminate them.

### Caveat: Organisational culture and countries with limited resources

Without a doubt, manual cleaning of bedpans is fraught with danger and should be discontinued. Manual washing of bedpans has the potential to spread pathogenic microorganisms via splashing and aerosol.<sup>5</sup> Some countries have adopted the use of macerators, others bedpan washer-disinfectors, and many are still using manual methods of reprocessing bedpans and urinals.<sup>2</sup>

Up to 50% of bedpans worldwide are emptied and cleaned manually by healthcare workers.<sup>2</sup> It was noted in one study that, of the bedpans cleaned manually, only 39% were cleaned with detergent, 17% were cleaned with water only and 44% with a disinfectant.<sup>2</sup>

Apple<sup>5</sup> states that the manual reprocessing of bedpans and urinals may be performed due to a lack of resources, cultural norms or a lack of information.

### Conclusion

There is no one size fits all solution when it comes to human waste disposal. From my personal observations, there is

a tendency to bypass processes (emptying urinals in hand wash basins, for example) even when we have the resources available to us. We must all play our part in reducing the chances of our patient's developing healthcare-associated infections. One way of doing that will be to improve how we manage the disposal of human excreta in hospitals, clinics, and nursing homes.

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