

# Comparative Analysis of Bedpan Processing Equipment

## HIGHLIGHTS

From the study of the Quebec government agency responsible  
for health services and technology assessment (AETMIS)

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## Preface

The issues which have arisen as a result of the problem of nosocomial infections in Québec are numerous and involve all stakeholders in the health system. In recent years, the challenges posed by the reprocessing of medical devices have become increasingly present, but the solutions for improvement are few.

Considering that "*the average cost related to C. difficile-associated disease acquired during a hospital stay is estimated to be \$16,717*" (ETMIS 2009, p. 32) <sup>1</sup>, it was imperative to analyse the traditional methods of reprocessing bedpans as well as new technologies now available in the industry.

Therefore, we are pleased that AETMIS has been mandated by the Ministry of Health and Social Services (MSSS) to perform a study which analyses bedpan management in the province's health-care facilities.

This document is an effort to put in perspective the analysis produced by AETMIS as it pertains to the use of the hygienic covers™ and recyclable supports. In it, the reader will find highlights of the original study.

We understand that the study by AETMIS is not exhaustive and that some major issues generating additional costs and which could probably influence some of the study's conclusions. Indeed, elements such as labour costs and administrative expenditures, structural changes involved in infrastructure conversion (installation, plumbing) and sterile processing of reusable bedpans have not been taken into account. (p. 31)

We hope that this initial analysis will generate further examination of the economic and environmental issues at stake concerning the various bedpan processing methods.

## Highlights from AETMIS study<sup>2</sup>

The choice of bedpan processing equipment raises safety, organizational, economic and environmental issues (p. 38)

### ***Bedpan Washers***

- Possibility of disinfecting small reusable items on the ward. (p. 21)
- No bedpan washer could guarantee thorough cleaning. (p.16)
- Bedpan washers are designed to disinfect not sterilize bedpans. Yet, disinfection does not kill spore-forming bacteria. It is therefore unrealistic to expect to see spore-free bedpans after reprocessing in a conventional bedpan washer. (p.35)
- It has been demonstrated that the drying stage that is part of the cycle of washer-disinfectors in the CPD significantly contributes to killing spores. Yet, most ward bedpan washers do not have a drying stage. (p.35)
- Given that dried residues are more difficult to remove, the Canadian Standard recommends organizing a system for collecting and transporting soiled receptacles so that they can be decontaminated immediately after use. (p.16)
- The annual capital costs for a bedpan-washer system were much higher than those for macerators (£4195 and £2184 respectively) and use a great quantity of descaling agents which are considered toxic, irritant and corrosive. (p.14 and 17)
- The cleaning and disinfection process may not always be effective, leaving a potential risk of infection. (p.33)
- The main users are patient-care attendants, not sterile processing experts. (p.33)
- Although more recent bedpan-washer models no longer require bedpans to be emptied by hand, the staff still risk contamination if excretions are spilled during bedpan transport in the corridors (from patients rooms to dirty utility rooms). (p.9)

### ***Macerators***

- Prevents accumulation of soiled bedpans waiting to be cleaned. (p.22)
- Macerator breakdowns were chiefly due to drain blockages caused by accidental insertion of solid objects (gloves, diapers, plastic bags, etc.) into the machine. This leads to the risk of infection, and the maintenance staff repairing the macerators may be more exposed to contaminated aerosols. Blocked drains can lead to flooding the ward, which poses a contamination risk. (p.12)
- Bedpan transport to dirty utility rooms. (p.12)
- Even if macerators produce biodegradable solid waste, it still represents a significant volume discharged into municipal sewer systems. (p.34)
- High recurring costs of disposable supplies. (p.25)
- The CPD doesn't necessarily have the capability to reprocess plastic disposable bedpan supports. (p.25)

### **Hygienic Bags**

- Hygienic bags, is a recent single-use concept that allows for the safe disposal of human waste. It would seem to be a promising option at a time of labour shortages and *C. difficile* outbreaks. Although the hygienic bag method requires no equipment or infrastructure, it entails very high operational costs and generates a large amount of environmental waste. (p.ix)
- Effective for controlling infection and contamination risks (outbreaks, asymptomatic carriers, etc.). (p.23)
- Hygienic bags do not leave isolation rooms. This reduces the risk of workplace contamination. (p.23)
- Use of hygienic bags has greatly contributed to reducing the incidence rate of *C. difficile* infections. (p.24)
- Reduces odours. (p.24)
- More time for patient care. (p.28)
- Makes the job easier for patient-care attendants. (p.24)
- Does not require staffing increases. (p.24)
- Increase in bedside care (necessary supplies are available in the isolation area or the room). (p.23)
- Fast and simple procedure. (p.23)
- Works perfectly with commodes. This process is also applicable to the small items. (p.23)
- Eliminates use of water and chemical products. (p.23)
- The use of reusable bedpans without hygienic bags would require thousands of gallons of bleach, causing plumbing problems. Moreover, the priority is still reducing the risk of *C. difficile* infections. (p.24)
- Bags made of oxobiodegradable plastic. (p.23)
- Staff training is short.(p.24)
- Easily adopted and very popular with staff. (p.24)
- Popular with patients: bedpans are less cold, reduces risk of soiling themselves during bedpan use. (p.24)
- Use of recyclable plastic supports for these bags, which replace reusable bedpans and supports. (p.18)

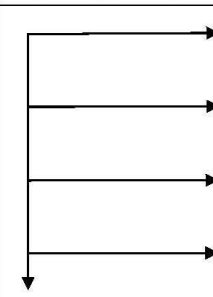
### **Experts made the following recommendations concerning the issue of bedpan processing [IICC, 2007]:**

- Allocate a bedpan to an individual patient and sanitize bedpans or bedpan supports between patients.
- Do not transport uncovered soiled bedpans from one place to another; use solidifying gel if possible. (p.17)

In light of its analysis, AETMIS concluded that bedpan management cannot be uniform across health-care facilities in Québec and that it is up to each facility’s infection prevention and control team to make an informed decision about the method to adopt, in conjunction with management and the rest of the medical and professional staff. For the purpose of guiding that choice, the following basic principles apply:

- Manual bedpan cleaning must be proscribed because it poses a very high risk of infection: staff must not empty bedpans into sinks or toilets and must no longer use spray wands. (p.v)
- Sterilization of reusable bedpans between patients must be considered if the aim is to have bedpans free of bacterial spores in order to better control sources of *C. difficile* infection.
- If the use of bedpan washers is adopted, a backup option must be planned for isolated cases or outbreaks of diarrhea associated with *C. difficile* (disposable bedpans, hygienic bags) especially when reusable bedpans are not sterilized after use. (p.v)
- Installation of modular bedpan-washer units or macerators in the washrooms of isolation rooms should be considered in order to minimize workplace contamination during bedpan transport to dirty utility rooms, and to monitor highly contaminated bedpans. (p.v)
- Staff must be properly trained and must consistently comply with procedures for human waste management, bedpan reprocessing and equipment operation. (p.v)
- The use of hygienic bags for all patients should be considered in the critical conditions of a *C. difficile* outbreak. (p.v)

TABLE 2

Comparison of the procedures using reusable bedpans, disposable bedpans and hygienic bags			
COMMON STEPS	SPECIFIC STEPS		
	BEDPAN WASHERS	MACERATORS	HYGIENIC BAGS
1. A patient needs to have a bowel movement.			
2. The patient is given a bedpan or a hygienic bag.	→		
3. The patient soils the bedpan or hygienic bag.			
	1. Bedpan is taken to dirty utility room.	1. Disposable bedpan is taken to dirty utility room.	1. Hygienic bag is put in wastebasket in patient’s room.
	2. Bedpan is put in bedpan washer.	2. Disposable bedpan is put in the macerator.	↓
	3. Bedpan washer cycle is started.	3. Macerator is started.	
	4. Bedpan is removed and dried.		
4. Staff member washes hands.	↓	↓	↓
5. Bedpan is returned to patient’s room.			
			Housekeeping staff in charge of waste management (empty wastebaskets).
	After patient discharge, bedpan is sent to CPD if hospital has bedpan sterilization policy.	After patient discharge, bedpan support is disinfected in washer-disinfector. During hospital stay and if soiled, bedpan support is disinfected immediately.	After patient discharge, support is returned to supplier for recycling. During hospital stay, soiled support is replaced.

Information presented in this table (p.26) highlights the reduction of steps related to the use of hygienic envelopes in comparison with other methods of management bedpan.

The use of bedpan washers and macerators as bedpan management methods do not fully prevent the risk of workplace contamination. The main reasons are bedpan transport outside the rooms and in the corridors; accumulation of soiled bedpans on counters until a machine is available; non-compliance with hygiene practices; the probability of leakage during macerator operation; regular breakdowns caused by blocked macerators or plumbing; transport to the CPD; and the likelihood of errors resulting from long and complex procedures. Even though the problem of bedpan transport outside isolation areas could be solved by installing modular bedpan-washer units or macerators in patients' rooms, the current infrastructure of some health-care facilities would not allow for that mainly because of the limited number of single rooms, the lack of space, and the extent of retrofitting that would be required to alter the plumbing system. And even if that option were selected, it would still be necessary, in the case of bedpan washers, to sterilize reusable bedpans between patients to address the issue of spore destruction. For macerators, this would involve solving their malfunctions and planning for bedpan support reprocessing. (p.35)

In that respect, hygienic bags would be a safer procedure because the supplies do not leave the isolation area. This alternative requires little or no infrastructure, so it would be easy to implement in hospitals and other health-care facilities. Compared with disposable pulp bedpans, hygienic bags provide a stronger barrier between human waste and bedpan supports. The supports are recycled after use by a single patient (during the entire hospital stay) and the hygienic bags never leave the room (except when the wastebaskets are emptied), so the hazards of spore contamination and spread are minimal. Although hygienic bags incur high operating costs, they save many nursing care hours because the procedure is fast. In a context of labour shortages, the hours saved enable staff to do other tasks or to provide more bedside care. (p.35-36)