



PILOT PROJECT REPORT HYGIENIC LINERS

APRIL 1, 2014, TO MARCH 31, 2015

INFECTION PREVENTION AND CONTROL DEPARTMENT

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CONTEXT OF THE PILOT PROJÉT

In October 2013, a request for opinion to the infection prevention and control (IPC) department was sent by the manager of the medical device reprocessing unit (MDRU) asking it to rule on the need to continue disinfecting and sterilizing bedpans, a change brought in after the May 2012 outbreak of *Clostridium difficile*. In May 2012, we had had to adopt a change in practice in managing excreta because we could see that the processing of bedpans by the care unit's bedpan washer was not effective in destroying spore-forming bacteria such as *C. difficile*.

The IPC department therefore took the time to compare the different methods of managing excreta (Appendix 1: Opinion: Bedpan Disinfection and Sterilization). From a strictly clinical point of view, bedpan liners appear to be the solution of choice. However, given financial considerations and the organizational impacts we have to take into account, three methods for managing excreta were analyzed more closely. The methods studied were:

- Use of reusable basins with regular disinfection in the unit's basin washer for all users, and addition of a hygienic liner for users with suspected or confirmed infectious status (**infectious risk: high**).
- Use of reusable basins with sterilization at the MDRU for all users, and addition of a hygienic liner for users with suspected or confirmed infectious status (**infectious risk: low**).
- Full use of hygienic liners for all users regardless of their infectious status (**infectious risk: low**).

The opinion concluded by specifying that, considering that:

- We have a duty to provide safe and high-quality care services;
- Environment plays an important part in the transmission of pathogenic microorganisms and infectious risks associated with the different methods of reprocessing bedpans;
- The transmission of many bacteria and viruses is closely related to the handling of excreta by staff, and the method of processing bedpans (e.g. gastroenteritis, VRE, etc.);
- The costs of a *C. difficile* infection are \$16,717 per infected user in addition to major clinical impacts (extended hospital stays, increases in morbidity and mortality);
- Manual cleaning of bedpans is forbidden;
- Continuing to use a number of bedpan reprocessing methods (not uniform from one unit to the next, from one user to the next) may create confusion, and consequently the risk of contaminating the environment;
- The only method for processing excreta that fully abides by all the basic principles identified by the AETMIS is the use of hygienic liners;
- The use of hygienic liners, as well as bringing some of the infectious risk associated with the environment under control, will reduce flow to the sterilization of the MRDU.

CONTEXT OF THE PILOT PROJECT

The infection prevention and control department is of the opinion that, first and foremost from a clinical point of view, the use of hygienic liners must be adopted by all users requiring materials for excreta elimination. We also recommend the gradual replacement of bedpans by hygienic liner supports.

This opinion was submitted to the program coordination committee on November 6, 2013. The members of the program coordination committee subscribed to the opinion and recommended to the steering committee that a pilot project be launched to measure the impacts of the change. Agreeing with this recommendation, the steering committee lent its support on January 22, 2014. As a result, a one-year pilot project was planned, and conducted from April 1, 2014, to March 31, 2015.

CONDUCT OF THE PILOT PROJECT

Beginning in the week of April 20, 2014, training sessions were given to the staff of the short-term care units and emergency department. The training was provided by Hygie account manager Julie-Pascale Gagnon. Nearly two hundred (200) staff members on three (3) shifts were involved. In general, the training and introduction went smoothly in the various care units. Everyone welcomed the arrival of the hygienic liners as the sole method for managing excreta. However, some resistance was raised by staff members due to the fact that the hygienic liner supports were disposed of after the user's departure (environmental consideration).

After the introduction (May 2014), the IPC department, in close collaboration with the infection prevention and control committee, sought to identify and formulate indicators. The indicators chosen were:

- Incidence rate of nosocomial infections through fecal-oral transmission.
- Satisfaction of the staff.
- Number of care hours recouped.
- Total expenditures in material purchasing.
- Maintenance costs of washer-decontaminators.
- Expenditures at the MDRU on bedpan reprocessing.
- Expenditures on managing solid waste.

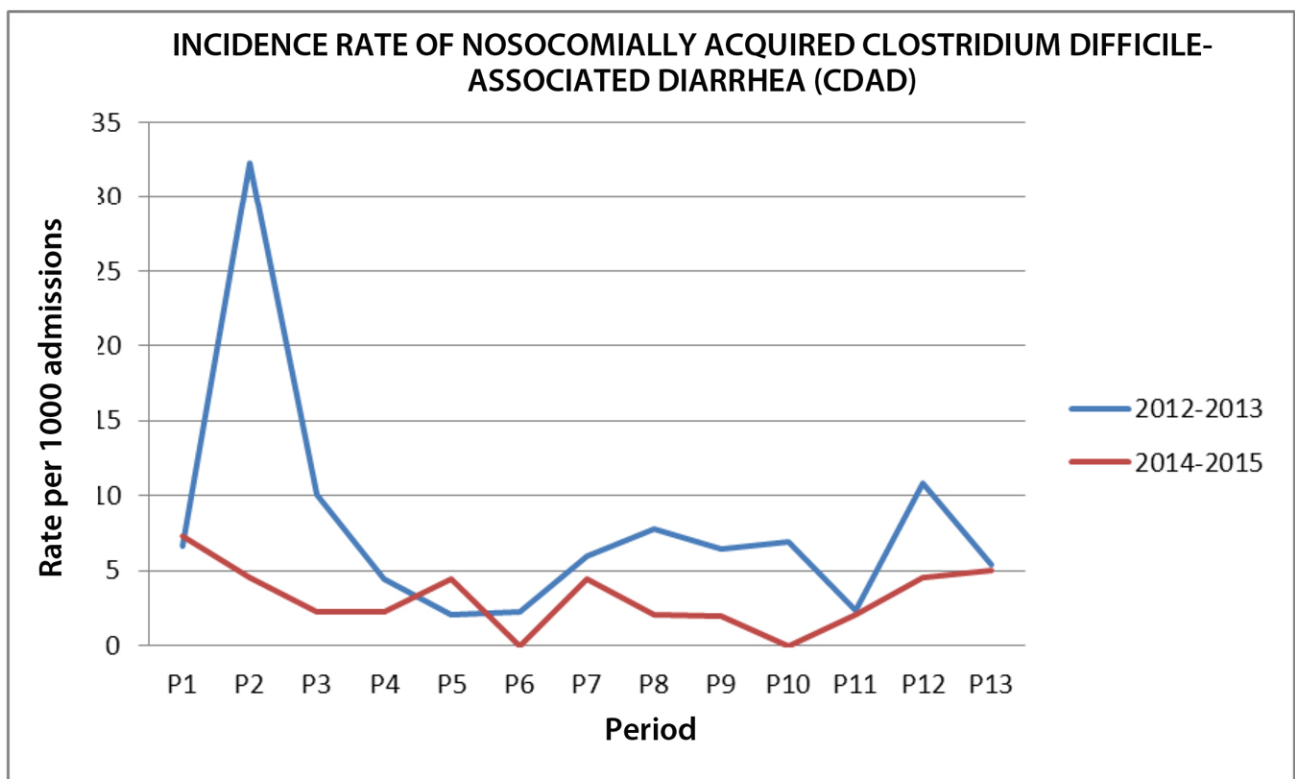
To lay the basis for reliable comparison and ruling on the actual impact of introducing this new method of excreta management, the 2012-2013 financial year was chosen as a comparison base. We excluded any comparison with 2013-2014 because in that year informal use of hygienic liners had already begun.

INDICATORS

INCIDENCE RATE OF NOSOCOMIALLY ACQUIRED CLOSTRIDIUM DIFFICILE-ASSOCIATED DIARRHEA (CDAD)

The graph "Incidence of nosocomially acquired CDAD" shows a striking reduction in the incidence of nosocomially acquired CDAD. The overall incidence rate dropped from 8.0 in 2012-2013 to 3.2 in 2014-2015, a reduction of over 50%. Users showing diarrhea mainly used hygienic liners as a method for managing excreta.

Statistics taken from Nosokos



INDICATORS

SATISFACTION OF THE STAFF

An opinion survey was distributed in March 2015 to all patient service associates working on the short-term units. The survey was administered by the care unit managers and returned to the IPC department by internal mail. Four (4) statements were measured, each with which the employee had to state they strongly agreed, agreed, disagreed or strongly disagreed. The final question gauged the employee's general satisfaction with hygienic liners, rated on a scale of 1 to 10.

The first statement validated the literature, which stipulates that hygienic liners made it possible to recoup care hours, given the handling inherent in excreta management. Ninety-five percent of respondents agreed (12/44) or strongly agreed (30/44) with the statement.

The second statement sought to verify the presence of foul-smelling odours on the care unit relating to the use of hygienic liners. Respondents' opinions were divided. Seventy percent of respondents agreed (17/43) or strongly agreed (13/43), while 30% disagreed (10/43) or strongly disagreed (3/43). One person declined to answer. The wide distribution of respondents suggests there is a problem relating to improper use of the hygienic liners, causing a certain odour be released. A more extensive verification and action are no doubt required.

The third statement validated respondents' impression of the quality of the hygienic liners as a method of preventing infections. Most respondents, some 95%, agreed (12/44) or strongly agreed (30/44) with the statement, while 5% of respondents (2/44) disagreed.

The fourth statement sought to validate the staff's perception of gratification at work. The literature stated that by reducing the handling of excreta, hygienic liners made the staff's work more gratifying. Ninety-five percent of respondents agreed (13/43) or strongly agreed (28/43). Two (2) respondents disagreed with the statement (5%), and one (1) declined to answer.

The general satisfaction rate with hygienic liners was measured on a scale of 1 to 10. All respondents scored between 7 and 10, distributed as follows:

- Score of 7: 34%
- Score of 8: 23%
- Score of 9: 9%
- Score of 10: 34%

A comments section was included in the survey in which some respondents entered information. Two points emerged in particular, namely the environmental impact of throwing bedpan supports away on the user's departure, and the difficulty of controlling odours in the user's room.

INDICATORS

NUMBER OF CARE-HOURS RECOUPED

When the IPC department was analyzing the issues around the three (3) methods for managing excreta, one point in favour of hygienic liners was the major gain in care-hours of patient service attendants, which allowed them to be more present at users' bedsides.

Unfortunately, we were unable to establish a mechanism to fully assess these data by the deadline, and even if we had, no comparative data of this kind are readily available. As a result, we have, albeit subjectively, verified the staff's perception of this indicator. In the survey, a statement stipulating "Hygienic liners allow us to spend more time with users" garnered a 95% (42/44) "agree" or "strongly agree" response.

TOTAL EXPENDITURES

The financial aspect of this pilot project cannot be overlooked. Three (3) indicators—the purchase costs of the supplies, the costs of reprocessing the bedpans at the MDRU, and the costs of managing solid waste—fall under this aspect.

Costs of supplies

Naturally, an increase in expenditures relating to the purchase of excreta management material was imputed to the care units affected by the change. In the table "Purchase costs of supplies," you will find the costs for the two years compared. The increase in expenditures represents an increase of \$45,898, which may seem astronomical, but can be put into perspective with the reduction in the incidence rate of CDAD. In fact, this amount represents three (3) infected users in terms of cost (\$45,898/\$16,717).

Purchases cost of supplies				
	2012-2013		2014-2015	
Supplies	Number	Cost (\$)	Number	Cost (\$)
14941-Hygienic bag for bedpan	1047	\$18,969	3503	\$63,494
1100815- Disposable basin	0	\$0	2089	\$1373

INDICATORS

Costs of reprocessing bedpans at the MDRU

As mentioned previously, when writing the opinion and recommendation on bedpan disinfection and sterilization, three methods of excreta management had been analyzed. The full use of hygienic liners reduced costs relating to thermal disinfection and sterilization of bedpans considerably, by \$94,405. Now, approximately only 15 bed pans are sent to the MDRU.

	2012-2013	2014-2015
Parameters	Thermal disinfection and sterilization	
Technical time at the MDRU (\$28.13/h)	\$18,812	\$2225
Thermal disinfection and sterilization	\$84,493	\$6675
Total	\$103,305	\$8900

Costs of managing solid waste

Expenditures relating to the management of solid waste were more difficult to isolate because numerous services are offered by these companies, including, among others, parasite management, collection of recycling waste and destruction of confidential documents. Furthermore, the change of service supplier at the beginning of 2014-2015 limits us in interpreting the data in the table below. Nevertheless, if we stipulate that no drastic changes occurred in these other sectors and that the change of company has not influenced the costs of managing solid waste, we note an increase of nearly \$8500.

	2012-2013	2014-2015
Service supplier	Sani-Éco	Matrec
Waste management only	Not available	Not available
Total	\$45,611	\$54,060

In the final reckoning, without considering the infections avoided, the use of hygienic bags represents for the organization a gain in efficiency of \$40,007 (-\$45,898 + \$94,405 - \$8500).

CONCLUSION

From a clinical point of view, the use of hygienic liners as a method to manage excreta seems to have contributed to a significant decrease in the number of users with the bacterium *C. difficile* (reduction in the order of thirty (30) users infected with CDAD from 2012-2013).

From a financial point of view, the increased expenditures resulting from the use of this technology (purchase cost) and costs relating to the increase in solid waste is largely balanced out by a reduction in costs at the MDRU.

From an organizational point of view, staff members expressed their satisfaction with this method of managing excreta, which, while posing certain environmental misgivings, has become a work tool they wish to keep. The unpleasantness experienced because of certain foul-smelling odours will be corrected with refresher training on the technique for closing hygienic liners.

In the final analysis of this pilot project, the IPC department believes that the organization would do well to maintain full use of hygienic liners, in all of its facilities.

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