

UNIFIED APPROACH TO PREVENTING CARBAPENEMASE-PRODUCING ENTEROBACTERIACEAE TRANSMISSION

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DESCRIPTION

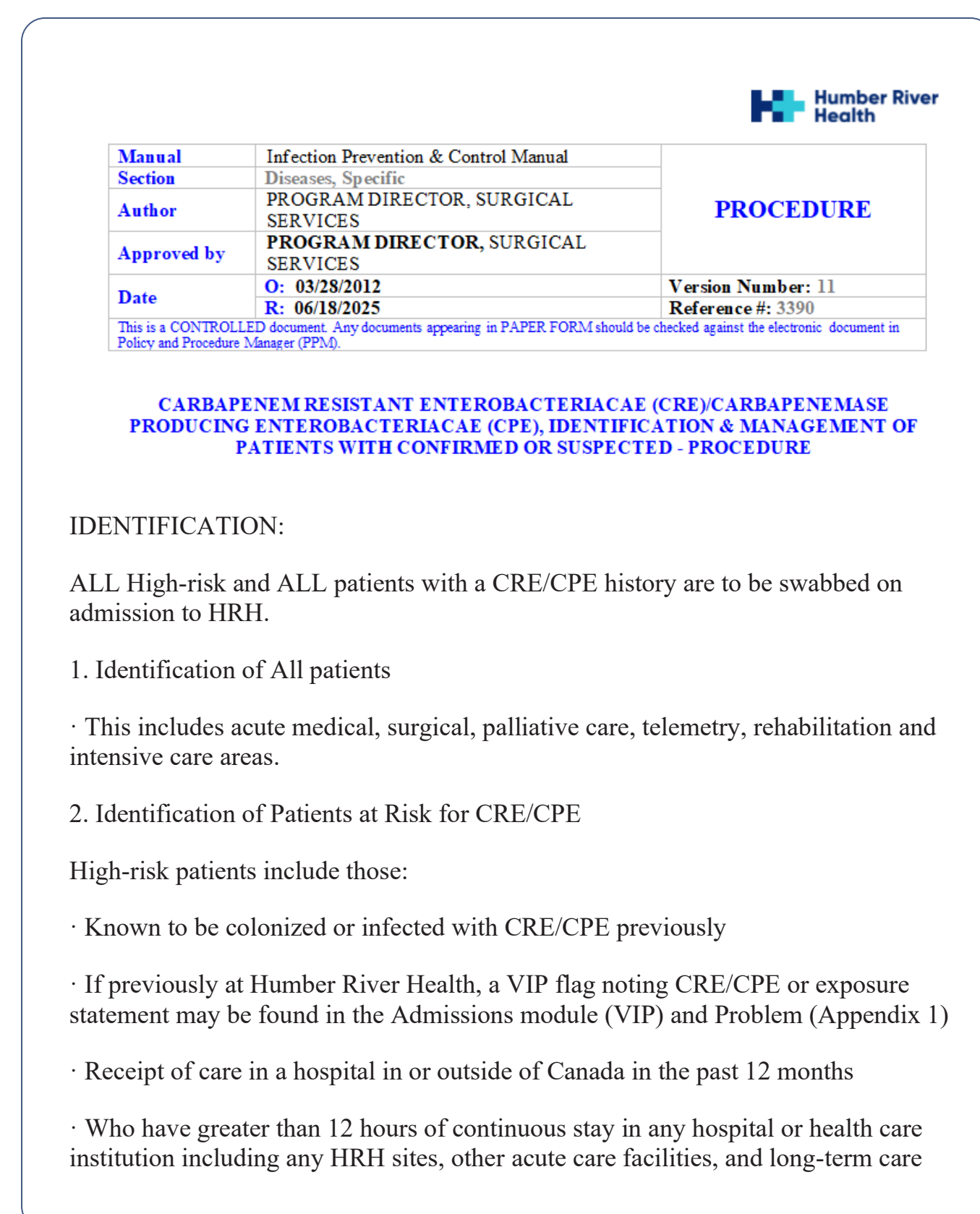
Carbapenemase-Producing Enterobacteriaceae (CPE) are highly resistant bacteria that pose a serious threat to patient safety. These organisms produce enzymes that inactivate carbapenem antibiotics, leading to limited treatment options, prolonged hospital stays, and increased risk of severe illness or death. CPE can spread through colonized individuals and/or contaminated surfaces, making early detection and meticulous infection prevention and control practices essential. Prevention requires a coordinated, multidisciplinary approach involving active screening, hand hygiene, isolation precautions, and enhanced cleaning and disinfection protocols. At Humber River Health (HRH), our approach to managing CPE focuses on proactive identification, containment and education to prevent transmission, protect patients, and uphold a high standard of care.

OBJECTIVE

To identify colonization early and implement precautions to reduce CPE transmission and improve patient outcomes.

ACTIONS TAKEN

A comprehensive strategy was implemented to reduce CPE transmission and improve patient outcomes. This included chart reviews, targeted screening, and enhanced cleaning protocols, such as twice daily cleaning, UVC disinfection, and drain care (Figure 5). Colonized patients were promptly isolated with contact precautions and were assigned dedicated equipment where possible. Routine audits of hand hygiene compliance, Personal Protective Equipment (PPE) use, and cleaning practices reinforced compliance. Antimicrobial stewardship ensured appropriate antibiotic use. Staff were engaged through IPAC huddles, while patients received CPE-specific patient education documents. In cases without epidemiological links, prevalence swabbing was conducted to confirm containment and prevent transmission.



IDENTIFICATION:

- ALL High-risk and ALL patients with a CRE/CPE history are to be swabbed on admission to HRH.
- 1. Identification of All patients
 - This includes acute medical, surgical, palliative care, telemetry, rehabilitation and intensive care areas.
- 2. Identification of Patients at Risk for CRE/CPE

High-risk patients include those:

- Known to be colonized or infected with CRE/CPE previously
- If previously at Humber River Health, a VIP flag noting CRE/CPE or exposure statement may be found in the Admissions module (VIP) and Problem (Appendix 1)
- Receipt of care in a hospital in or outside of Canada in the past 12 months
- Who have greater than 12 hours of continuous stay in any hospital or health care institution including any HRH sites, other acute care facilities, and long-term care

Figure 1. Snapshot of CRE/CPE Identification and Management of Patient with Confirmed or Suspected Procedure Policy.

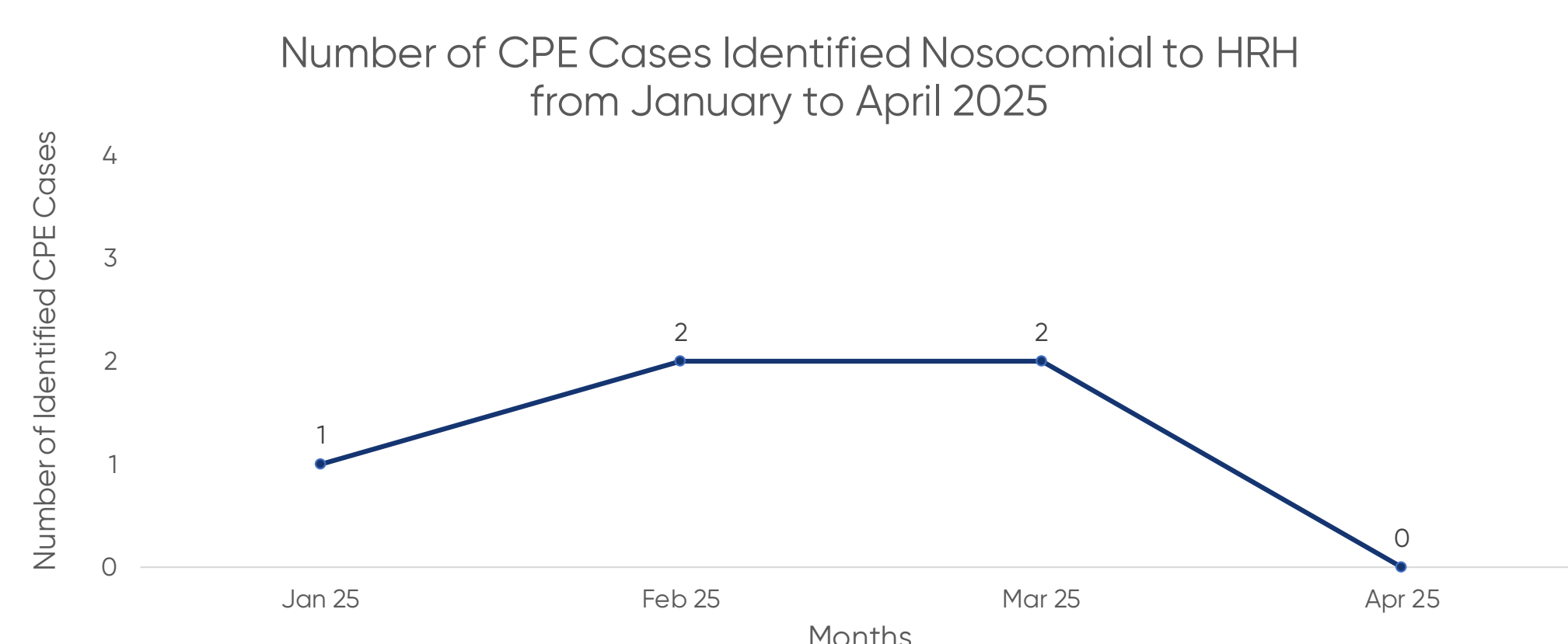
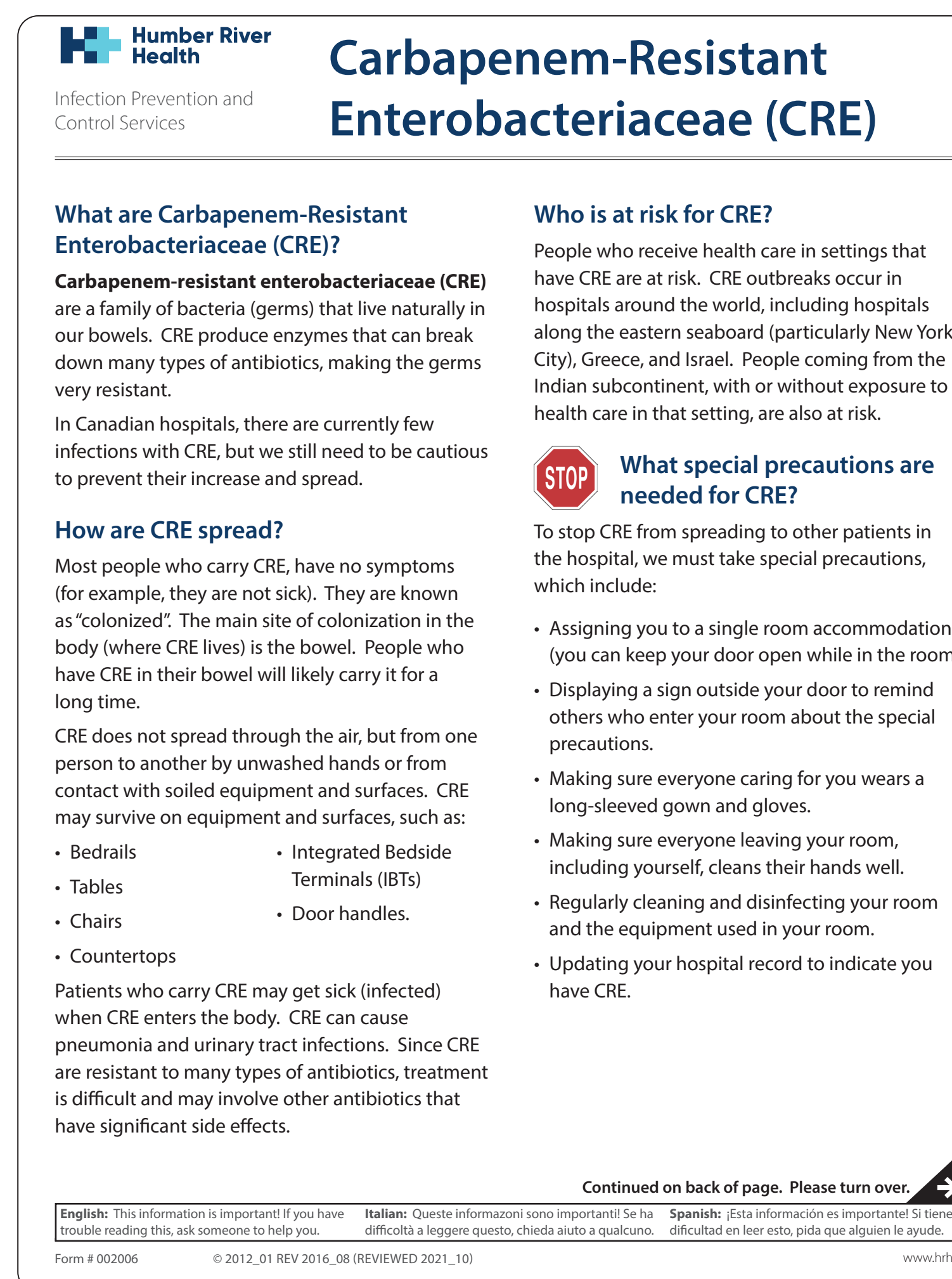


Figure 4. There was an overall decrease in the number of CPE cases identified nosocomial to HRH from January to April 2025.

SUMMARY OF RESULTS

Our integrated approach - high-risk screening, enhanced environmental cleaning, staff education, and IPAC team engagement maintained minimal CPE transmission in hospital. Prevalence swabs conducted after isolated cases revealed no additional colonization, confirming no further transmission. These efforts collectively enhanced patient safety, minimized infection risk, and supported better clinical outcomes across HRH.



What are Carbapenem-Resistant Enterobacteriaceae (CRE)?

Carbapenem-resistant enterobacteriaceae (CRE) are a family of bacteria (germs) that live naturally in our bowels. CRE produce enzymes that can break down many types of antibiotics, making the germs very resistant.

In Canadian hospitals, there are currently few infections with CRE, but we still need to be cautious to prevent their increase and spread.

Who is at risk for CRE?

People who receive health care in settings that have CRE are at risk. CRE outbreaks occur in hospitals around the world, including hospitals along the eastern seaboard (particularly New York City), Greece, and Israel. People coming from the Indian subcontinent, with or without exposure to health care in that setting, are also at risk.

What special precautions are needed for CRE?

To stop CRE from spreading to other patients in the hospital, we must take special precautions, which include:

- Assigning you to a single room accommodation (you can keep your door open while in the room).
- Displaying a sign outside your door to remind others who enter your room about the special precautions.
- Making sure everyone caring for you wears a long-sleeved gown and gloves.
- Making sure everyone leaving your room, including yourself, cleans their hands well.
- Regularly cleaning and disinfecting your room and the equipment used in your room.
- Updating your hospital record to indicate you have CRE.

How are CRE spread?

Most people who carry CRE, have no symptoms (for example, they are not sick). They are known as "colonized". The main site of colonization in the body (where CRE lives) is the bowel. People who have CRE in their bowel will likely carry it for a long time.

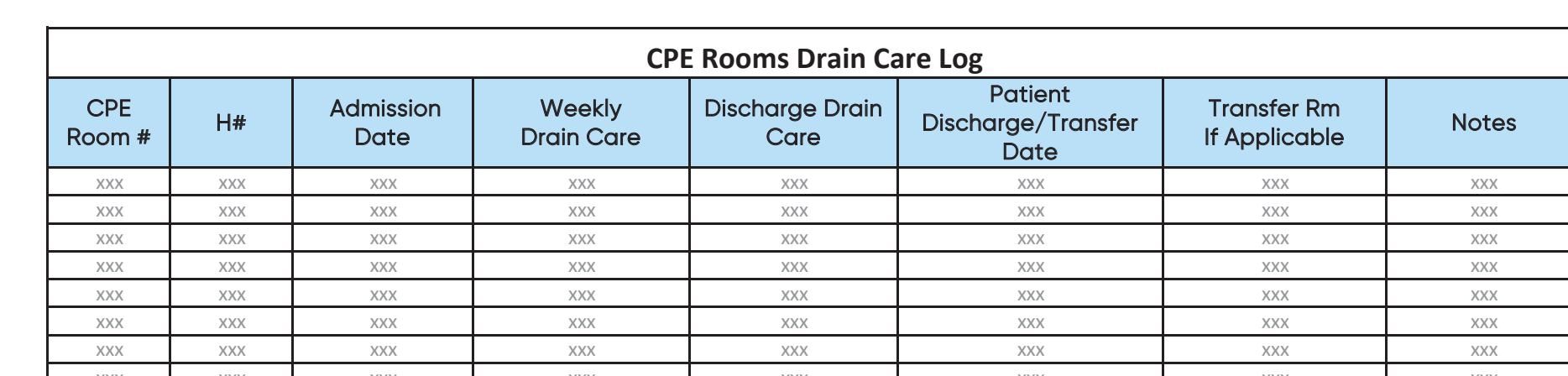
CRE does not spread through the air, but from one person to another by unwashed hands or from contact with soiled equipment and surfaces. CRE may survive on equipment and surfaces, such as:

- Bedrails
- Tables
- Chairs
- Countertops
- Integrated Bedside Terminals (IBTs)
- Door handles.

Patients who carry CRE may get sick (infected) when CRE enters the body. CRE can cause pneumonia and urinary tract infections. Since CRE are resistant to many types of antibiotics, treatment is difficult and may involve other antibiotics that have significant side effects.

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Figure 3. HRH-specific patient education handout provided to patients.



CPE Room #	H#	Admission Date	Weekly Drain Care	Discharge Drain Care	Patient Discharge/Transfer Date	Transfer Rm If Applicable	Notes
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
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XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Figure 5. CPE Rooms Drain Care Log to follow up on weekly drain care cleaning, completed for patients in CPE identified rooms.

LESSONS LEARNED

Targeted screening, cleaning, education, and audits minimized CPE spread, strengthened infection control, and empowered staff and patients—resulting in safer and higher-quality care.

