

Carbapenemase-Producing Enterobacteriaceae (CPE): Overcoming the Barriers

A Knowledge Translation Approach to Success

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IPAC CSO Education Day

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Objectives

- Provide a short update on Carbapenemase-producing *Enterobacteriaceae* status in Ontario
- Draw on a CPE success story to discuss how we can improve CPE management in health care

Carbapenemase-Producing Enterobacteriaceae (CPE)

- *Enterobacteriaceae* are a family of bacteria commonly found in the gastrointestinal tract
- CPEs occur when these organisms become resistant to carbapenem antibiotics through the production of carbapenemase enzymes

Classification	Enzyme	Most Common Bacteria
Class A	KPC, SME, IMI, NMC, GES	Enterobacteriaceae and rarely pseudomonas
Class B (metallo-β-lactamases)	NDM, IMP, VIM, GIM, SPM	<i>P. aeruginosa</i> Enterobacteriaceae <i>Acinetobacter</i> spp.
Class D	OXA OXA-48	<i>Acinetobacter</i> spp. Enterobacteriaceae

The Problem

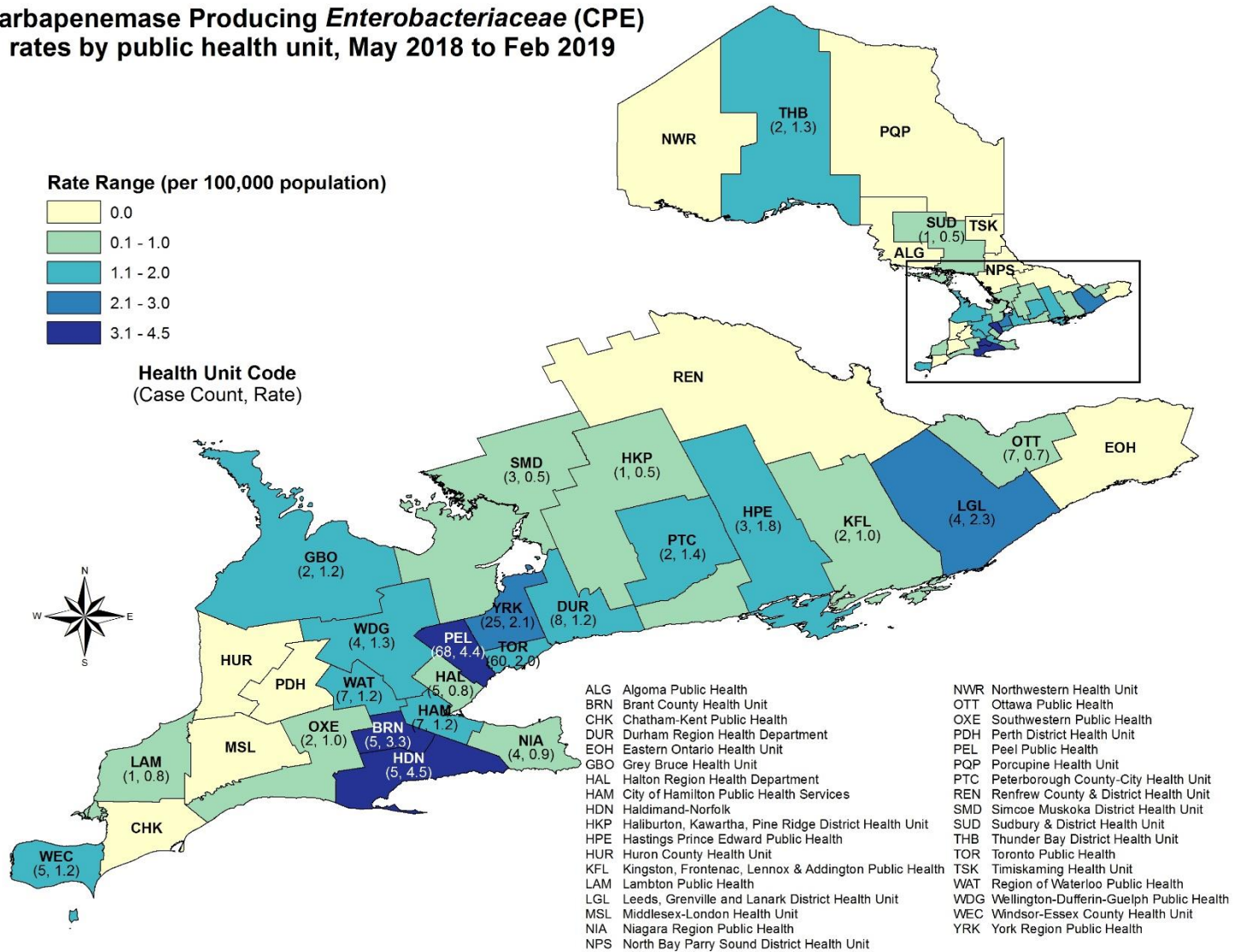
- Very limited treatment options
- ~16.5% of colonized cases become infected
- High rates of mortality in infected patients
 - Estimated 3 times increased likelihood of death compared to patients with carbapenem-susceptible infections
- Patients/residents can remain colonized for prolonged periods of time (some evidence shows >18 months)

Tischendorf J, de Avila RA, Safdar N. Risk of infection following colonization with carbapenem-resistant Enterobacteriaceae: A systematic review. *Am J Infect Control*. 2016 May 1;44(5):539-43. doi: 10.1016/j.ajic.2015.12.005. Epub 2016 Feb 15

The Data

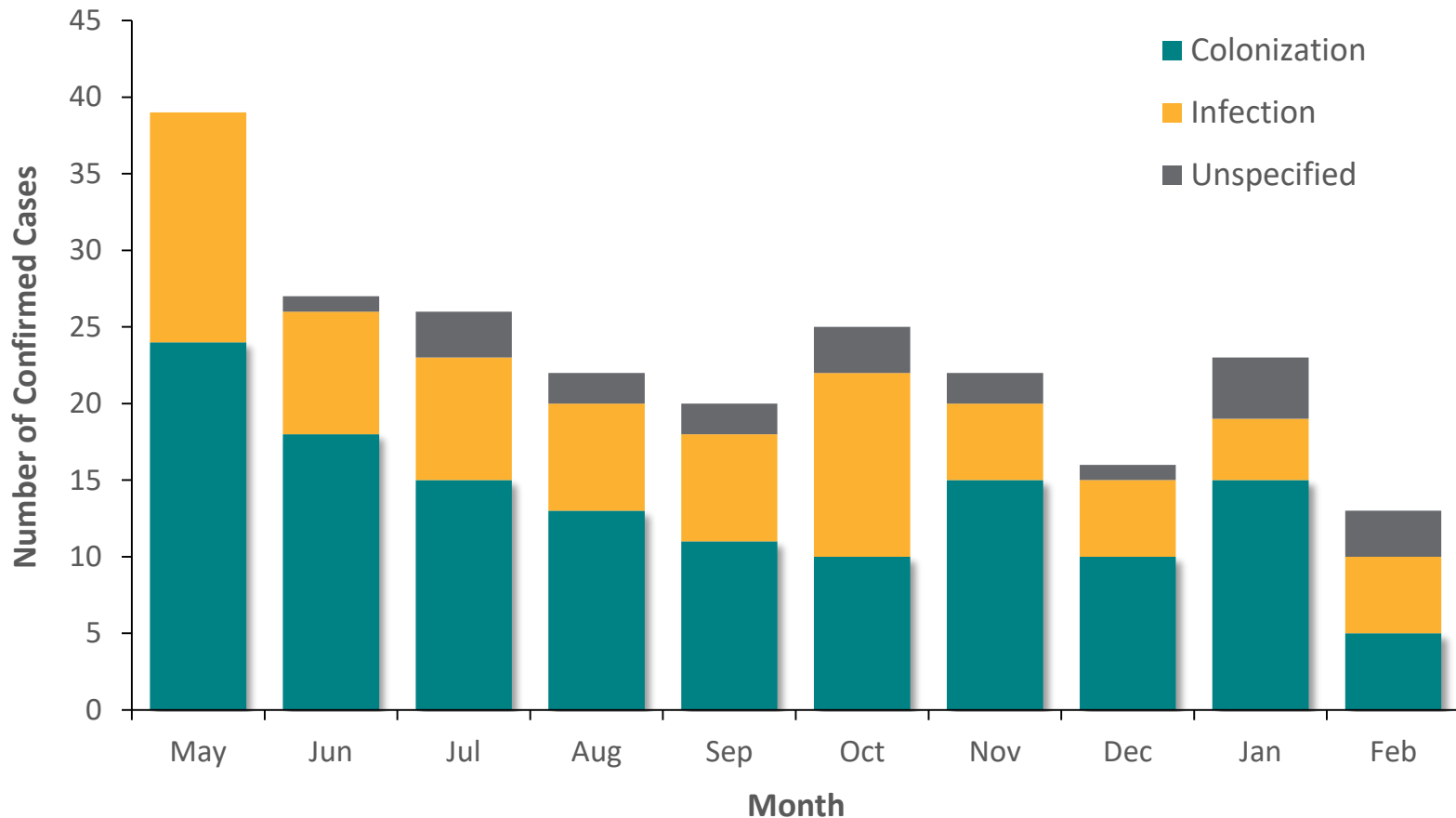


Carbapenemase Producing *Enterobacteriaceae* (CPE) rates by public health unit, May 2018 to Feb 2019



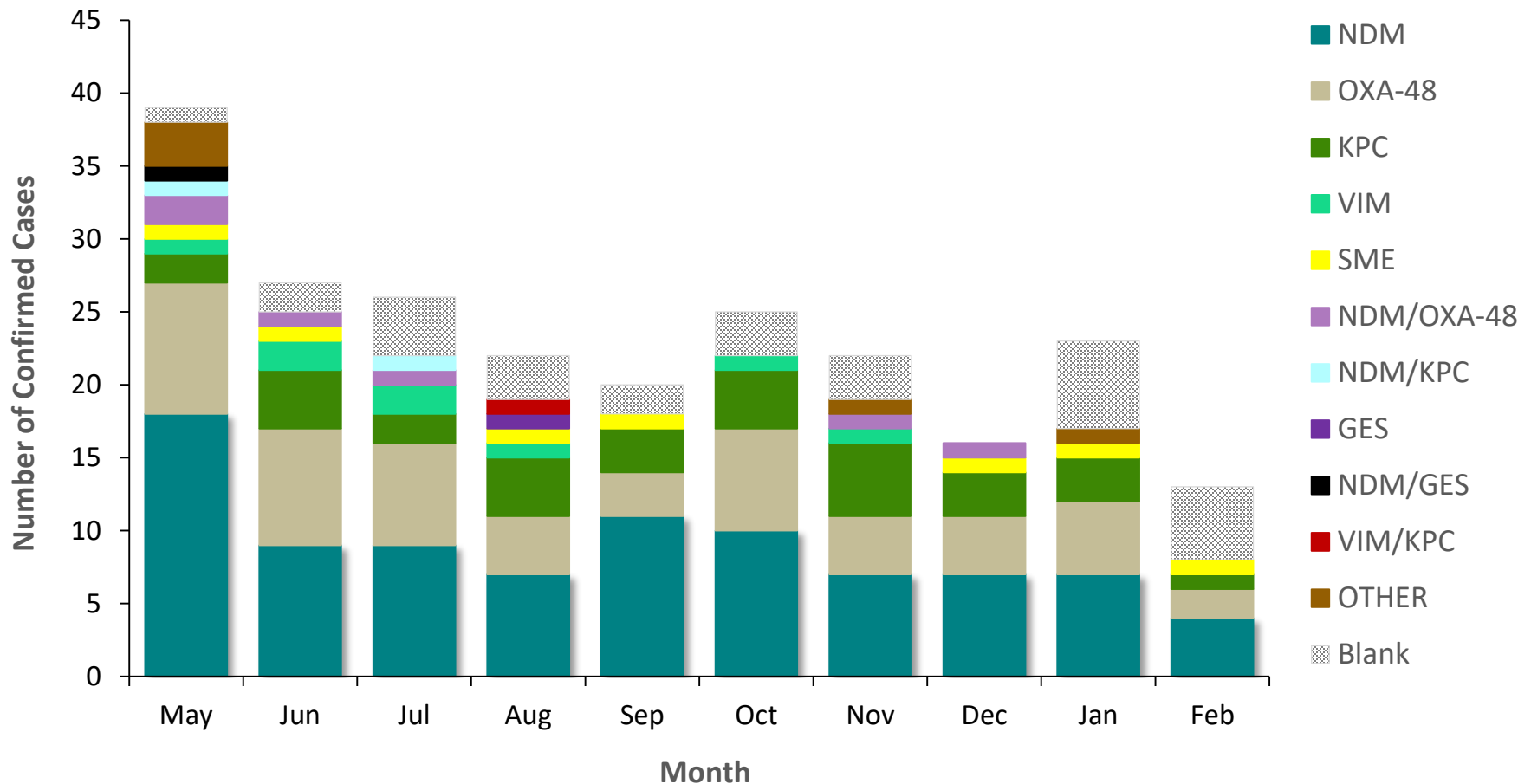
Cases: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2019/03/15].
 Ontario Population: Population Projection, 2016-2041, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, extracted: [2017/10/24].

CPE cases by infection status, May 2018 to Feb 2019



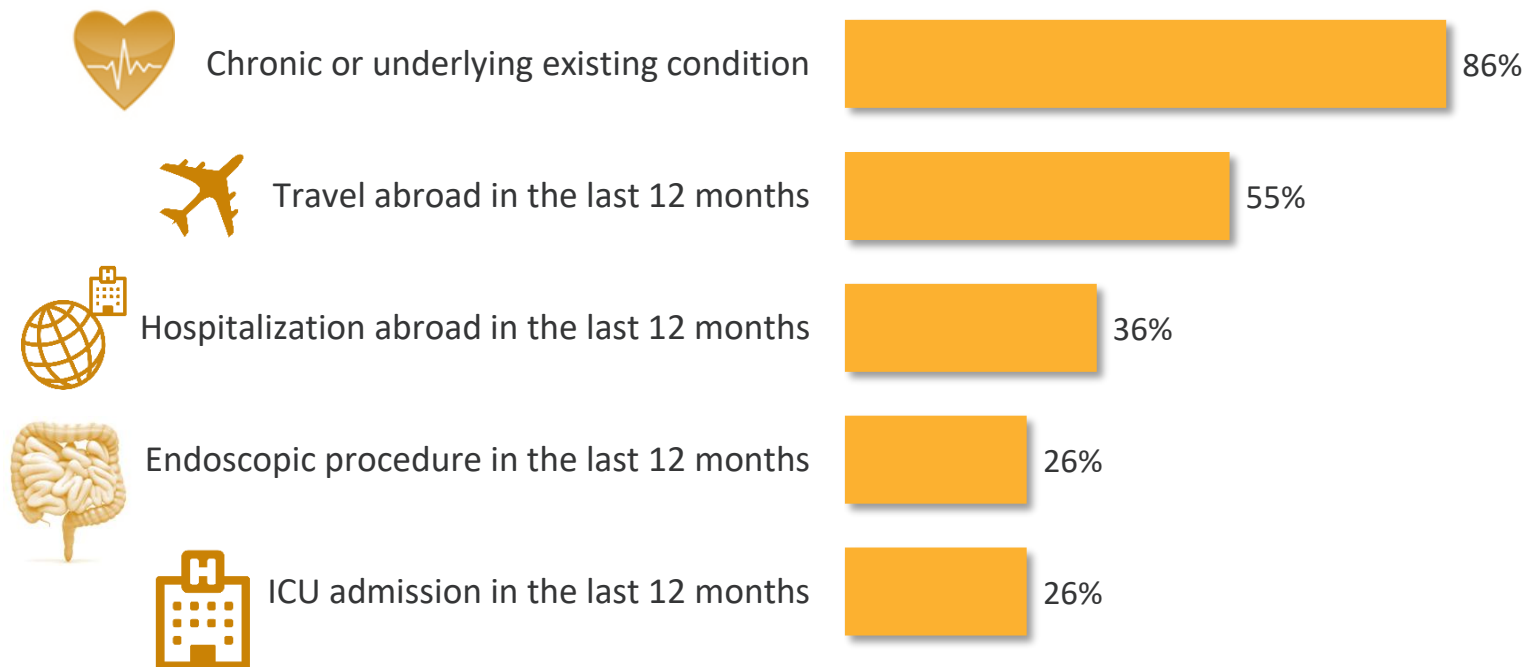
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2019/03/15].

CPE cases by resistance type, May 2018 to Feb 2019



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2019/03/15].

Risk factors for CPE, May 2018 to Feb 2019



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2019/03/15].

What are the CPE Needs and Gaps?

- Non-Acute Care!
- High proportion of inquiry related to gaps in non-acute care guidance:
 - The lab denied our point prevalence screens, what do we do now?
 - We don't have a single room available...
 - When can we remove precautions?
 - Can the resident engage in group activities?
 - Should our screening protocols be the same as acute care?
 - We share baths and showers, is special cleaning required?
 - Who is considered a contact...
 - We've never seen a case before...

A Success Story



The Success Story

- Caring for a CPE resident at a Long-Term Care Home (LTCH)
- How one LTCH overcame the barriers to manage their first case of CPE



Framing the Success



Ontario Agency of Health Protection and Promotion. Knowledge to Action Cycle. 2018. Retrieved from: https://goto.oahpp.ca/areas/ricn/teamsite/Implementation_Science_Knowledge_Translation/Knowledge%20to%20Action%20Proces

The Problem

- ✓ Request for LTCH to admit a patient with CPE
- ✓ LTCH has never cared for a CPE patient before
- ✓ Home is hesitant to accept the patient

Identifying the Barriers



The Barriers

- Informal interviews with facility staff conducted by facility educator

1. Fear

- “the new SARS”
- Cognitively impaired residents causing transmission



The Barriers

2. Lack of Knowledge

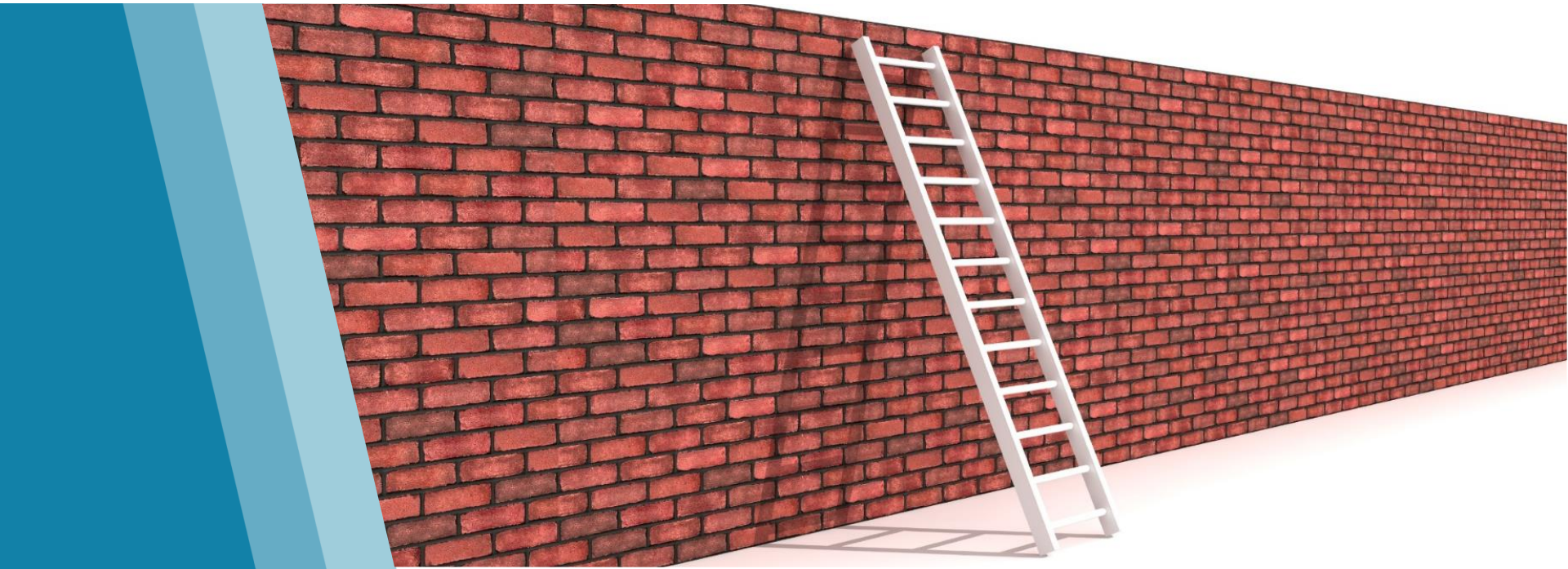
- Transmission
- Balance quality of life with preventing transmission
- Infection risk factors e.g. catheterization
- Sink cleaning

3. Sustainability

- Staff turnover
- Few cases



Overcoming the Barriers



Overcoming the Barriers

- Educator spoke directly with care staff to discuss strategies to overcome the barriers
 - Small group and one-to-one discussion
 - All relevant staff – RN, RPN, PSW, allied health etc.
- Relevant stakeholders came together to discuss barriers and ways to address the issues and concern (LHIN, PHU, LTCH, PHO)



Overcoming the Barriers

Addressing the Fears

- The IPAC Risk Assessment
 - How is it transmitted?
 - Is the patient ambulatory?
 - How is the patient accommodated?
 - Can the patient follow directions?
 - Can the patient maintain personal and hand hygiene?
 - Can any draining wounds be covered?
 - Can incontinence be contained?
- Patients may wander
 - Staff decided to keep door closed and have a bottle of Antiseptic wipes located by the patient's room to allow staff to wipe high touch surfaces before and after care

Overcoming the Barriers

Addressing the Knowledge Gaps

Collaboration

- Educator, PHU, PHO, LHIN to formulate responses to staff questions and concerns
- PHO provided educational materials



Overcoming the Barriers

Addressing the Knowledge Gaps

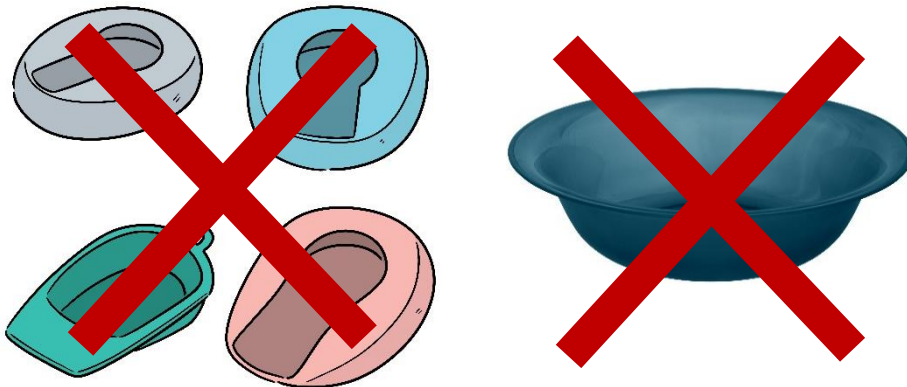
Educational session

- Responses specific to staff questions
- Provided to all shifts
- Topics Included
 - Preventing Transmission
 - Dedicate shower or clean after use
 - Avoid shared equipment or wipe down after use
 - Avoiding shared hygiene products
 - Promoting quality of life: simple methods that allow patient to participate in activities, while minimizing transmission
 - Hygiene
 - Chlorhexidine bathing

Addressing the Knowledge Gaps

Education Session Topics, Continued

- Risk Factors
 - Education on risk factors for infection and encouraging the removal of the catheter
- Sink protocols
 - Development of a simpler protocol, focus on preventing sink contamination



Overcoming the Barriers

Addressing the Sustainability Barrier

- Reports of improved confidence and comfort
- Educator has become an “expert”
- Educator check-ins
- Education materials for new staff or refreshers
- New policies and procedures
- Facility sought GU consult with a view to removing catheter

Call To Action!

To fill the need, we must first understand the problem

To promote change we must address the barriers to change

Knowing the outcomes we are seeking will help us evaluate our interventions



For More Information About This Presentation, Contact:

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