

A Hospital's Experience with Preventing Nosocomial Transmission of CPE During a Community Outbreak

Presenter: Katy Short, MPH
Epidemiologist, Infection Prevention and Control, Fraser Health

Co-authors:
Alexandra Jude, RN, BScN, Anne Brownlee, RN, MN,
Benjamin Mack, MD, FRCPC, Elizabeth Brodtkin, MD, MHSc, FRCPC

IFIC/IPAC Canada 2019



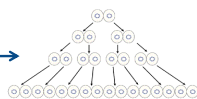
Disclosures

- None

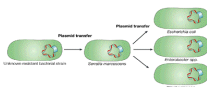


What are Carbapenemase-Producing Organisms (CPO)?

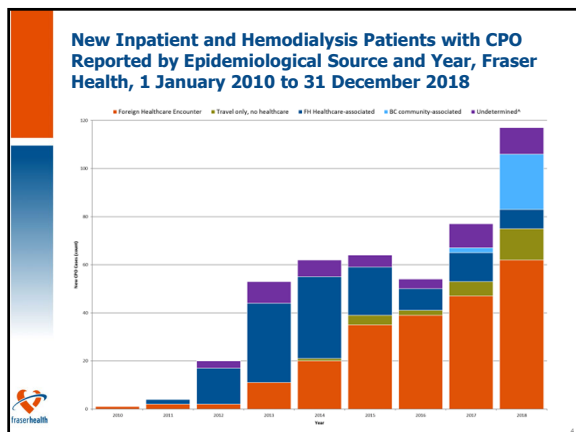
CLONAL SPREAD



HORIZONTAL GENE TRANSFER



Hoang L & Brodtkin E. "Whole genome sequencing and what we are learning about CPO transmission." PICNet Educational Conference, 2017, Vancouver BC.



Peace Arch Hospital



- Community hospital
- 171 beds
- Average LOS 7.7 days
- Critical care, maternity, emergency surgery, mental health and rehabilitation
- Serves a population of ~109,000

September 2017

- C1, male, 66 years old
 - Admitted 29-Aug-2017 for cellulitis, acute renal failure and sepsis (*Providencia rettgeri*)
 - 18-Sep-2017 blood culture positive for *E.coli* NDM




September 2017

- Patient transferred to CPO cohort at another hospital
- *Surgical*, 210 and *Medicine*, 655
 - Decluttered
 - Isolation discharge cleaned
- Sinks screened for CPE
 - *Surgical*, 210 – NDM positive
 - *ICU* Bed B – negative
 - *Medicine*, 655 – negative
- Contact tracing
 - 1 contact still admitted, screened negative
 - 4 contacts flagged for screening upon re-admission
- 6 weeks point prevalence screening of *Surgical*




October 2017

- C2, female, 87 years old
 - Admitted 7-Oct-2017 for back trauma and diverticulitis
 - 10-Oct-2017 point prevalence screen on *Surgical* positive for *E.coli* NDM

December 2017

- C3, male, 96 years old
 - Admitted 26-Dec-2017 for general weakness, pyelonephritis
 - 26-Dec-2017 urine sample positive for *E.coli* NDM

January 2018

- C4, female, 87 years old
 - Admitted 23-Jan-2018 for cellulitis
 - 27-Jan-2018 urine sample positive for *E.coli*/NDM

Timeline for C4: 23-Jan ER, 24-Jan Older Adult, 510, 25-Jan, 26-Jan, 27-Jan, 28-Jan, 29-Jan, 30-Jan

January 2018

- C5, female, 97 years old
 - Admitted 13-Jan-2018 for pneumonia and congestive heart failure
 - Contact of C4, lives at *Facility A*
- C6, female, 97 years old
 - Admitted 17-Jan-2018 for pneumonia
 - Contact of C4, lives at *Facility A*



Timeline for C5 and C6: 13-Jan ER, 14-Jan Medicine 2, 410, 15-Jan, 16-Jan, 17-Jan Medicine 2, 410, 18-Jan, 19-Jan, 20-Jan, 21-Jan, 22-Jan, 23-Jan, 24-Jan, 25-Jan, 26-Jan, 27-Jan, 28-Jan, 29-Jan Older Adult, 510, 30-Jan, 31-Jan, 1-Feb

January 2018

- C1, 18-Sep-2017, blood, family home
- C2, 10-Oct-2017, rectal screen, *Facility A*
- C3, 26-Dec-2017, urine, *Facility A*
- C4, 27-Jan-2018, urine, family home
- C5, 30-Jan-2018, rectal screen, contact of C4, *Facility A*
- C6, 30-Jan-2018, rectal screen, contact of C4, *Facility A*



Actions at Peace Arch Hospital

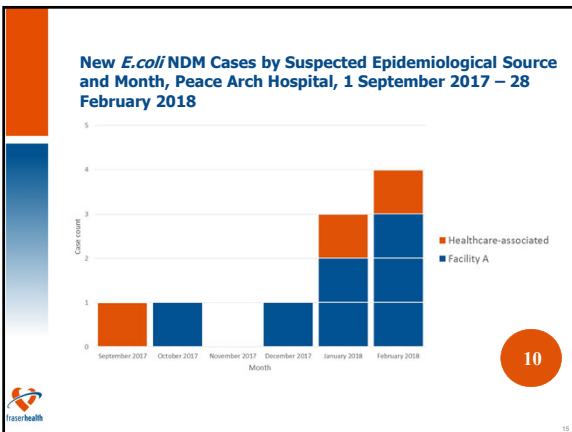
- **Facility A residents**
 - PAH to screen and place on contact precautions all residents admitted, currently and in the future
- **Contacts**
 - Screen all contacts of C5 and C6
- **Older Adult unit**
 - Point prevalence screening, contact precautions and enhanced cleaning until clear for 6 weeks
 - Isolate discharge clean of entire unit
- **PATH unit**
 - 1 round of point prevalence of unit

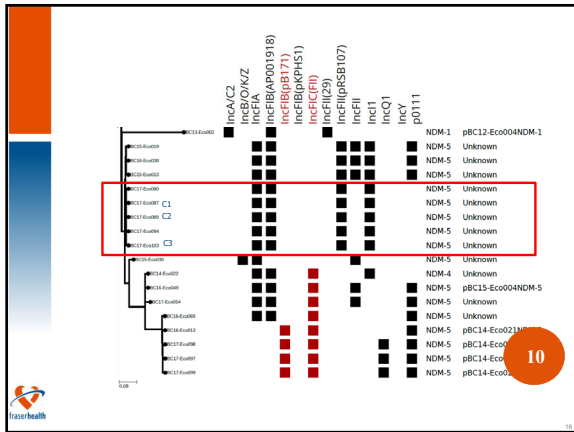



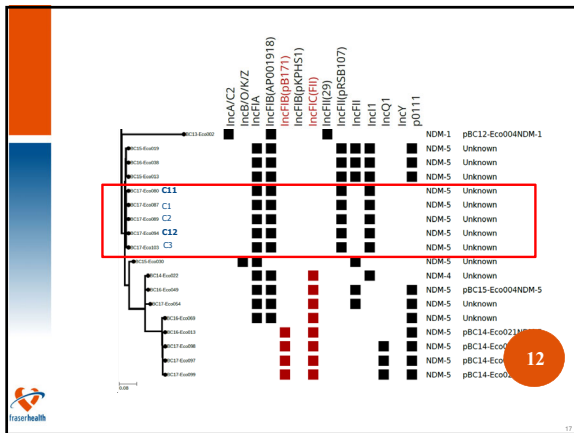
February 2018

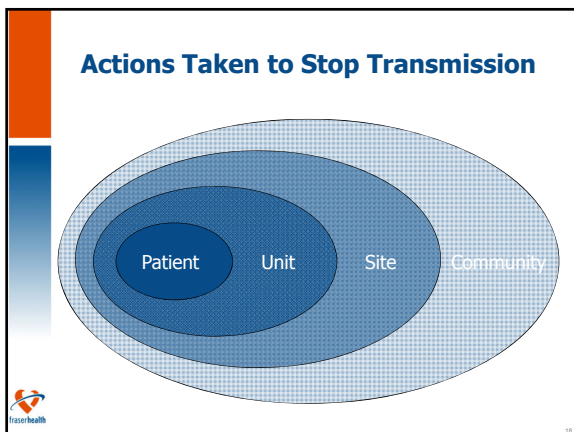
- **C7, 4-Feb-2018, rectal screen, point prevalence, Facility A**
- **C8, 8-Feb-2018, rectal screen, point prevalence, Facility A**
- **C9, 8-Feb-2018, rectal screen, point prevalence, Facility A**
- **C10, 8-Feb-2018, rectal screen, point prevalence, family home**











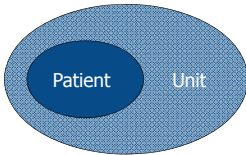
Actions Taken to Stop Transmission




- Enhanced Contact Precautions
 - Single occupancy rooms
 - Dedicated nurse
 - Daily chlorhexidine bath
 - Disposable or dedicated equipment
 - Supervised isolation discharge clean
 - Second daily enhanced clean of high touch surfaces and bathroom
- Case investigations
- Contact screening



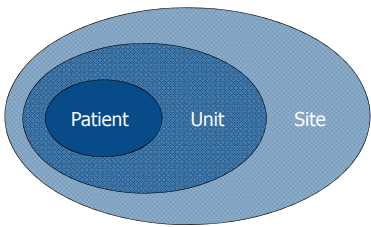
Actions Taken to Stop Transmission




- Point prevalence screening
- Contact precautions
- Isolation discharge cleaning

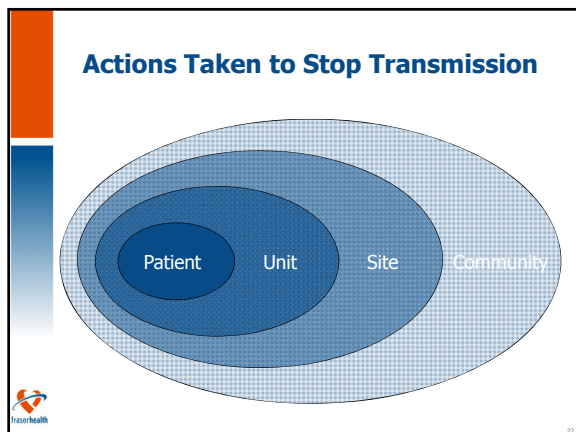


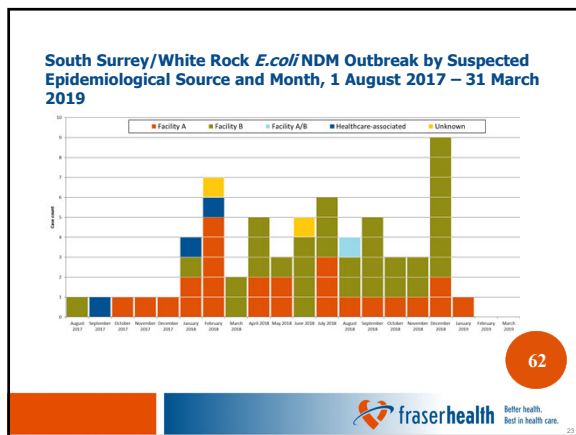
Actions Taken to Stop Transmission



- Targeted admission screening
- Contact precautions
- Dedicated cohort unit








- ### Factors Contributing to Success
- Established regional protocols
 - Management and education of patients
 - Surveillance and case investigation
 - Targeted CPO screening
 - IPC Program
 - Access to laboratory testing
 - Timely results
 - Whole Genome Sequencing
- 63
- fraserhealth Better health. Best in health care.

Lessons Learned

- Unknown risk factors for CPO
- Communication with front-line staff



25

Acknowledgements


- Peace Arch Hospital staff and leadership, especially:
 - Anne Brownlee, Director, Clinical Operations
 - Emergency Department staff
- Fraser Health Infection Prevention and Control, especially:
 - Dr. Elizabeth Brodtkin, Executive Medical Director
 - Shelly Garcha, IPC Specialist
 - Alexandra Jude, IPC Practitioner
 - Petra Welsh, Director, IPC Strategy and Performance
- Fraser Health Medical Microbiologists
- BC Centre for Disease Control Public Health Laboratory, especially:
 - Dr. Linda Hoang, Associate Director
- Fraser Health Public Health team, especially:
 - Dr. Aamir Bharmal, Medical Health Officer
 - Dr. Mark Bigham, Medical Health Officer
 - Christy Burkett, Administrative Assistant
 - Amy Dhudwal, Administrative Assistant
 - Inderjeet Gill, Manager, Environmental Health Services
 - Kevin Gorse, CD Environmental Health Officer
 - Mark McCabe, Field Epidemiologist, Public Health Agency of Canada
 - Dr. Michael Schwandt, Medical Health Officer
 - Jason Stone, Communicable Disease Practitioner
- The Provincial Infection Control Network of BC, especially
 - Romali Ranasinghe, Surveillance Systems Coordinator



26

Thank You

- Questions?
- Katy.Short@fraserhealth.ca



27
