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An innovative leap into the possible future of Surveillance in Long Term Care:

Sharing preliminary results from the

Public Health Ontario Surveillance Project

Bois Marufov, MD, MSc, CIC
Team Lead, Public Health Ontario Regional IPAC Office, Cambridge, Ontario
Wendy Miller, RN
Infection Control Consultant, Schlegel Villages, Kitchener, Ontario

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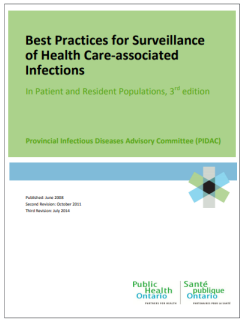
Objectives

- Why is healthcare associated infections' (HAI) surveillance important in LTC?
- Implementation process of HAI surveillance in Schlegel Villages
- Facilitators and barriers to implementation in LTC
- Lessons learned from the project
- Where do we go from here?

What is surveillance?

*"Surveillance is the systematic, ongoing **collection, collation and analysis of data** with timely **dissemination** of information to those who require this information in order to take **action**."*

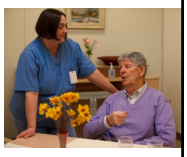


Components of a Surveillance Program

- Planning
- Data Collection
- Data Analysis
- Interpretation of Data
- Communication of Results
- Evaluation
- Education

Why is surveillance in Long Term Care (LTC) settings important?

- LTC homes have healthcare associated infection (HAI) rates comparable to hospitals
  - 3 – 7 HAIs per 1,000 resident days Stausbaugh and Joseph, 2000
- The Ontario population requiring LTC is increasing Gibbard, 2017; Ministry of Finance, 2018
  - Population at risk of HAIs is increasing
- Legislative requirements
  - Long-Term Care Homes Act – O.Reg. 79/10



Data: Acute care vs LTC

Acute Care

- 722,000 HAIs occur (USA)
- 75,000 with HAIs die (USA)
- 200,000 HAIs (Canada)
- 8,000 deaths associated with HAI (Canada)

LTC

- 1.6 to 3.8 million infections (USA)
- **No data in Canada**

Mortality rate 0.04-0.71 per 1,000 resident care days

- 21,880 - 388,370 deaths (USA)
- 2,886 - 51,237 deaths (Canada)

Sources: CDC NHSN; References 3-4

IPAC capacity: Acute Care vs LTC

Acute care

- Funding available
- Expertise (training, Certification in Infection Prevention and Control)
- Executive support
- HAI data available
- Staff: 1 Full Time Equivalent (FTE)/100-150 beds
- Recommended: 3 FTE/500 beds (Health Canada, 2004)

LTC

- Very limited funding
- Limited expertise (training, Certification in Infection Prevention and Control)
- Minimum executive support
- HAI data NOT available
- Staff: less than **0.1 FTE/100** beds (*estimate*)
- Recommended: 1 FTE/150-250 beds (Health Canada, 2004)

Cost of HAIs

United States of America

One admission
$4,400-$6,300

All admissions
$153,000 - $306,000

Annual cost
$673K - $2 billion

Canada

?

Source: Strausbaugh LJ, Joseph CL. The burden of infection in long-term care. Infect Control Hosp Epidemiol 2000;21:674 –9.

Legislation: Long-Term Care Homes Act – Ontario Reg.79/10

229. (1) Every licensee of a long-term care home shall ensure that the infection prevention and control program required [under the Act] complies with the requirements of this section.

(3) The licensee shall designate a staff member to co-ordinate the program who has education and experience in…

(c) **data collection** and trend analysis;

(4) The licensee shall ensure that **all staff participate** in the implementation of the program

(5) The licensee shall ensure that on every shift,

(a) **symptoms** indicating the presence of infection in residents are **monitored** in accordance with evidence-based practices…

(b) the symptoms are **recorded**…

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Trial of a Surveillance Toolkit in a Long-Term Care Corporation

Project: Trial a Surveillance Toolkit with a LTC Corporation

- Identified 2 LTCHs interested in trialing a surveillance toolkit
  - Training provided to staff and ICP designates at LTCHs
  - Trial over 3 months, feedback gathered throughout
  - Feedback used to revise tools
- Rolled out revised toolkit with LTCH corporation
  - Training
  - Monthly webinars
  - Revisions and additional tools developed as needed

LTC Surveillance Pilot

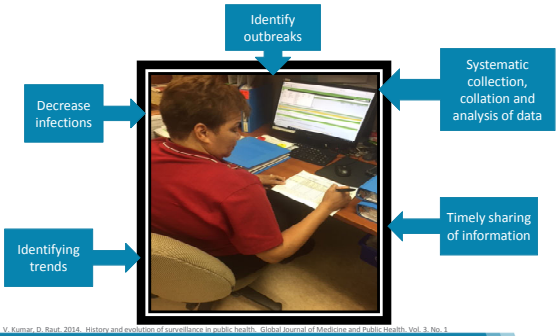
- Trial
  - January – March 2018, 2 LTCHs trialed a PHO-developed surveillance toolkit
    - Daily surveillance forms
    - Case definitions
    - Case validation forms
    - Surveillance reporting form
- Phase 1
  - April 2018 – March 2019, revised tools implemented by 17 additional LTCHs

Schlegel Villages

- We currently have 19 continuum of care Villages in Ontario.
- All the Villages except 1 have LTC, 1 Village is Retirement only.
- We are in our 10th year of a culture change journey to promote the social model of living moving away from the medical model

Why forge this path?

Getting the message across



V. Kumar, D. Raut. 2014. History and evolution of surveillance in public health. Global Journal of Medicine and Public Health. Vol. 3. No. 1

Daily Surveillance Form

Infection Control Daily Surveillance Form

Neighbourhood

Month:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	D																															
	E																															
	N																															

			Respiratory								Urinary						Skin			GI			Other					
Date	Resident name	Room number	Body temperature	Runny nose/Sneezing	Stuffy nose or congestion	Sore throat	Dry Cough	Increased sputum production	Myalgia, body aches	Malaise	Chest Pain	Increase in frequency	Acute Dysuria/ acute pain	Increase urinary incontinence	Acute costovertebral pain/tenderness	Increased urgency	Indwelling catheter	Wound/tissue damage	New rash/site	Rash/lesion	Redness or swelling at site	Nausea	Increased frequency	Vomiting frequency	Abdominal pain	Diarrhea	Ear	X-ray	Antimicrobial treatment	Lab result	Other

Legend: Use these legends in the last column (Other) for sign and symptoms not present in sheet.
CP - Purulent discharge from around catheter/acute pain, swelling, or tenderness of the testes, epididymis, or prostate, **SI** - sinusitis, **BP** - abnormal blood pressure
GL - swollen or tender glands in the neck (cervical lymphadenopathy), **HE** – headache or eye pain, **MA** - Malaise or loss of appetite, **LE** - leucocytosis
LA - new or changed lung examination abnormalities, **RR** - respiratory rate of ≥ 25 breaths/minute, **FD** - acute functional decline, **CO** - conjunctivitis
PC - Pseudomembranous colitis on endoscopy, **EI** - Ear infection, **MO** - mouth/perioral infection, **OS** - O^2 sats <94% on room air in O^2 sats >5% from baseline

Case Definitions

Appendix D: Recommended Case Definitions for Surveillance of Health Care-Associated Infections in Long-term Care Homes

NOTE: Long-term care surveillance definitions in previous versions of this document were originally published by McGeer et al.[18] in 1991. A current re-visitation of these definitions has been proposed by Stone et al.[19] in 2012, and are summarized in this Appendix.

A. RESPIRATORY TRACT INFECTION

I. Common Cold Syndromes/Pharyngitis

The resident must have *at least* two of the following signs or symptoms:

1. runny nose or sneezing
2. stuffy nose (i.e., congestion)
3. sore throat or hoarseness or difficulty in swallowing
4. dry cough
5. swollen or tender glands in the neck (cervical lymphadenopathy).

Comment:
Fever may or may not be present. Symptoms must be new, and care must be taken to ensure that they are not caused by allergies.

II. Influenza-like Illness (ILI)

Both of the following criteria must be met:

1. Fever (see Comments)
   AND
2. The resident must have *at least three* of the following signs or symptoms:
   a) chills
   b) new headache or eye pain
   c) myalgias or body aches
   d) malaise or loss of appetite
   e) sore throat
   f) new or increased dry cough.

Case Validation Form

Healthcare-associated infection (HAI) urinary tract infection case form

Date: _____ (YYYY/MM/DD) Unit: _____ Resident Name: _____

Date of Birth: _____ (YYYY/MM/DD) Onset Date of Infection: _____ (YYYY/MM/DD) Physician: _____

①

SYMPTOMATIC URINARY TRACT INFECTION (UTI)

Indwelling catheter present	Indwelling catheter NOT present
❑ fever, rigors, or new onset hypotension, with no alternate site of infection ❑ either acute change in mental status or acute functional decline, with no alternate diagnosis, and leucocytosis ❑ new onset of suprapubic or costovertebral angle pain or tenderness ❑ purulent discharge from around the catheter or acute pain, swelling, tenderness of the testes, epididymis, or prostate ❑ resident has a urinary catheter specimen culture with at least 10^5 cfu/mL of any microorganisms	❑ acute dysuria or acute pain, swelling, or tenderness of the testes, epididymis, or prostate ❑ fever or leucocytosis ❑ acute costovertebral angle pain or tenderness ❑ suprapubic pain ❑ gross hematuria ❑ new or marked increase in incontinence ❑ new or marked increase in urgency ❑ new or marked increase in frequency ❑ at least 10^5 cfu/L of no more than two species of microorganisms in a voided urine sample or ❑ at least 10^5 cfu/L of any number of organisms in a specimen collected by in-and-out catheter

CONSTITUTIONAL CRITERIA

Fever	Leukocytosis	Acute functional decline	Acute change in mental status
❑ Single oral temperature >37.8 C ❑ Repeated oral temperatures >37.2 C or rectal temperatures >37.5C ❑ Single temperature >1.1C over baseline from any site	❑ leukocytosis (>14,000 leuko/mm³) ❑ Left shift (>6% bands or >1,500 bands/mm³)	❑ A new 3-point increase in total activities of daily living score from baseline, based on the following seven items, each scored from 0 to 4 o Bed mobility o Transfer o Locomotion within the LTC home o Dressing o Toilet use o Personal hygiene o Eating	❑ Acute onset ❑ Fluctuating course ❑ Inattention ❑ Either disorganized thinking or altered level of consciousness

Culture Results:
❑ Contaminated specimen
❑ No specimens taken
❑ No growth
❑ Commensal flora
❑ Organisms, specify _____ ❑ S ❑ R to antibiotic ordered _____

Case Validation Form (continued)

Physician Diagnosis: _____

Meets Case Definition:

- ❑ SYMPTOMATIC URINARY TRACT INFECTION (UTI)
- ❑ ARO: ☐ MRSA ☐ VRE ☐ ESBL
- ❑ DOES NOT MEET infection definition
- ❑ Y ❑ N Healthcare-associated infection
- ❑ Y ❑ N Communicable disease, reported to the Medical Officer of Health _____/____/____ (YYYY/MM/DD)

Comments: (hospitalization, recent out-patient visits, surgery, other): _____

Surveillance Reporting Form

Village:
Continuum: LTC

								Infections																							
										Respiratory									Gastrointestinal												
Month	Year	Resident Name	Neighbourhood	Room #	Date of Onset	Was the Resident in Hospital in last 48 hours? (Y/N)	Temperature (°C)	Fever (Adjusted)	Malaise, Lethargy	Nasal Congestion/Runny Nose	Chills	Cough or dry cough	Headache	Sore Throat/Severe Virus	Swollen or bloody glands	Body aches	Pneumonia	Lower Respiratory	3 episodes of diarrhea in 24 hour period	3 episode of vomiting in 24 hour period	Nausea	Abdominal Pain/Tenderness	Painful GI Activities	C-Difficile	Serious GI Urgency	Acute Dysentery/Loose Poo	Incontinence					
January	2019	John Doe			01-Jan-19	N	38.5	X	X	X	X	X	X	X																	
January	2019	Jack Doe			01-Jan-19	N	39	X	X	X	X	X	X	X																	
January	2019	Jane Doe			01-Jan-19	N	40												X			X			X					
January	2019	John Doe			01-Jan-19	N	40																				X	X	X		
January	2019	Jordan Doe			01-Jan-19	N	40																				X	X	X		
January	2019	Jim Doe			01-Jan-19	N	40																				X	X	X		
February	2019	Ariel			01-Feb-19	N	38.5	X	X	X	X	X	X	X																	
February	2019	Ella			01-Feb-19	N	38.5																				X	X	X		
February	2019	Tinkerbell			01-Feb-19	N	39												X	X	X	X	X								
February	2019	Jasmine			01-Feb-19	N	40												X			X		X							
February	2019	Cinderella			01-Feb-19	N	40																				X	X	X		
February	2019	Belle			01-Feb-19	N	40																				X	X	X		
February	2019	Anna			01-Feb-19	N	40																								

Surveillance Reporting Form

Implementation strategy

- Initial testing with two homes and changes/improvements made into forms
- Improved data collection form and reporting form
- Gradual implementation (initial focus on UTIs)
- Monthly webinars: feedback and further improvements in data reporting form

April-May	June-August	September-October	November-December
Urinary tract infections	Respiratory infections	Gastrointestinal infections	Other infections

The Success

- Improved communication between shifts
- Highlighted the need for good practice for communal living.
- Knowledge of case definitions
- Collaboration
- Positive outlook for teams
- Tools at your fingertips
- Decrease in infections
- Tool to keep people accountable
- Visual tools

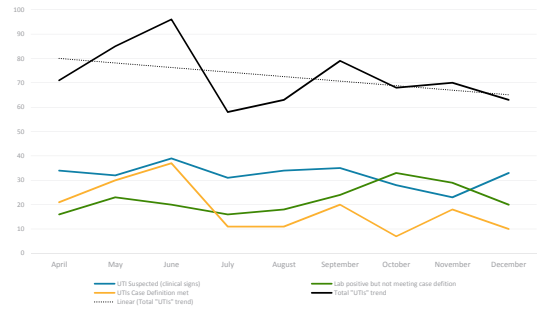
Challenges

- Computer document
  - Altering
  - Sharing
  - Understanding
- Participation
- Comprehension
  - Missteps-formula, user error, design error
  - Stakeholders
- Education for all team members
- Product quality
- Competing priorities
- Physician and family buy-in
- Time for infection control to collect the data

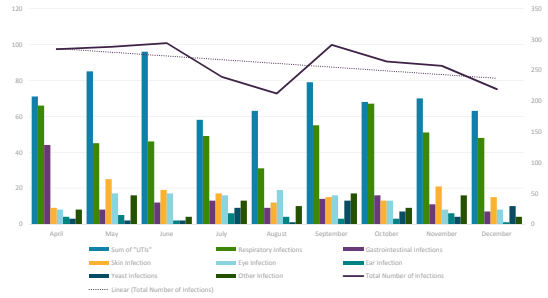
Success story – respiratory practices

- The geriatric consultation service was asked to assess an 78 year old woman for failure to thrive.
- She had previously lived in the community and had presented to the emergency department of an academic health sciences centre with shortness of breath.
- She was treated with corticosteroids and bronchodilators, as well as with a course of antibiotics.
- Yet, despite these treatments going on for 11 days, she remained dependent on oxygen and was becoming increasingly deconditioned.
- The clinical assessment of this patient by the consultant geriatrician revealed a very elevated jugular venous pressure, bilateral chest crackles and wheezing and evidence of bilateral pleura effusions.
- The clinical diagnosis was heart failure not infection.
- Her respiratory status responded to appropriate heart failure therapy.

UTIs since project start



Total number of infections



Early evaluation findings

Facilitators

1. Support from leadership
2. Enthusiasm and willingness to reduce infections
3. Monthly webinars
   1. Troubleshoot challenges
   2. Share ideas

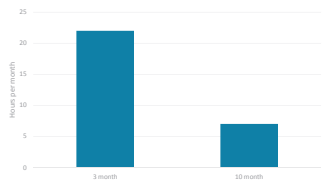
Barriers

1. Competing priorities
   a. Webinar attendance
2. Calculating resident-days
3. Compliance with nurses signing off on daily surveillance form every shift
4. IT support required

Process evaluation

- Webinar Participation
  - Seven webinars were offered to support implementation
  - ICP designates attended 0-5 webinars
    - Mean of 3 webinars attended
    - Positive feedback from ICP designates who did attend
  - Webinars were recorded, summary notes provided to everyone
    - Unable to improve attendance but made information from webinars easily accessible

Time required to complete surveillance activities



Process evaluation

- Training
  - 11/13 ICP designates interviewed were able to maintain ongoing training of front-line staff (95-100%) on surveillance tool
- Use of the tools
  - 11/13 ICPs designates reported consistently using standardized case definitions
  - 12/13 ICP designates reported consistently using the surveillance reporting form
    - Seven reported struggling with submitting the form to the health informatics coordinator on time

Lessons Learned

- Barriers identified at the early stage of implementation
  - Staff turnover
    - Clear communication of staff changes is required
    - Process to train new ICP designates in process is necessary
  - Competing priorities
    - Impedes ICP designates ability to conduct surveillance, use tools and attend webinars
- Successes
  - ICP designates liked having a reporting form that generates graphs they can use at IPAC meetings
  - Using standardized case definitions resulted in fewer infections (meeting case definition)

What is next?

- Final evaluation with focus on implementation barriers and forms (corporate approach)
- Changes made in forms and implementation strategy
- Implementing revised forms with additional 10-12 homes
- Evaluation of implementation (non-corporate approach)
- Additional antimicrobial utilization data on UTIs and respiratory infections

Questions?

For further information or questions, please contact us at:
ipaccentralwest@oahpp.ca

References

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