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Infection Prevention and Control (IPAC) Orientation for IPAC Leads in Long-Term Care:

Surveillance

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Learning Objectives

By the end of this session, participants will be able to:

- Provide an overview of surveillance in IPAC programs

- Discuss the design of surveillance systems/steps to planning a surveillance system

- Discuss the collection and compilation of surveillance data

- Describe how to interpret and present surveillance data

Agenda

Item	Time	Topic
1	5 (minutes)	Welcome and introductions
2	5 (minutes)	Introduction to the Checklist: IPAC Orientation for Infection Control Leads in LTCHs
3	40 (minutes)	Surveillance
4	5 (minutes)	Knowledge-to-Action – Q/A
5	5 (minutes)	Wrap-up and next steps

Checklist for IPAC Orientation for IPAC Leads in Long-Term Care

- PHO has developed a new webpage that will contain the Checklist and the series of presentations

- The Checklist and the series of presentations will help build your IPAC knowledge.

Orientation for Infection Prevention and Control Leads in Long-Term Care
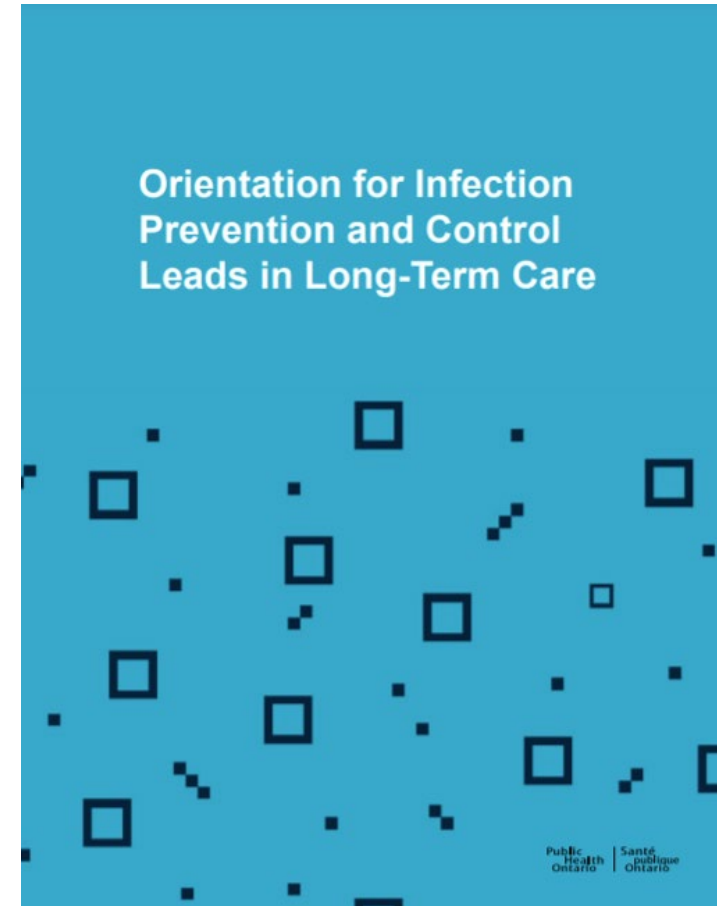
Ontario Agency for Health Protection and Promotion (Public Health Ontario). Orientation for infection prevention and control leads in long-term care [Internet]. Toronto, ON: Queen's Printer for Ontario; 2022 [cited 2022 May 12]. Available from: https://www.publichealthontario.ca/-/media/Documents/I/2022/ipac-leads-orientation-long-term-care.pdf?sc_lang=en

Surveillance: What is it? Why is it Important?

What is Surveillance?

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

PIDAC 2014

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Why do Surveillance in LTCHs?

- To reduce healthcare associated infections

- To establish baseline, detect outbreaks and monitor trends

- To identify high risk residents

- To detect reportable and emerging infectious diseases

- To determine effectiveness of IPAC measures

- To heighten awareness of IPAC practices

Types of Surveillance for LTCH

Targeted
- Focused
- Example: Dementia unit

Process
- Verify
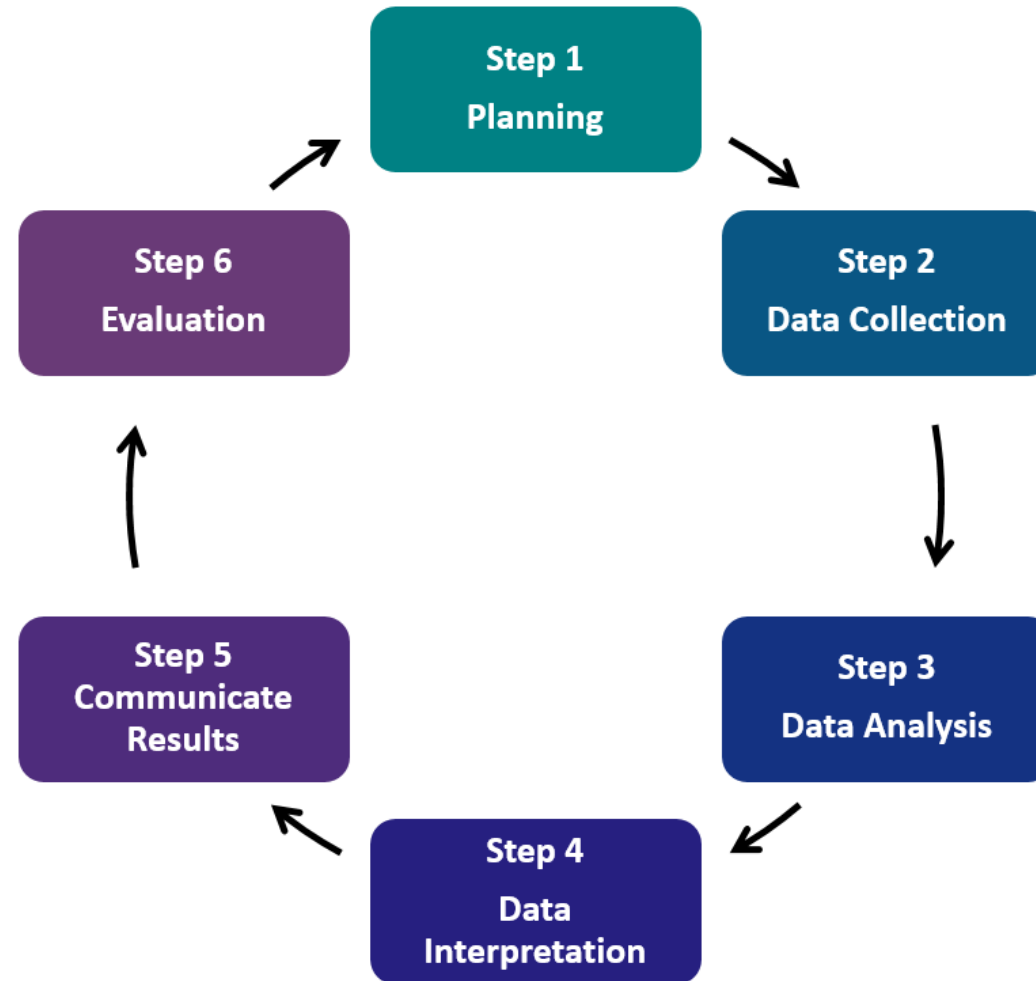- Example: Adherence to antimicrobial resistant organism (ARO) screening protocols for residents

Outcome
- Changes
- Example: Health care associated infection (HAI) rates

Syndromic
- Detection
- Example: Acute respiratory infection or acute gastrointestinal illness

Steps for Designing a Surveillance System

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Step 1: Planning
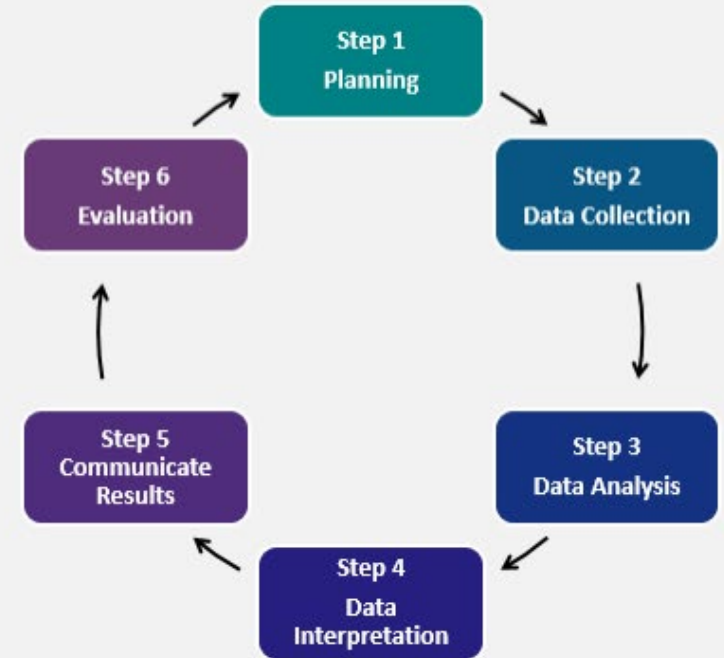
Step 1: Planning (1/2)

- Assess the population
  - Type of residents served
  - Most common invasive procedures
  - Health concerns from the community
- Select outcomes for surveillance
- Establish case definitions

Step 1: Planning (2/2)

Establish case definitions

- Clearly defined-infection outcome, at risk population and any other risk factors

- **Consistently applied**

Established case definitions for LTC

- IPAC Canada

- SHEA

- PIDAC

Happe J, Stoll F, Biluk L, Cargill K, Cuff A, Cerkowniak G, et al. Surveillance definitions of infections in Canadian long term care facilities [Internet]. Winnipeg, MB: IPAC Canada; 2017 [cited 2022 May 20]. Available from: https://ipac-canada.org/photos/custom/Members/pdf/SurveillanceDefinitionsOfInfectInCdnLTCFacilities_Fall2017.pdf

Step 2: Data Collection
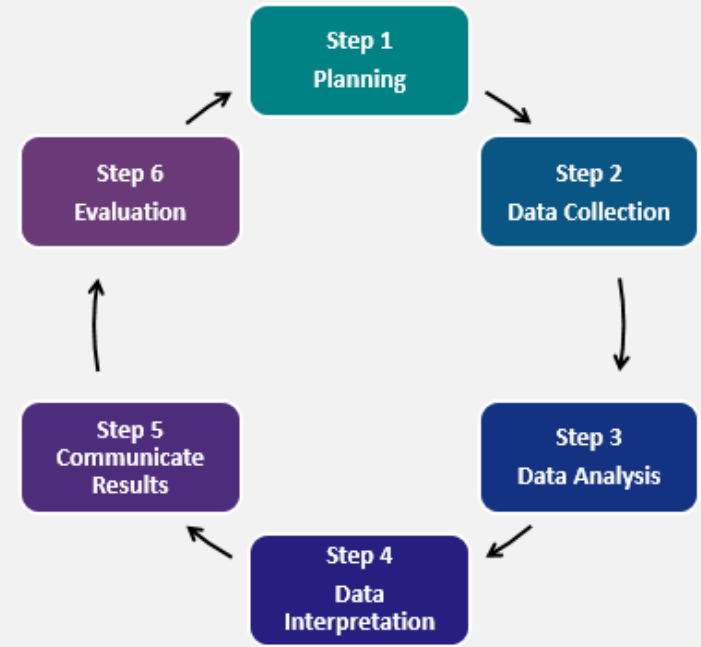
Step 2: Data Collection (1/3)

- Determined by outcomes and case definitions

- Data collection may occur:
  - During a resident's stay at a long-term care home
  - Retrospectively, after discharge

- Data sources:
  - Medical records/resident charts
  - Lab reports
  - Isolation lists
  - Admission logs
  - Clinical diagnosis

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Step 2: Data Collection (2/3)

Passive

- Reliance on staff to provide information to IPAC lead

- Requires the least amount of IPAC lead time and resources

- Greater misclassification or underreporting

Active

- IPAC lead actively seeking out data on a regular basis

- Requires a high level of IPAC lead support

- Higher level of sensitivity

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Step 2: Data Collection (3/3)

Storing Data:

IPAC Canada Databases

- Long Term Care Surveillance Database and Reporting Tool

Commercial Database Examples

- Microsoft Excel https://www.microsoft.com/en-ca/microsoft-365/excel

- Statistical Analysis Software (SAS) https://www.sas.com/en_ca/software/in-database-technologies.html

Infection Prevention and Control Canada (IPAC Canada). Long-term surveillance toolkit [Internet]. Winnipeg, MB: IPAC Canada; 2020 [cited 2022 May 20]. Available from: https://ipac-canada.org/surveillance-and-applied-epidemiology-interest-group.php

Step 3: Data Analysis
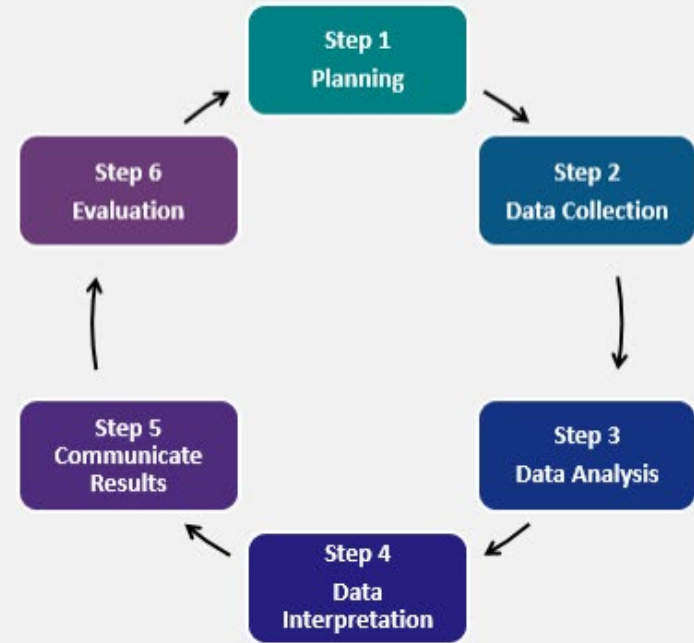
Step 3: Data Analysis (1/3)

Calculating Rates

Rate= (X/Y) x k

- **X** = The numerator (I.e. number of cases or times the event has occurred during a specified time interval)

- **Y** = The denominator which equals the number in the population (I.e. number of residents at risk) from which those experiencing the event were derived during the same time interval

- **k** = A constant used to transform the result of division into a uniform quantity that can be compared with other similar quantities.

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Step 3: Data Analysis (2/3)

HAI specific rates

- MRSA, VRE, respiratory infections
- Denominator: Use total number of **resident days**

Measures of disease occurrence

Incidence rate

$\underline{\text{X (number of \textbf{NEW} cases during a specific time period)}} \times$ K (e.g. 10 000 resident days)

Y (number of resident days for that same time period)

Prevalence rate

$\underline{\text{X (number of \textbf{EXISTING} cases during a specific time period)}} \times$ K (e.g. 10 000 resident days)

Y (Count of that population for the same time period)

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Step 3: Data Analysis (3/3)

Device associated infection rates may include:

- Foley catheters

- Enteral tubes

(X/Y) x K

X = Number of infections

Y = Number of **device days** during a given time period

K= is a constant to keep your rates consistent –usually 1000 for device associated infections

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Step 4: Data Interpretation
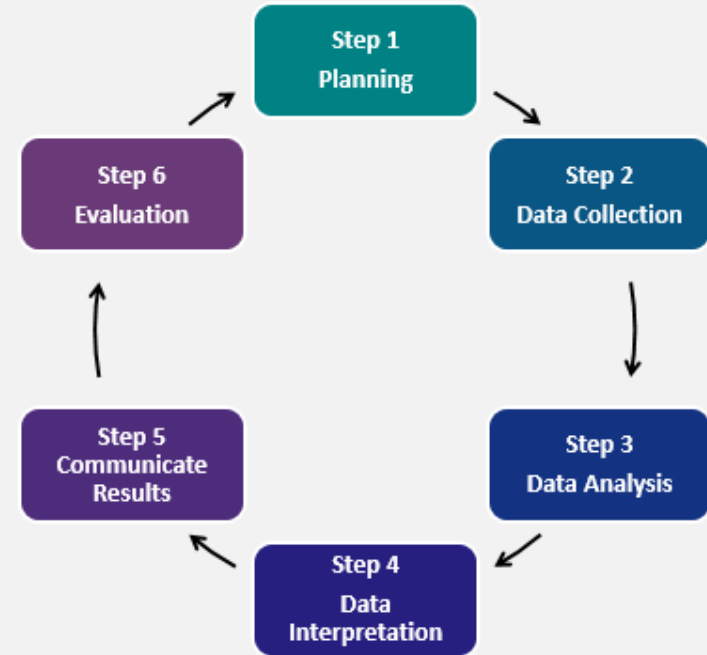
Step 4: Data Interpretation

- Have someone review HAI rates for accuracy

  - E.g. another IPAC practitioner, Director of Care or a member of the IPAC Committee

- Compare rates to recognized standards or benchmarks

  - Compare rates internally

  - Compare rates externally

- Are the rates substantially high, if yes

  - May signify an outbreak

  - Investigate risk for infections

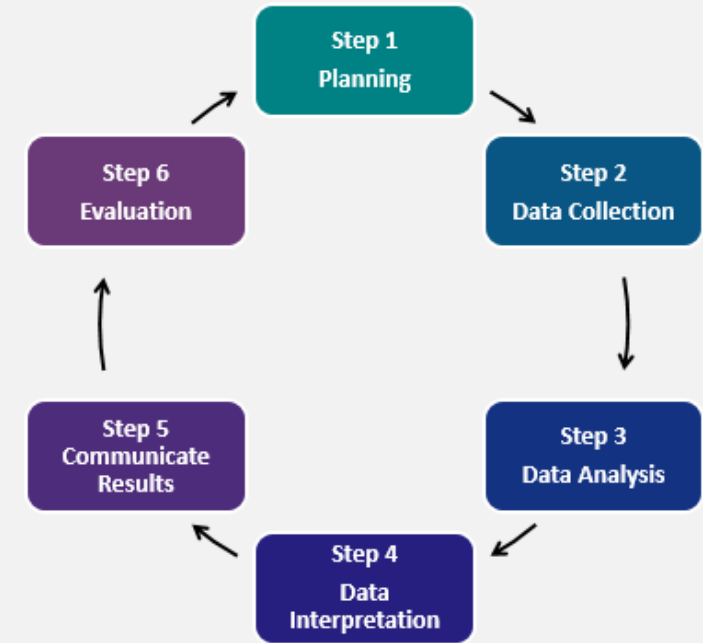 - No obvious explanation for high rates

- Present findings

Step 5: Communicate Results
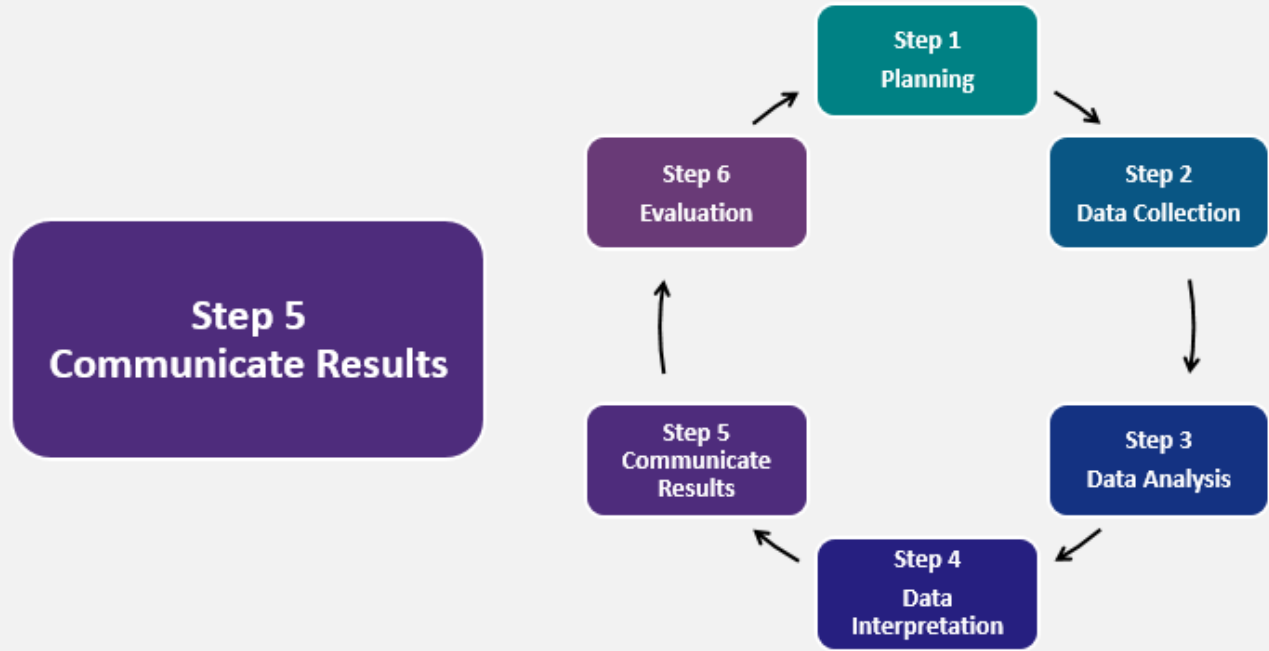
Step 5: Communicate Results

- Verbal and visual

- Timely

- Organization and unit level

Step 6: Evaluation

Step 6: Evaluation

Process

- How well the surveillance system is working on a day to day basis

- Measures things done to/for a resident within the healthcare system

- E.g. Hand hygiene audits

Outcome

- Effectiveness of a program in protecting residents, HCWs and visitors from HAIs

- What practices can be changed based on data?

- E.g. Surveillance of *C. difficile* infection rates

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Best practices for surveillance of health care-associated infections [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Nov 26]. Available from: https://www.publichealthontario.ca/-/media/documents/b/2014/bp-hai-surveillance.pdf?sc_lang=en

Example of Process Evaluation in Action

- Evaluate the application of case definitions for UTIs
  - Randomly select residents' charts that have suspected or confirmed UTIs
  - Identify a group (i.e. IPAC Committee members) to review the charts and apply the case definition
  - Determine if the case definitions are being applied consistently
    - if not, discuss reasons and possible interventions to improve application of the definitions
  - Develop a plan to improve process
    - E.g. staff communication, education and exercises at staff meetings
  - Develop a plan to evaluate the process later to ensure process improvement

LTCH Surveillance Toolkit

- Developed by Public Health Ontario in partnership with IPAC Canada in September, 2020

- The LTC Surveillance Toolkit supports the entire surveillance process including:

  - How to get started and training staff

  - Daily monitoring of residents for signs and symptoms of infection

  - Applying case definitions

  - Analyzing data

  - Auto-generating rates and epi-curves

- The Toolkit is customizable and can be used with any case definitions

- The Toolkit and a webinar on how to use the Toolkit are available to members and non-members

Infection Prevention and Control Canada (IPAC Canada). Long-term surveillance toolkit [Internet]. Winnipeg, MB: IPAC Canada; 2020 [cited 2022 May 20].
Available from: https://ipac-canada.org/surveillance-and-applied-epidemiology-interest-group.php
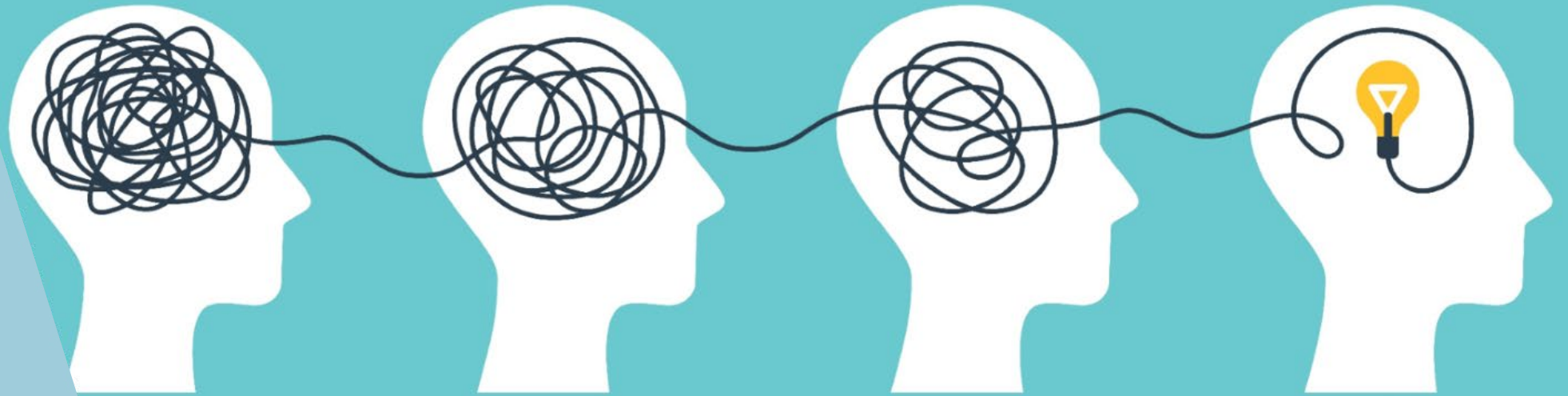
Additional IPAC Resources

Continue to grow your knowledge and fill outstanding gaps with relevant sections from additional readings:

- Happe J, Stoll F, Biluk L, Cargill K, Cuff A, Cerkowniak G, et al. Surveillance definitions of infections in Canadian long term care facilities [Internet]. Winnipeg, MB: IPAC Canada; 2017 [cited 2022 May 20]. Available from: https://ipac-canada.org/photos/custom/Members/pdf/SurveillanceDefinitionsOfInfectInCdnLTCFacilities_Fall2017.pdf

- Ontario. Ministry of Long-Term Care. Infection prevention and control (IPAC) program guidance [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Mar 24]. Available from: https://ltchomes.net/LTCHPORTAL/Content/Snippets/IPAC%20Program%20Guidance_em.pdf

Public Health Ontario:

- Ontario Agency for Health Protection and Promotion (Public Health Ontario). Influenza (flu) [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2022 Apr 19]. Available from: https://www.publichealthontario.ca/en/Diseases-and-Conditions/Infectious-Diseases/Respiratory-Diseases/Influenza

Knowledge-to-Action

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