

LTC Surveillance Workshop



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Surveillance and Applied Epidemiology Interest Group Co-Chairs

January 31, 2023



Disclaimer

The presenters represent the IPAC Canada Surveillance and Applied Epidemiology Interest Group (SAEIG).

The presenters do not have any conflicts of interest to declare.



Objectives

- Provide an overview of surveillance
- Outline the components of a surveillance system
- Review key elements of data collection and analysis
- Review considerations for presentation of surveillance findings
- Provide practical surveillance examples for long-term care settings

Surveillance – What & Why?





What is surveillance?

- ▶ *“The ongoing, systematic collection, analysis, and interpretation of health-related data essential to planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those responsible for prevention and control” CDC*



Why do we conduct surveillance?

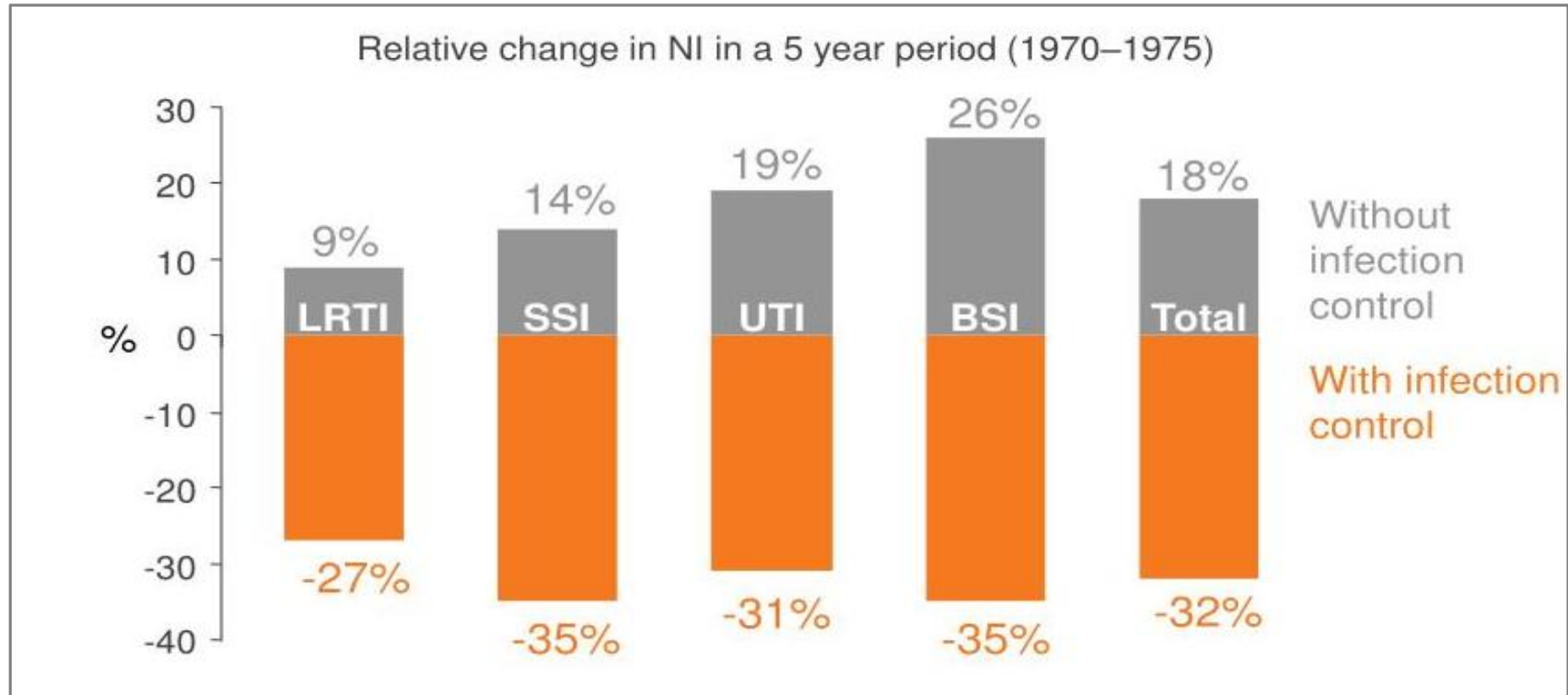
- Detect baseline and endemic rates of disease
- Detect disease clusters/outbreaks
- Assess effectiveness of infection prevention & control measures
- Monitor adverse outcomes and identify risk factors
- Measure & evaluate effectiveness of interventions
- Detect reportable diseases/sentinel events
- Detect emerging infectious diseases
- Provide education for healthcare professionals

Importance of surveillance in infection control



Semmelweis washing his hands in chlorinated lime water

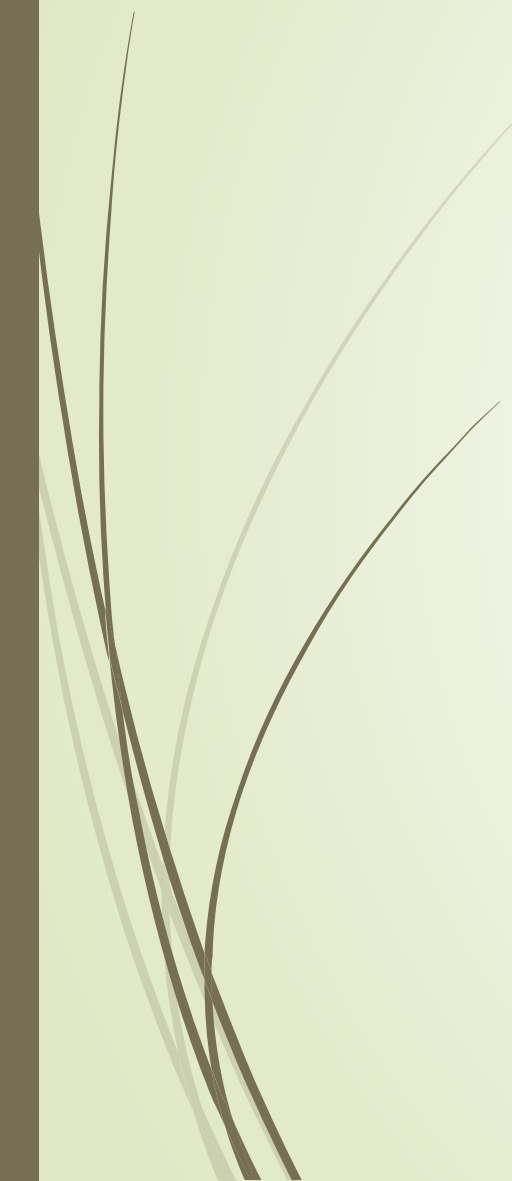
SENIC study: Study on the Efficacy of Nosocomial Infection Control



Halev RW et al. *Am J Epidemiol* 1985



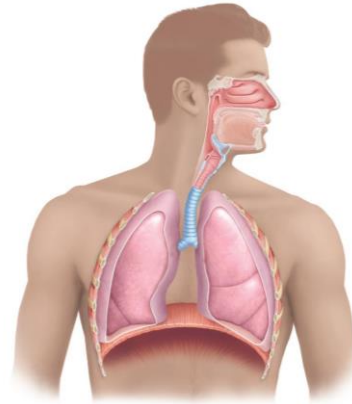
Types of surveillance

- ▶ Total vs. targeted
 - ▶ Active vs. passive
 - ▶ Symptom based vs. syndromic
 - ▶ Process vs. outcome based
- 

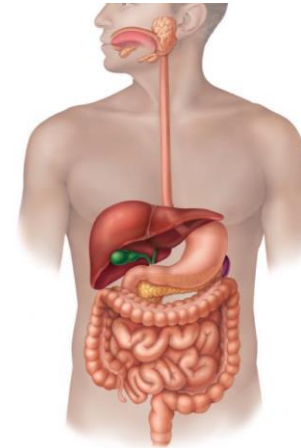
Process Surveillance



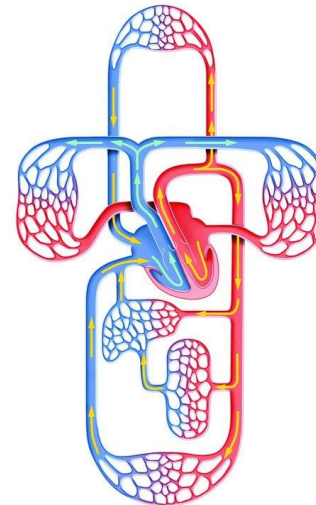
Outcome Surveillance



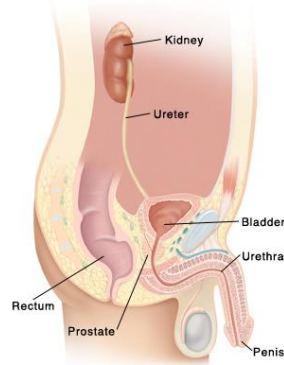
Respiratory Infections



Gastrointestinal Infections



Systemic Infections



Urinary Tract Infections



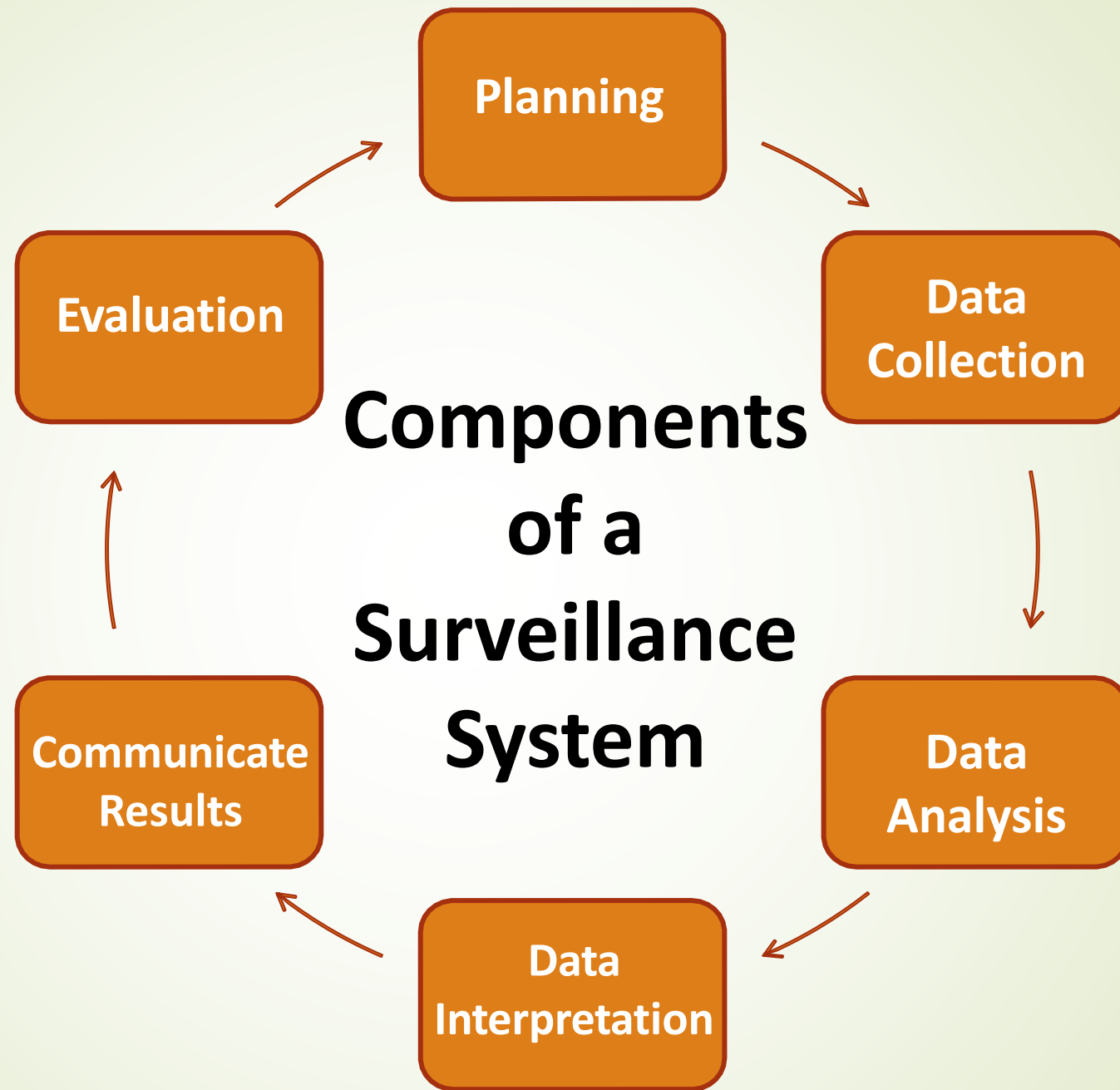
Skin, Soft Tissue, Mucosal Infections

Knowledge Check

Is it a Process or an Outcome measure?

1. *C.difficile* Infection
2. PPE donning and doffing technique
3. Hand hygiene compliance
4. CAUTI





Getting Started



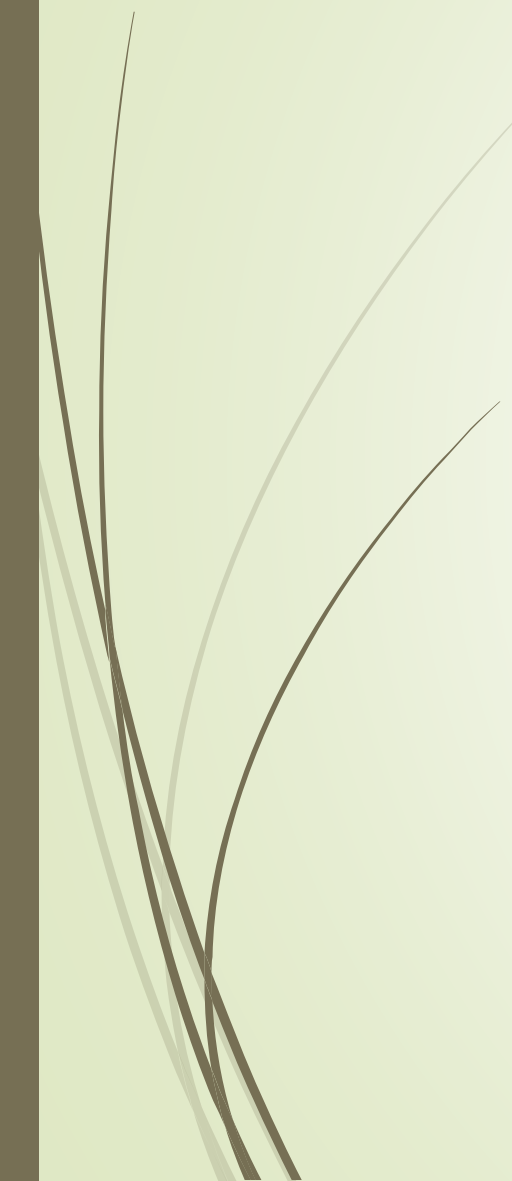


Setting up a surveillance system

- Prioritization
 - Risk assessment and Epidemiology
- Planning
 - Who? What? Why? How? When?
- Standardization
 - Case identification, definitions, protocols, data collection tools



Establish case definitions

- Standard set of criteria used to classify patients/residents/staff as a case
 - Describes cases in terms of person, place and time
 - Based on the symptoms experienced and/or lab confirmation
 - May be developed by the Infection Control Practitioner (ICP) in collaboration with local public health unit
 - A good case definition should include most, if not all cases, and few false positives
- 



Established case definitions

Acute Care

- ▶ Canadian Nosocomial Infection Surveillance Program ([CNISP](#))
- ▶ CDC's National Healthcare Safety Network ([NHSN](#))

Long-Term Care

- ▶ [IPAC Canada](#)
- ▶ Society for Healthcare Epidemiology ([SHEA/Stone](#))



Data Collection





Data collection

PASSIVE

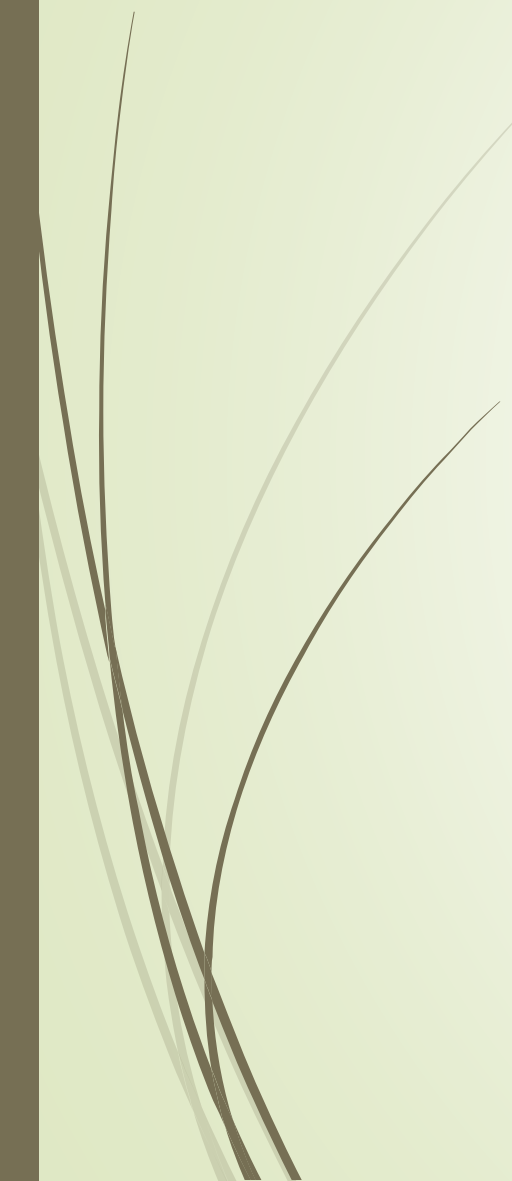
- Rely on staff or residents to report symptoms
- Requires the least amount of ICP time and resources
- Greater misclassification or underreporting

ACTIVE

- ICP actively seeks out HAI's on a regular basis
- Requires a high level of ICP support
- Higher level of sensitivity



Data collection

- ▶ Determined by outcomes and case definitions
 - ▶ Data collection may occur:
 - ▶ During a patient's stay at a facility
 - ▶ Retrospectively, after discharge
 - ▶ Data sources:
 - ▶ Medical records/patient charts
 - ▶ Lab reports
 - ▶ Isolation lists
 - ▶ Admission logs
 - ▶ Clinical diagnosis
 - ▶ Discharge abstract database (DAD)
- 

Storing Data

IPAC Canada Databases

- ▶ [Acute Care Surveillance Tracking Tool](#)
- ▶ [Long Term Care Surveillance Database and Reporting Tool](#)

Commercial Database Examples

- ▶ [Microsoft Excel](#)
- ▶ Statistical Analysis Software [\(SAS\)](#)



Data Quality





Data Cleaning

- ▶ Apply Logic Checks for:
 - ▶ Blank or missing information
 - ▶ Irregularities in patient demographics
 - ▶ Compliance with case definitions
 - ▶ Compliance with case classification rules



Competency Check Up

- Consistent application of case definitions and protocols
 - Identify education opportunities
- 



Data Analysis





Calculating Rates

- ▶ HAI specific rates (incidence density rates)
 - ▶ MRSA, VRE, respiratory infections
 - ▶ Numerator: number of cases in specified time period
 - ▶ Denominator: Use total number of patient days
 - ▶ Usually presented as x per 10,000 patient days



Calculating Rates

- ▶ Procedure specific surgical site infection rates
 - ▶ Hips, knees, C-sections or hysterectomies
 - ▶ Numerator: number of cases in specified time period following specified procedure
 - ▶ Denominator: Use total number of patients that had the same procedure in the same time period
 - ▶ Usually presented as x100 procedures



Calculating Rates

- ▶ Device associated infection rates
 - ▶ Ventilator-associated pneumonia, indwelling-catheter associated UTIs
 - ▶ Numerator: number of cases in specified time period
 - ▶ Denominator: Use total number of device days
 - ▶ Usually presented as x 1,000 device days



Measures of disease occurrence

- **Rate** – expression of frequency with which an event occurs in a defined population per unit of time
- **Ratio** – value obtained by dividing one quantity by another
- **Proportion** – type of ratio in which the values in the numerator are included in denominator



Measures of disease occurrence

- ▶ **Incidence rate** – measure of frequency with which an event occurs in a population over defined time period.
 - ▶ Numerator is number of **new** cases, denominator is population at risk
- ▶ **Prevalence rate** – proportion of **all** persons in a population who have a particular disease or condition at a specified point in time (**point prevalence**) or over specified period of time (**period prevalence**)
 - ▶ Numerator is number of **existing** cases, denominator is population at risk

Calculating Rates

$$\text{Rate} = (X/Y) \times k$$

- ▶ **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 patients 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. (i.e. 100, 1000, 10,000 or 100,000). Value of K is made so that the smallest rate calculated has at least one number to the left of the decimal point.

Incidence rate

$$(X/Y) \times k$$

X = (number of **new** cases during a given time period)

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

Prevalence rate

$$(X/Y) \times k$$

X = (number of all **existing** cases during a specific time period)

Y = (count of that population for the same time period)

*** Choice of denominator is important! Denominator must only include those at risk of the outcome of interest.



Attack rate (expressed as %)

$$(X/Y) \times 100$$

X = (number of **new** cases during a given time period)

Y = (population at risk for that same time period)

Mortality Rate

$$(X/Y) \times k$$

X = (number of **deaths**)

Y = (population at risk)



Device-associated infections

- Central lines
- Ventilators
- Foley catheters
- Enteral tubes

$$(X/Y) \times k$$

X = Number of infections

Y = Number of device days during a given time period

Surgical site infections (SSIs)

- Rates calculated for a particular surgery (CABG, appendectomy)
- The population at risk are those who had the same type of surgery
- Constant is 100, so always in %

$X/Y \times 100$ procedures

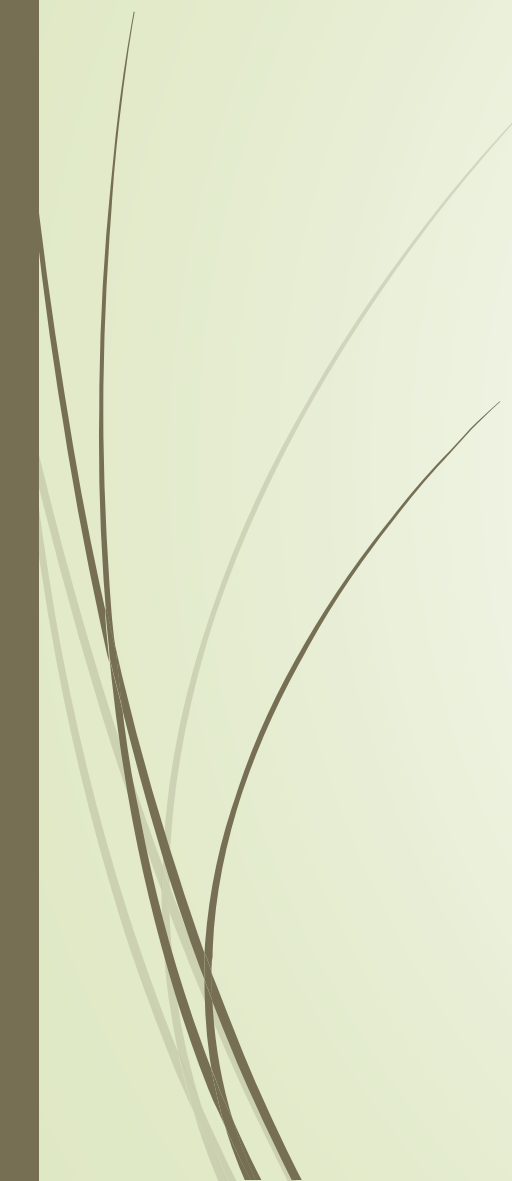
X = Number of infections following surgery Z

Y = Number of patients that had Z surgery during a given time period



Epidemic Curves

Epidemic Curves can be used to:

- Perform a review of surveillance data
 - Visually depict magnitude of an outbreak
 - Determine if a problem is ongoing
- 



Point source



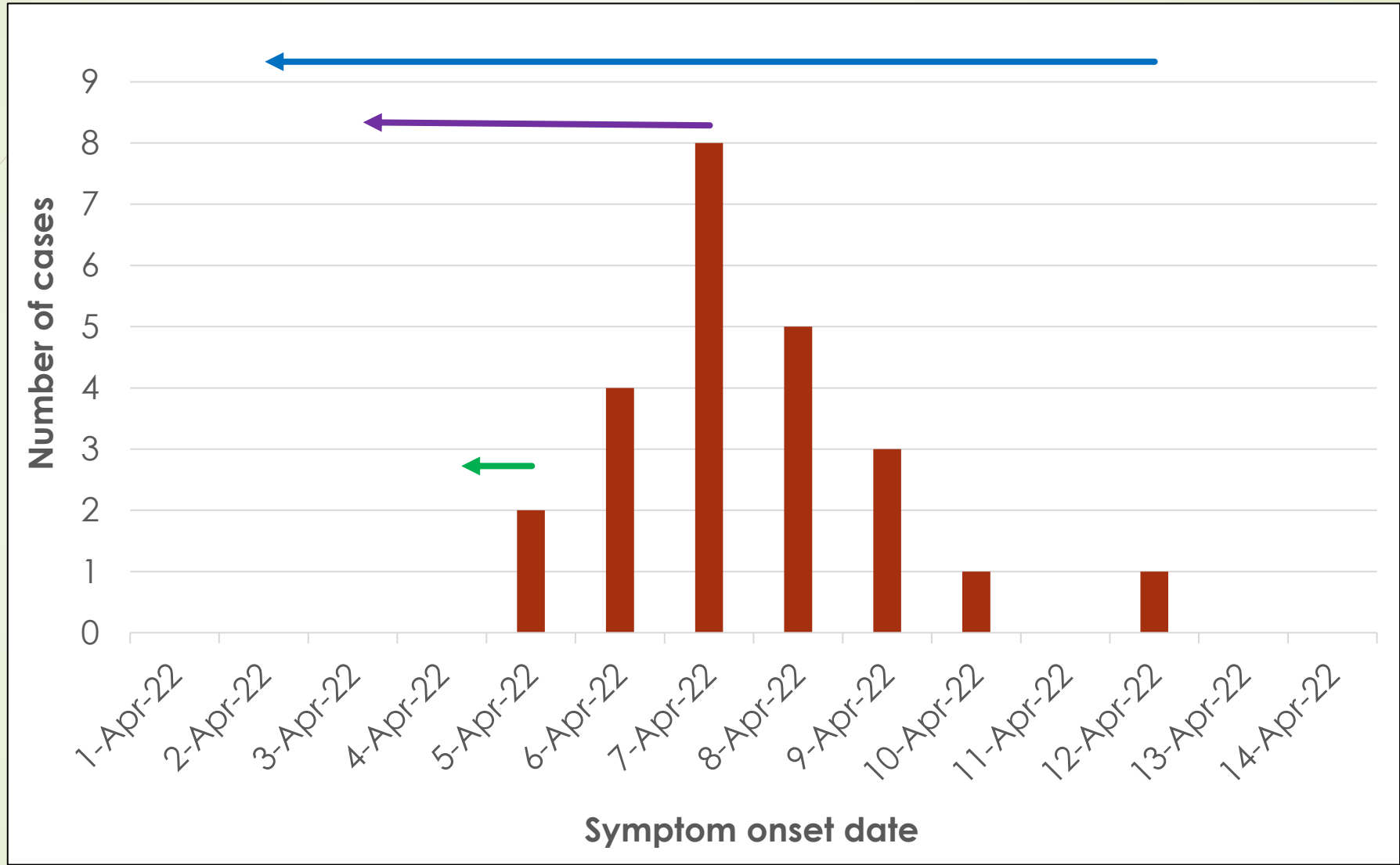
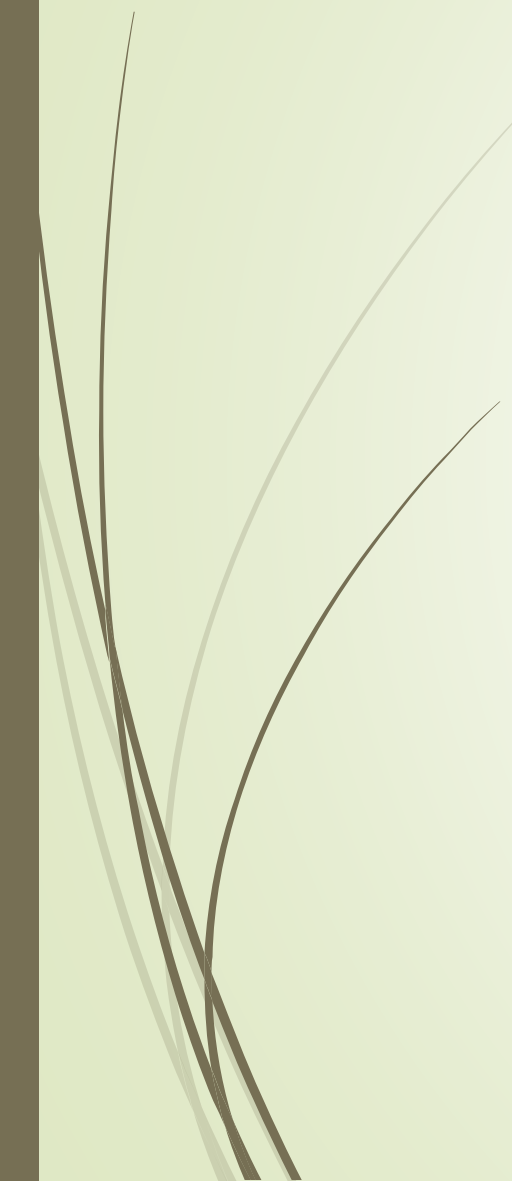
Continuous source



Propagated source



Intermittent source

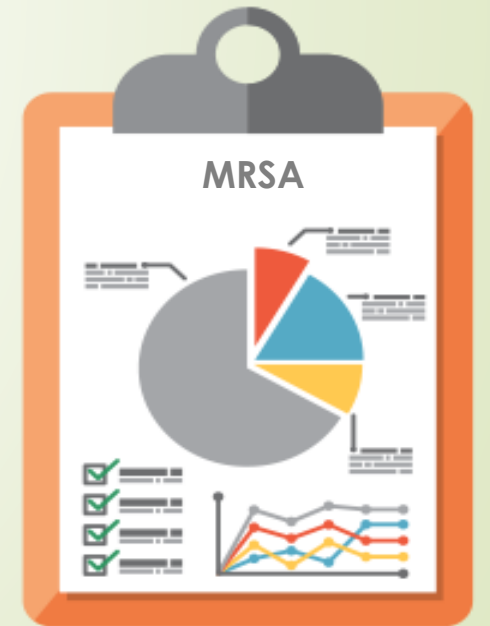


Benchmarking

- ▶ Compare rates **internally**:
 - ▶ From one year to the next
 - ▶ From one respiratory season to the next
- ▶ Compare rates **externally**:
 - ▶ To an externally published standard/reference, e.g. NHSN
 - ▶ To another facility of similar size/population/other characteristics
 - ▶ <https://www.cdc.gov/nhsn/ltc/index.html>



Surveillance Reports






Communicating Findings

- ▶ Verbal/written and visual – when to use graphs vs. reports
- ▶ Timely – provide information quickly in outbreak or if there is a spike in infections
- ▶ To those who need the information to make decisions and take action



PICNet Report Template



Annual Infection Control Report

20XX – 20XX

INSTRUCTIONS:

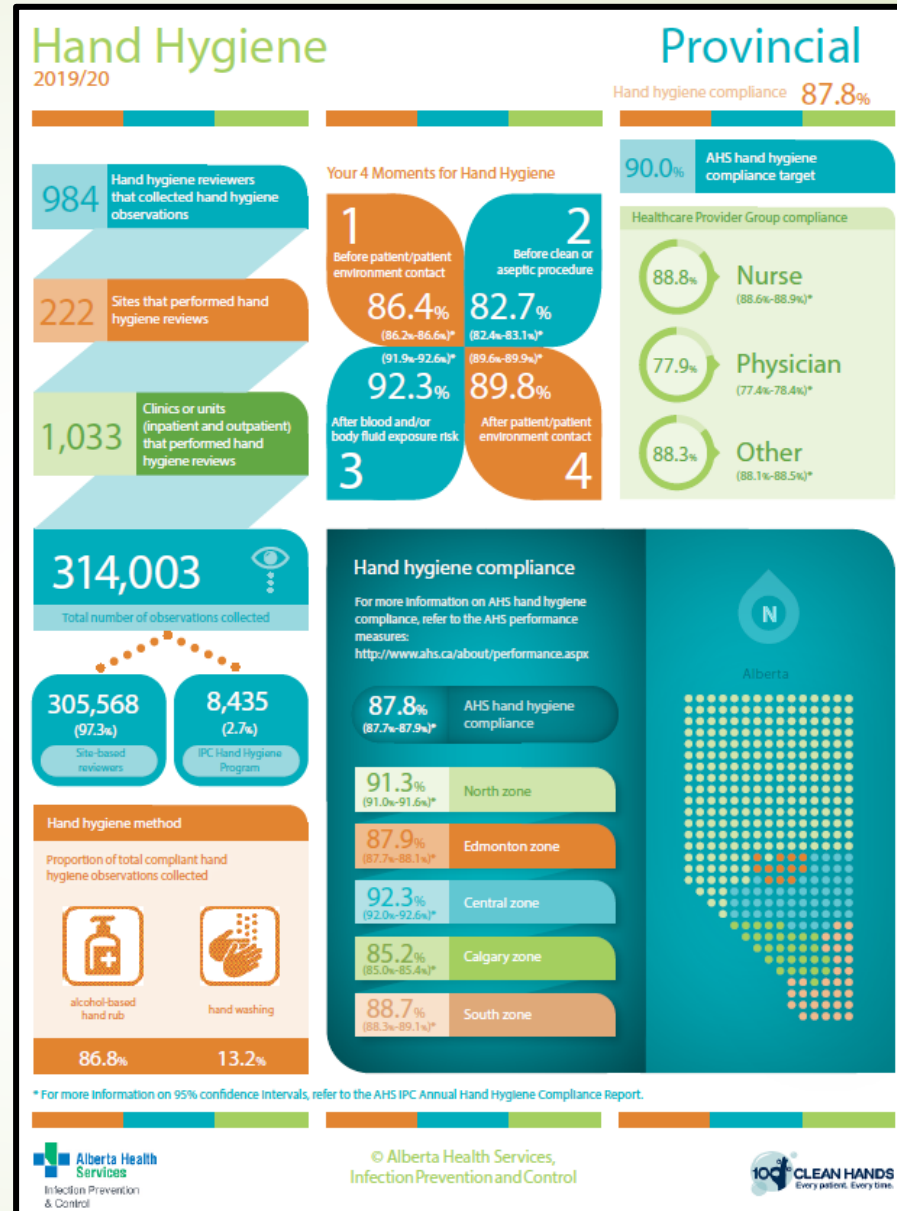
This template details the minimal information required in an Annual Report. Sections can be added to fit the needs of the organization. All sections within this template can be easily modified or sized to facilitate customization.

Any important information that does not readily fit within the structure of this template can be included at the end of the appropriate section. Inclusion of other supplementary material (supporting documentation, relevant calculations, etc.) should be incorporated into the Appendices.

This general instruction and the guidelines/examples that follow throughout the document indicated by [blue text] should be deleted when this document is complete and submitted for final review to your appropriate authorities.

This template was created by the Provincial Infection Control Network of British Columbia. Any feedback or questions should be emailed to picnet@phsa.ca.

AHS Infographic Example



<https://www.albertahealthservices.ca/assets/info/hp/hh/if-hp-hh-infographic.pdf>

Unit Bulletin Board Posting Example

facebook

ICU Best Practices Group (BP Group)

BP Group uploaded 4 new photos to the album
CLA-BSI Data

BP Group 274 VAP-FREE DAYS!

BP Group uploaded 1 new photo to the album
VAP Data

Phil Lamont and Deanna Roberts like this.

Lyndsay Clarke and Carmen Petersen like this.

BP Group 274 CLA-BSI Free Days!

BP Group joined the group Safer Healthcare Now!

BP Group 274 VAP-FREE DAYS!

BP Group uploaded 1 new photo to the album
VAP Data

"If everyone is moving forward together
then success takes care of itself!"

The bulletin board also features several small photos of the ICU Best Practices Group and a line graph showing VAP data.



Evaluation



Evaluate the System

PROCESS

- How well the surveillance system is working on a day-to-day basis
- Measures things done to/for a patient within the healthcare system
- Reviewing case definitions, case finding methods or other surveillance procedures
- E.g., Hand hygiene audits

OUTCOME

- Effectiveness of a program in protecting patients, HCW and visitors from HAIs
- Looking at changes in health status that are attributable to care or service
- Did the system detect an outbreak?
- What practices were changed based on data?
- E.g., Surveillance of SSI rates



IPAC Canada Surveillance Tools



LTC Surveillance Definitions

Surveillance Definitions of Infections in Canadian Long Term Care Facilities

Jennifer Happe, MSc¹; Faith Stoll, BScN, RN, CIC¹; Laurel Biluk, BN, RN, CIC¹; Karen Cargill, BN, RN, GNC(C)¹; Alisha Cuff, BN, RN, CIC¹; Gwen Cerkowniak, BSN, RN, CIC¹; Blanda Chow, MPH, RN¹; Jean Clark, BN, RN, CIC¹; Betty Anne Elford, BN, RN¹; Darlene Fawcett, BN, RN²; Yvette Gable, BN, RN²; Suldhpreet Jagpal, BEH, CPHI(C)¹; Lesley McLeod, MSc, CIC¹; Caroline Meguerditchian, CIC¹; Daphne Murray, BN, RN, CIC¹; Smit Patel, MSc¹; Nathalie Pigeon, BSc¹; Blair Ranns, MPH¹; Monica Sepoch, BN, RN¹; Paula Stagg, MN, RN, CIC¹; Marilyn Weinmaster, BScN RN CIC¹

¹ Infection Prevention and Control Canada (IPAC Canada), Surveillance and Applied Epidemiology Interest Group;

² IPAC Canada, Long Term Care Interest Group;

³ IPAC Canada, Network of Networks Interest Group;

⁴ L'Association des infirmières en prévention des infections

In partnership with:

Accreditation Canada; Association of Medical Microbiology and Infectious Disease Canada; Canadian Patient Safety Institute; Centre for Communicable Disease and Infection Control, Public Health Agency of Canada; IPAC Canada

BACKGROUND

The Canadian Patient Safety Institute (CPSI) and the Public Health Agency of Canada (PHAC) hosted a national infection prevention and control summit in November 2014. Participants came together with the goal of advancing infection prevention and control practices and reducing healthcare-associated infections (HAI) in Canada. During this meeting, measurement and surveillance, specifically improving consistency in surveillance practices across the country, surfaced as a key theme and an action plan was created. Under the leadership of Infection Prevention and Control Canada (IPAC Canada) and the Association of Medical Microbiology and Infectious Diseases Canada (AMMI Canada), a national committee was created to help establish and implement standard infection case surveillance definitions for HAI in acute care and long term care (LTC) facilities. Members of IPAC Canada's Surveillance and Applied Epidemiology, LTC, and Network of Networks Interest Groups and the L'Association des infirmières en prévention des infections formed a working group to revise the existing Society for Healthcare Epidemiology of America LTC facility infection surveillance definitions. Case definitions were updated based on the Canadian healthcare system and an increase in evidence-based literature about infections that occur in residents of LTC facilities.^{1,2}

METHOD SUMMARY

The Centers for Disease Prevention and Control (CDC) Healthcare Infection Control Practices Advisory Committee (HICPAC) guideline development methodology was used to revise the definitions.³ This included a structured review of evidence found in peer reviewed primary research reports and systematic and meta analyses. Changes to LTC infection case definitions were determined by consensus between working group members and reviewed by content experts including infectious disease physicians, epidemiologists, infection control professionals and public health officials. An annex describing the methodology used to produce these definitions, together with the literature search strategy, critical appraisal and stakeholder review and approval process, is available upon request.

GUIDING PRINCIPLES

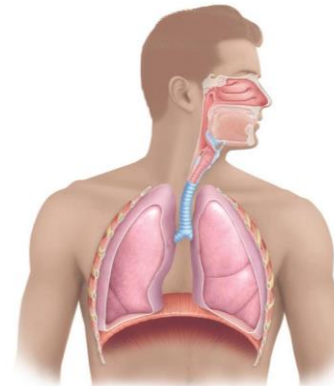
Clinically relevant infections that occur in LTC facility residents are defined here for surveillance purposes. Infection presentation in the elderly may be atypical and failure to meet these surveillance definitions does not necessarily exclude the presence of infection. Further, as with the original definitions, key conditions must be met when applying the definitions: signs and symptoms must be new or acutely worse than the resident's baseline; non-infectious causes should be considered first; and identification of an infection should be based on both clinical presentation and diagnostic testing.^{1,2}

Limited resources are available for infection prevention and control in many LTC facilities. As a result, it is recommended that surveillance focus on infections with the most potential for prevention, transmissibility, incidence, morbidity and/or mortality based on the local context. Attribution of an infection to a LTC facility for surveillance purposes should occur if there is no evidence the infection was incubating on admission to the facility and if infection onset occurs >2 calendar days after admission or >3 days after admission for *Clostridium difficile* infections (CDI).^{1,4} This is in keeping with the Canadian Nosocomial Infection Surveillance Program (CNISP) case classification rules for CDI in acute care.⁴ Finally, these definitions have not been tested in Canadian LTC facilities in advance of their publication.

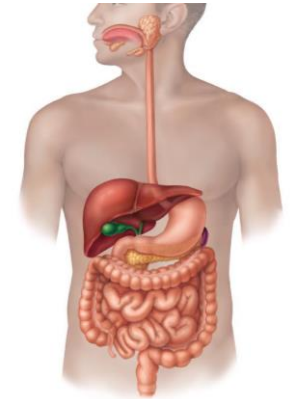
DEFINITIONS

Constitutional Criteria for Infection

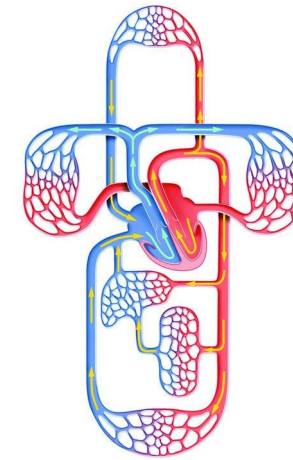
The constitutional criteria in Table 1 serves to establish parameters for common signs and symptoms of infection present in the clinical syndromes defined in this document. The only change to constitutional criteria from the original definitions is to leukocytosis. Normal levels of total leukocytes (including neutrophils, eosinophils, basophils, lymphocytes, and monocytes) in adults range between 4 to 10 x 10⁹ cells/L.^{5,6,7,8} Thus, a cell count above the normal range is considered leukocytosis. Further, the left



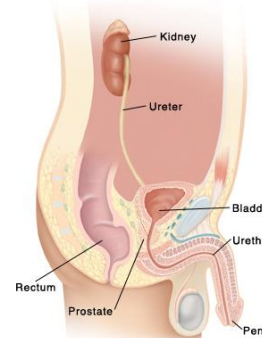
Respiratory Infections



Gastrointestinal Infections



Systemic Infections



Urinary Tract Infections



Skin, Soft Tissue, Mucosal Infections

LTC Surveillance Toolkit



Table of Contents LTC Surveillance Toolkit

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[Toolkit Guide](#)

[Surveillance Readiness Self-Assessment Form](#)

[Daily Infection Signs and Symptoms Tracking Form](#)

Infection Case Validation Forms

[Urinary Tract Infection without an Indwelling Catheter](#)

[Urinary Tract Infection with an Indwelling Catheter](#)

[Respiratory Tract Infection](#)

[Gastrointestinal Tract Infection](#)

[Skin Infections](#)

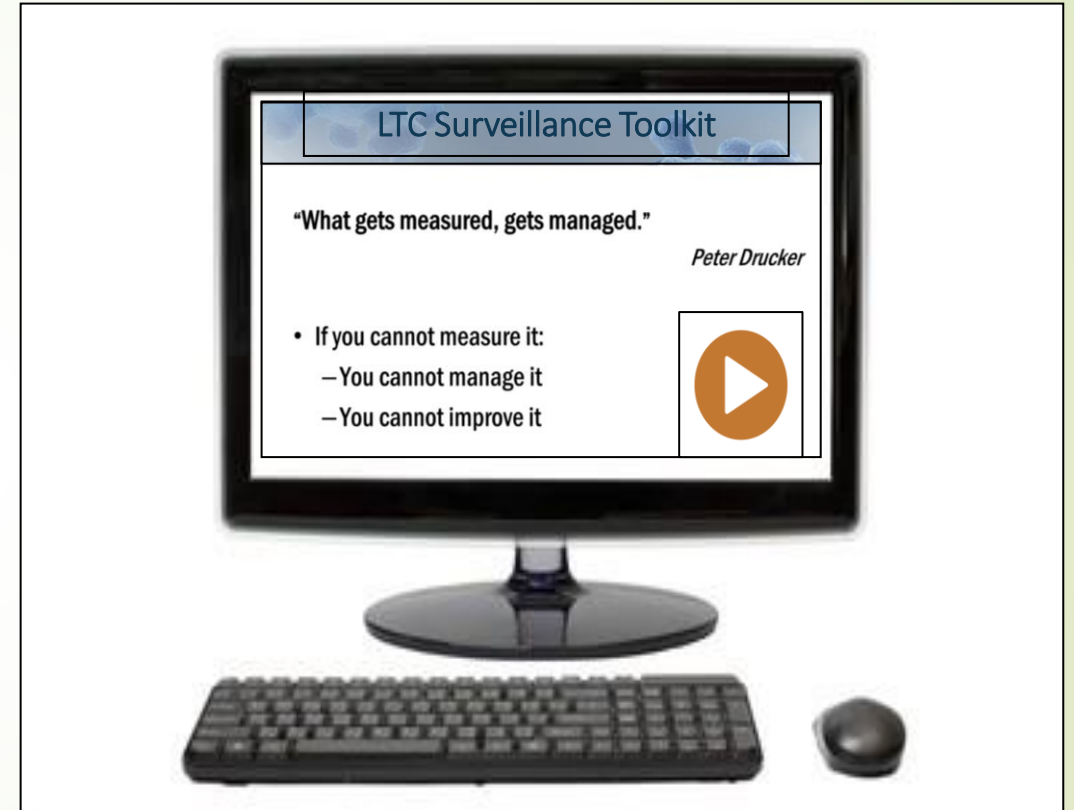
[Eye and Fungal Oral Infections](#)

[Systemic Infection](#)

Appendix A Surveillance Definitions of Infections in Canadian Long Term Care Facilities *

Appendix B Surveillance Database and Reporting Tool *

Appendix C Training Tool for Frontline Staff *



www.ipac-canada.org/webinar-ltc-surveillance

Collecting LTC Surveillance Data



Bug Control®

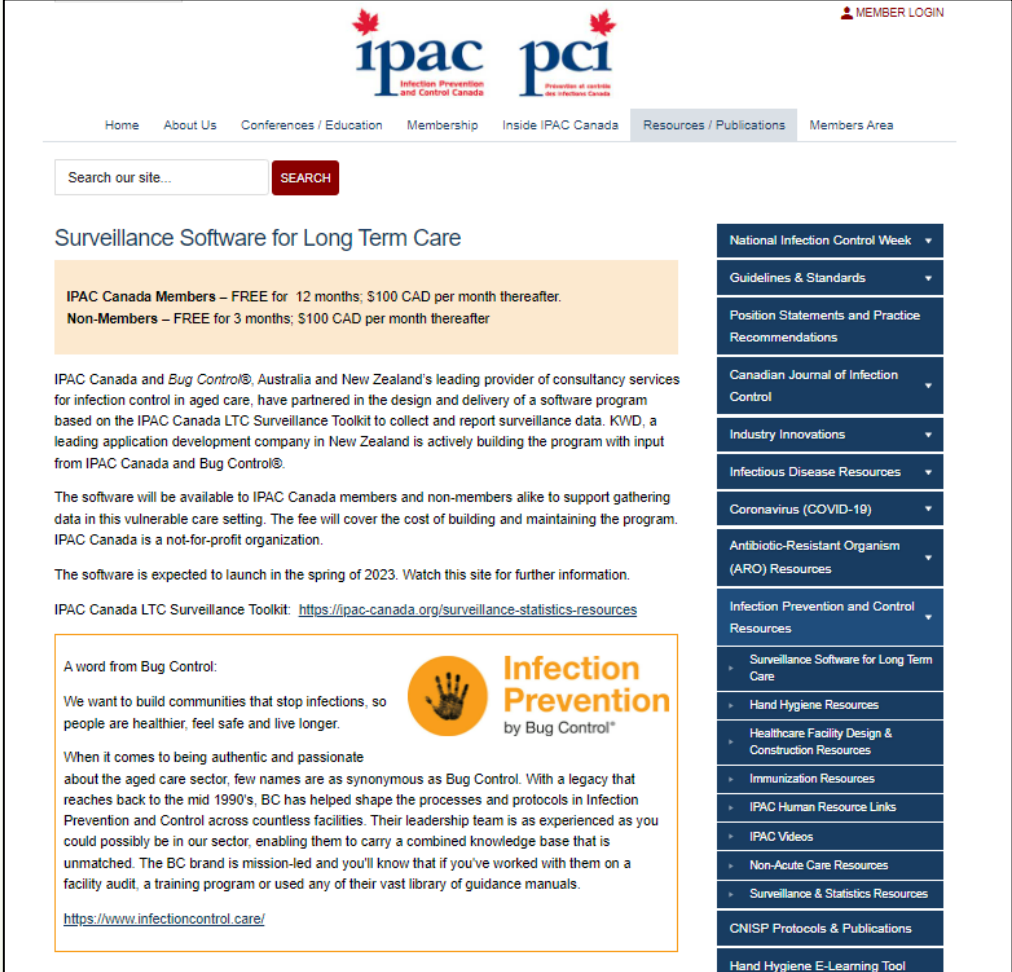
Infection Prevention Made Simple



“Together we can stop infections in aged care”



www.infectioncontrol.care



ipac Infection Prevention and Control Canada | pci Prevention of Control in the Intensive Care Unit

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Surveillance Software for Long Term Care

IPAC Canada Members – FREE for 12 months; \$100 CAD per month thereafter.
Non-Members – FREE for 3 months; \$100 CAD per month thereafter

IPAC Canada and Bug Control®, Australia and New Zealand's leading provider of consultancy services for infection control in aged care, have partnered in the design and delivery of a software program based on the IPAC Canada LTC Surveillance Toolkit to collect and report surveillance data. KWD, a leading application development company in New Zealand is actively building the program with input from IPAC Canada and Bug Control®.


The software will be available to IPAC Canada members and non-members alike to support gathering data in this vulnerable care setting. The fee will cover the cost of building and maintaining the program. IPAC Canada is a not-for-profit organization.

The software is expected to launch in the spring of 2023. Watch this site for further information.

IPAC Canada LTC Surveillance Toolkit: <https://ipac-canada.org/surveillance-statistics-resources>

A word from Bug Control:

We want to build communities that stop infections, so people are healthier, feel safe and live longer.



Infection Prevention
by Bug Control®

When it comes to being authentic and passionate about the aged care sector, few names are as synonymous as Bug Control. With a legacy that reaches back to the mid 1990's, BC has helped shape the processes and protocols in Infection Prevention and Control across countless facilities. Their leadership team is as experienced as you could possibly be in our sector, enabling them to carry a combined knowledge base that is unmatched. The BC brand is mission-led and you'll know that if you've worked with them on a facility audit, a training program or used any of their vast library of guidance manuals.

<https://www.infectioncontrol.care/>

- National Infection Control Week
- Guidelines & Standards
- Position Statements and Practice Recommendations
- Canadian Journal of Infection Control
- Industry Innovations
- Infectious Disease Resources
- Coronavirus (COVID-19)
- Antibiotic-Resistant Organism (ARO) Resources
- Infection Prevention and Control Resources
 - Surveillance Software for Long Term Care
 - Hand Hygiene Resources
 - Healthcare Facility Design & Construction Resources
 - Immunization Resources
 - IPAC Human Resource Links
 - IPAC Videos
 - Non-Acute Care Resources
 - Surveillance & Statistics Resources
- CNISP Protocols & Publications
- Hand Hygiene E-Learning Tool

<https://ipac-canada.org/surveillance-software-for-long-term-care>

Helpful Resources

- ▶ Ontario Agency for Health Protection and Promotion (Public Health Ontario), Provincial Infectious Diseases Advisory Committee. [Best practices for surveillance of health care-associated infections in patient and resident populations.](#) 3rd ed. Toronto, ON: Queen's Printer for Ontario; 2014.
- ▶ Lee, T.B., Montgomery, O.G., Marx, J., Olmsted, R.N., Scheckler, W.E. Recommended practices for surveillance: Association for Professionals in Infection Control and Epidemiology (APIC), Inc. 35(7): 427-440. <https://doi.org/10.1016/j.ajic.2007.07.002>
- ▶ Infection Prevention and Control Canada (IPAC Canada). Long-Term Surveillance Toolkit (Version 1.0; Released September 2020). Available from: <https://ipac-canada.org/surveillance-and-applied-epidemiology-interest-group.php>
- ▶ Infection Prevention and Control Canada (IPAC Canada). Acute Care Surveillance Tracking Form 1.0; Released March 2020). Available from: <https://ipac-canada.org/surveillance-and-applied-epidemiology-interest-group.php>
- ▶ Happe, J., Stoll, F., Biluk, L., Cargill, K., Cuff, A. et al. Surveillance Definitions of Infections in Canadian Long-Term Care Facilities. Infection Prevention and Control Canada (IPAC Canada). Can J Infect Control. Fall 2017 (Suppl):10-17). Available from: https://ipac-canada.org/photos/custom/Members/pdf/SurveillanceDefinitionsOfInfectInCdnLTCFacilities_Fall2017.pdf
- ▶ Provincial Infection Control Network of British Columbia. Annual Infection Control Report Template. 2012. Available from: <https://www.picnet.ca/wp-content/uploads/Annual-InfectionControl-Report-Template-2012.doc>

Health Break



**** 10 minutes ****



Knowledge to Action



**Practice
Makes
Perfect**




Long-Term Care Surveillance Exercise



You will need:

- Surveillance Workshop Worksheet
- LTC Appendix – Surveillance Database



LTC Surveillance Workshop Worksheet
January 2023

Exercise 1 – Long-Term Care

You will need:

[Appendix A LTC Surveillance Database](#), available on the screenshot for the purposes of this exercise provided

[Resident Respiratory Tract Infection Line List](#) on page 3

[Resident Dining Room Seating Arrangement](#) on page 4

[Surveillance Definitions of Infections in Canadian Long-Term Care](#) webpage. Relevant excerpts are provided on page 9.

Questions:

1a. Data cleaning

Review the [Appendix A LTC Surveillance Database](#) and determine whether any of the residents on pages 6-7 to determine whether any of the residents on page 9, for common cold, influenza-like illness or pneumonia.

Which resident(s) meet the case definition for a common cold?

Click here to enter text.

1b. Applying case definitions

You are an ICP at a long-term care home (ABC Care) and you are reviewing the surveillance database on pages 6-7 to determine whether any of the residents on page 9, for common cold, influenza-like illness or pneumonia.

Which resident(s) meet the case definition for influenza-like illness?

Click here to enter text.

Which resident(s) meet the case definition for pneumonia?

Click here to enter text.

Facility name: ABC Care ****Note: enter each infection for an individual resident****

Year: 2022

Infection											
Respiratory											
Month	Resident Name	Unit	Room #	Date Symptoms Started (dd/mm/yyyy)	Was the infection an HAI? (Y/N)	Temperature (°C)	Fever (Calculated)	Cold/Pharyngitis	Influenza-Like Illness (ILI)	Pneumonia	Lower Respiratory Tract Infection
October	Tommy Tomato	1	101	1/10/2022	Yes	39.4	Yes				
October	Carly Carrot	1	101	2/10/2022	Yes		No				
October	Petunia Pea	1	103	2/10/2022	Yes	39.7	Yes				
October	Liam Lettuce	1	107	3/10/2022	Yes	40	Yes				
October	Adam Apple	1	110	3/10/2022	Yes		No				
October	Peter Pear	1	121		Yes		No				
October	Bella Banana	1	124	4/10/2022	Yes	40.2	Yes				
October	Cam Cabbage	1	124	4/10/2022	Yes	40.1	Yes				
October	Polly Pumpkin	1	106	5/10/2022	Yes		No				
October	Aaron Asparagus	1	109	7/10/2022	Yes		No				
October	Carly Carrot	1	101	2/10/2022	Yes		No				
							No				
							No				
							No				

1. Data Cleaning

- ▶ Review the Appendix A database and list 2 data errors
- ▶ How would you correct them?

Work
sheet
pg. 1

Appendix
Infections
tab

**** 2 minutes ****

Facility name: ABC Care

****Note: enter each infection for an individual d**

Year: 2022

Respiratory

Month	Resident Name	Unit	Room #	Date Symptoms Started (dd/mm/yyyy)	Was the infection an HAI? (Y/N)	Temperature (°C)	Fever (Calculated)	Cold/Pharyngitis	Influenza-Like Illness (ILI)	Pneumonia	Lower Respiratory Tract Infection
October	Tommy Tomato	1	101	1/10/2022	Yes	39.4	Yes				
October	Carly Carrot	1	101	2/10/2022	Yes		No				
October	Petunia Pea	1	103	2/10/2022	Yes	39.7	Yes				
October	Liam Lettuce	1	107	3/10/2022	Yes	40	Yes				
October	Adam Apple	1	110	3/10/2022	Yes		No				
October	Peter Pear	1	121		Yes		No				
October	Bella Banana	1	124	4/10/2022	Yes	40.2	Yes				
October	Cam Cabbage	1	124	4/10/2022	Yes	40.1	Yes				
October	Polly Pumpkin	1	106	5/10/2022	Yes		No				
October	Aaron Asparagus	1	109	7/10/2022	Yes		No				
October	Carly Carrot	1	101	2/10/2022	Yes		No				
							No				
							No				

Information

Glossary

Inf instructions

Infections

Total Inf

ARO instructions

ARO

Total AROs





2. Applying IPAC Canada surveillance definitions

Scenario

Your long-term care facility has line-listed several residents with respiratory symptoms. You decide to apply IPAC Canada surveillance definitions to determine which resident(s) meet which definition to assist you in determining what pathogen(s) you may be dealing with.



2. Applying IPAC Canada surveillance definitions

Question

Choose 3 residents on the line list. Using IPAC Canada surveillance definitions, determine:

- i. Who meets the IPAC Canada surveillance definition for the common cold?
- ii. Who meets the IPAC Canada surveillance definition for influenza-like illness (ILI)?
- iii. Who meets the IPAC Canada surveillance definition for pneumonia?

**** 10 minutes ****

Resident identifiers		Symptoms (new onset)														
Room number	Resident Name	Onset date (y/m/d)	Abnormal Temperature (°C)	Dry Cough	Productive cough (new)	Runny nose/sneezing	Nasal congestion/stuffy nose	Sore throat/ hoarseness/ difficulty swallowing	Chills	Body aches	Malaise	Headache	Loss of appetite	Other symptoms (specify)	Date symptoms resolved (m/d)	X-ray confirmed pneumonia (m/d)
101	Tommy Tomato	10/1	39.4 C	x		x			x							9/30
101	Carly Carrot	10/2		x			x		x			x				
103	Petunia Pea	10/2	39.7 C				x	x								10/1
107	Liam Lettuce	10/3	40.0 C		x			x	x	x				Chest pain		10/2



2. Applying Case Definitions

➤ Common Cold:

- Carly Carrot
- Petunia Pea
- Adam Apple
- Aaron Asparagus

➤ ILI:

- Bella Banana
- Cam Cabbage

➤ Pneumonia:

- Tommy Tomato
- Liam Lettuce
- Polly Pumpkin
- Peter Pear

2. Applying Case Definitions

INTECTI												
Facility name: <u>ABC Care</u>							**Note: enter each infection for an individual as a					
Year: <u>2022</u>												
											Respiratory	
Month	Resident Name	Unit	Room #	Date Symptoms Started (dd/mm/yyyy)	Was the infection an HAI? (Y/N)	Temperature (°C)	Fever (Calculated)	Cold/Pharyngitis	Influenza-Like Illness (ILI)	Pneumonia	Lower Respiratory Tract Infection	
October	Tommy Tomato	1	101	1/10/2022	Yes	39.4	Yes			X		
October	Carly Carrot	1	101	2/10/2022	Yes		No	X				
October	Petunia Pea	1	103	2/10/2022	Yes	39.7	Yes	X				
October	Liam Lettuce	1	107	3/10/2022	Yes	40	Yes			X		
October	Adam Apple	1	110	3/10/2022	Yes		No	X				
October	Peter Pear	1	121	3/10/2022	Yes		No			X		
October	Bella Banana	1	124	4/10/2022	Yes	40.2	Yes		X			
October	Cam Cabbage	1	124	4/10/2022	Yes	40.1	Yes		X			
October	Polly Pumpkin	1	106	5/10/2022	Yes		No			X		
October	Aaron Asparagus	1	109	7/10/2022	Yes		No	X				
							No					
							No					
							No					



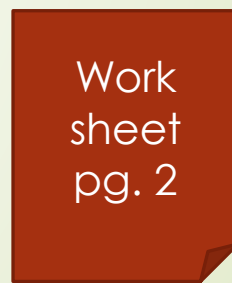
3. Epi-curves

Scenario

Review the resident respiratory tract infection line list for October.

Question

Prepare an epi-curve by plotting the cases on the y-axis, and symptom onset dates on the x-axis. What does your epi-curve look like?



Work
sheet
pg. 2

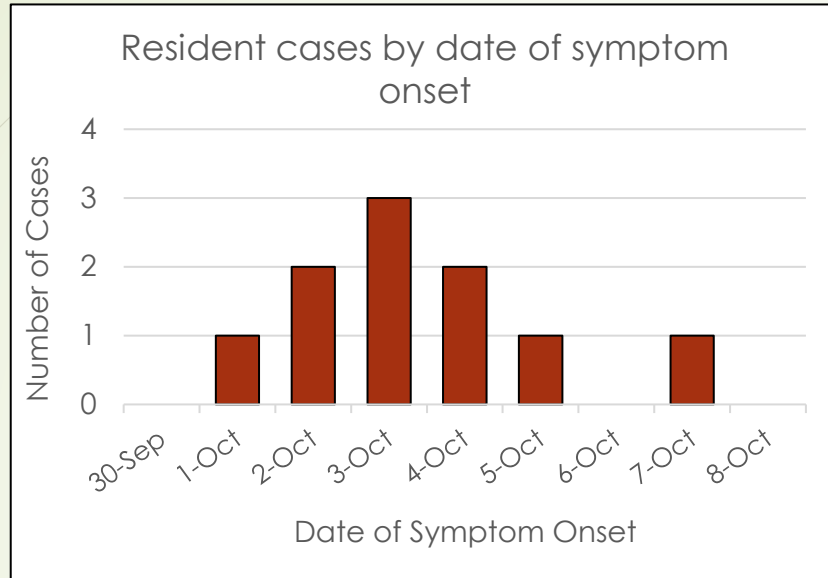


Appendix
Infections
tab

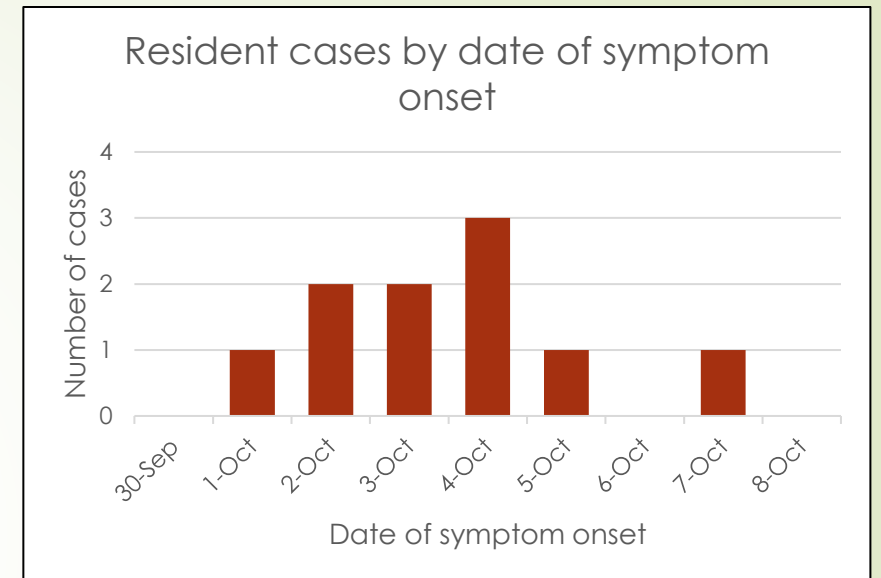
**** 5 minutes ****

What does your epidemic curve look like?

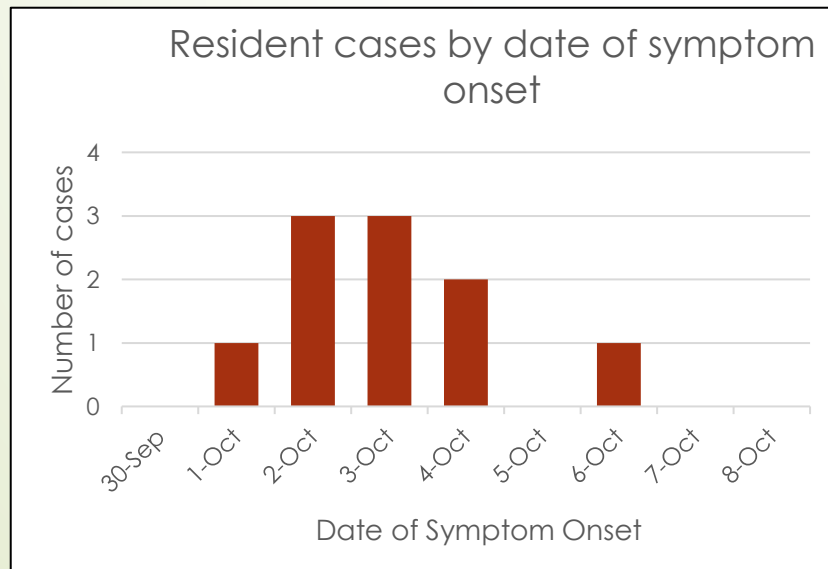
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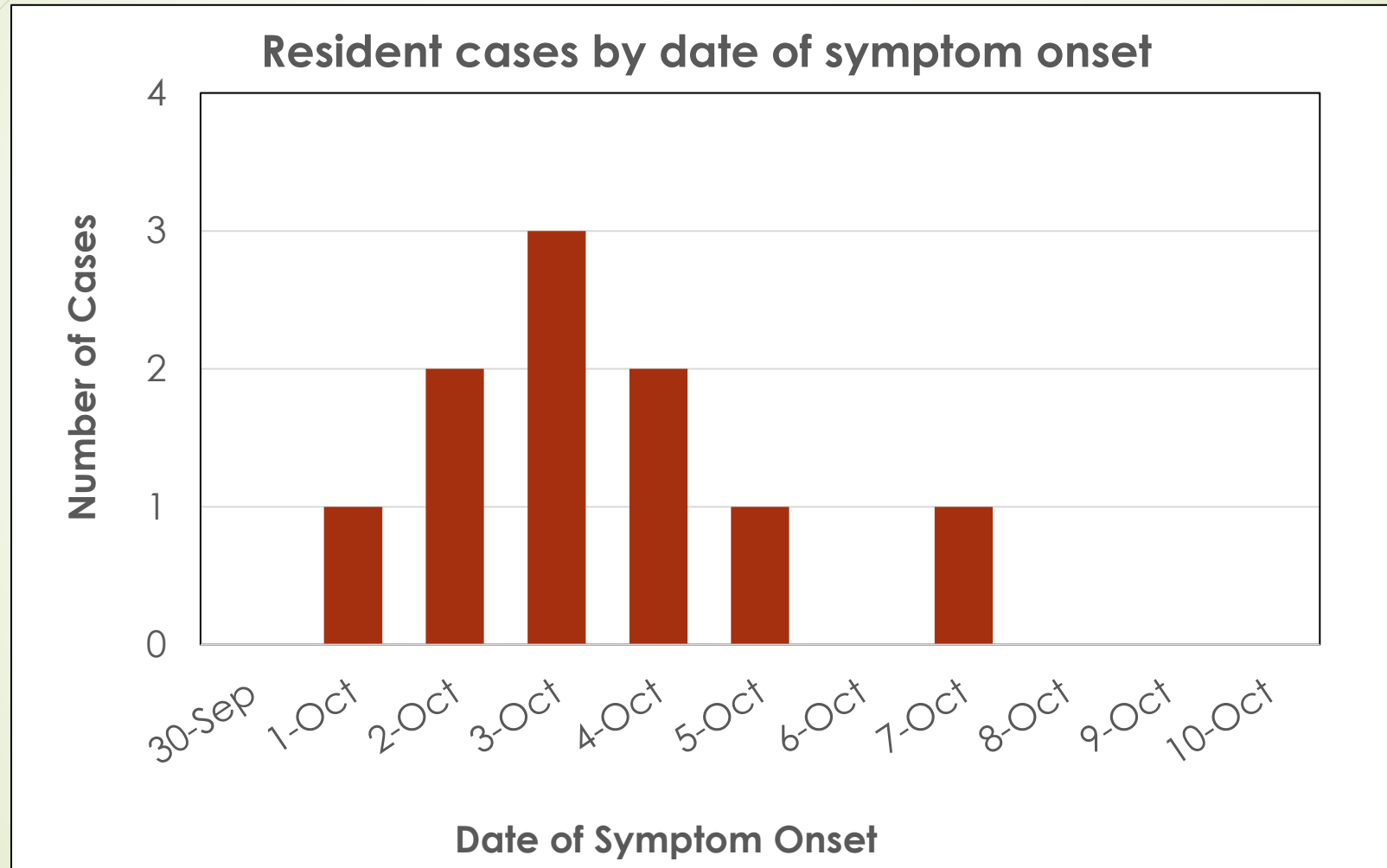
B



C



3. Epi-curve



4. Rate Calculations

Scenario

There are 150 residents in the ABC Care facility, and all residents were present in the facility for the full month of October. During the month of October, 12 residents had a new onset or respiratory symptoms that met the definition of an ILI, and 3 residents (in addition to the 4 already line listed) had ongoing symptoms consistent with a common cold.

Questions

- i. what was the incidence rate of ILI in October?
- ii. what was the prevalence of the common cold in the facility in October?

Work
sheet
pg. 3

**** 10 minutes ****

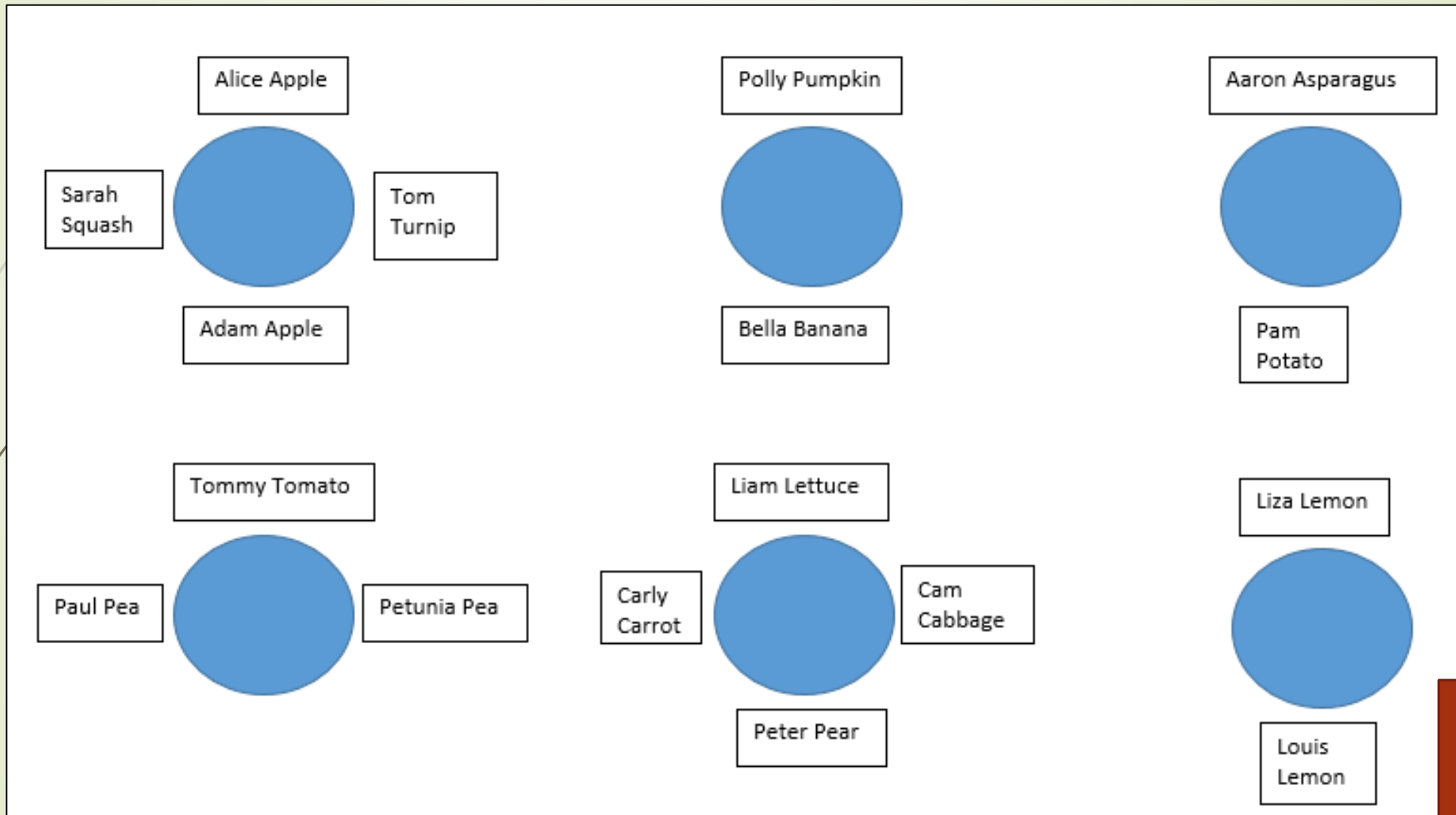
4. Rate Calculations

- Incidence rate:
 - A total of 12 residents had new onset of ILI in October
 - Incidence rate
 - = 12 cases per (31 x 150) resident days
 - = 12 cases per 4,650 resident days
 - = 2.6 cases per 1,000 resident days

4. Rate Calculations

- Prevalence:
 - 4 residents on our line list met the definition for a common cold in October
 - An additional 3 residents had ongoing symptoms of a common cold = 7 residents in total
 - Prevalence = $7/150 \times k$
 - Prevalence = $0.047 \times k$
 - Prevalence = 4.7 cases per 100 residents

5. Floor plans





5. Floor plans

Scenario

As part of your investigation into the observed cases of respiratory illness in your facility, you decide to do some additional detective work and take a look at the seating plan for the dining room in your facility.

Question

Looking at the dining room seating plan in conjunction with your resident line list, what do you observe?

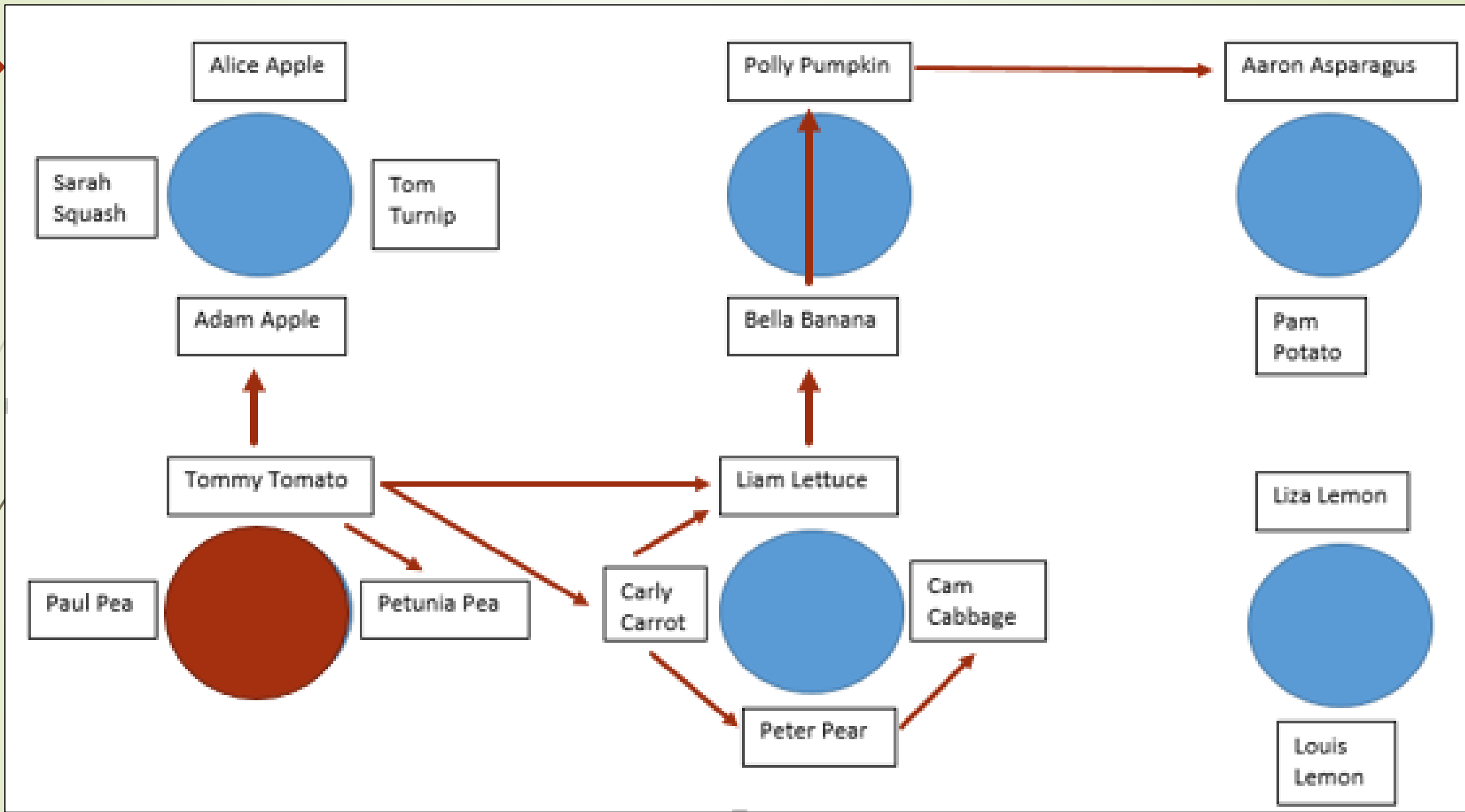
***Hint: consider onset dates

**** 5 minutes ****



5. Floor plans – what do you see?

- ▶ Overlaying onset dates with table placement:
 - ▶ Illness began at Tommy's table
 - ▶ Next illness began in his roommate (Carly Carrot) and nearest tablemate (Petunia Pea)
 - ▶ By onset day illness spread outward in dining mates and roommates
 - ▶ Dining room may have contributed to transmission within the home

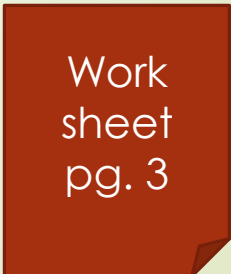




6. Data to Action

Question

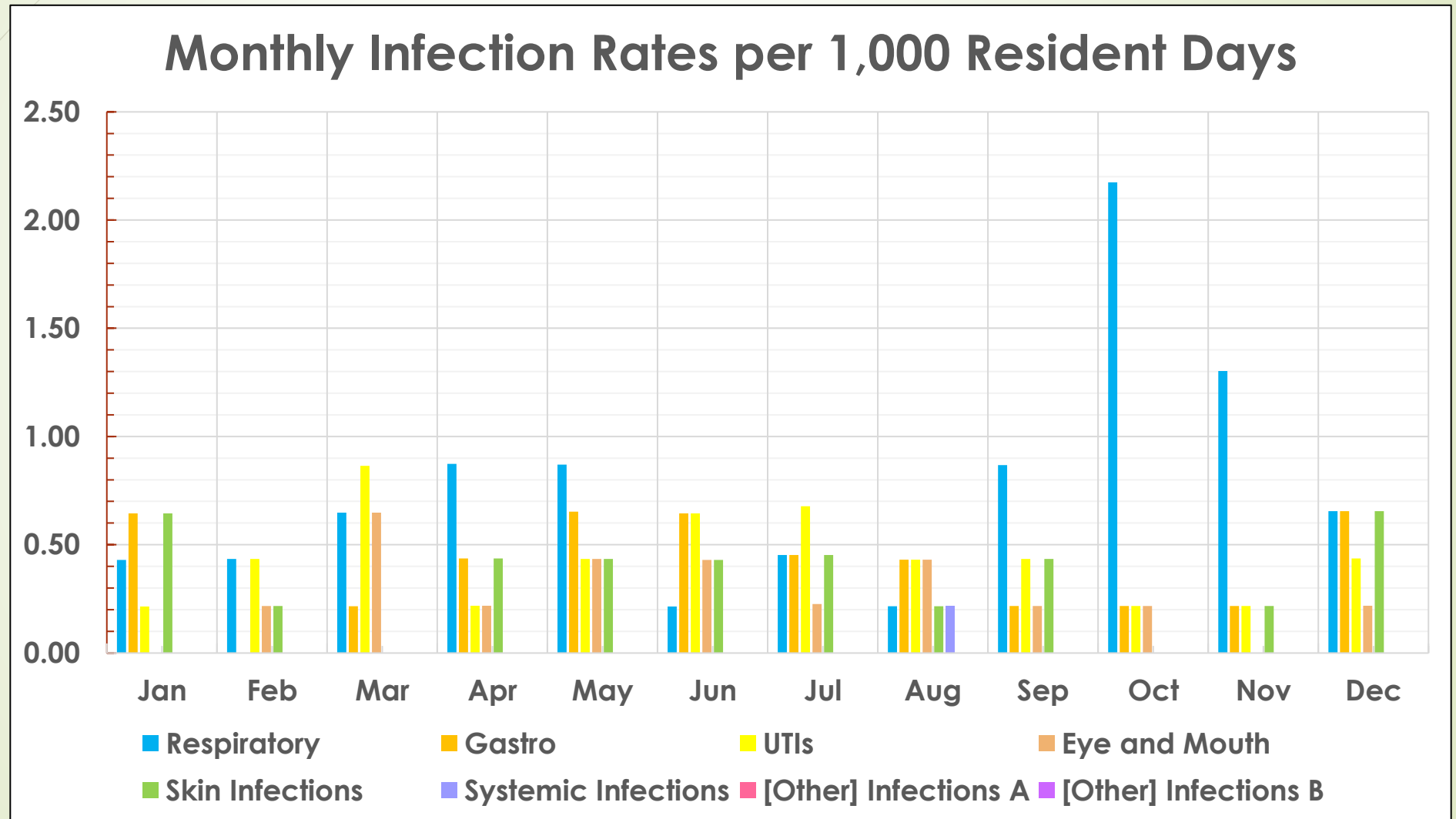
What are the next steps you would take based on your observations? Consider if further investigation is needed, if infection prevention and control interventions are warranted, etc.



Work
sheet
pg. 3

**** 3 minutes ****

7. Reviewing annual data



7. Reviewing annual data

Scenario

You have been asked to prepare an annual summary report for unit nursing staff and administration.

Questions

What information would you choose to highlight?

What images (if any) would you consider including?

Work
sheet
pg. 3-4

**** 3 minutes ****



8. Benchmarking

Scenario

To further understand the observed increase in respiratory illness in your facility in the fall, and whether this was unusual for your facility, your manager has asked you to internally benchmark your data.



8. Benchmarking

Question

Which of the following is the most appropriate:

- A. Comparing data for 2022 to 2021 (full year)
- B. Comparing data from Oct-Dec to Jan-March
- C. Comparing data from Oct-Dec (2022) to the same time period in 2021

**** 3 minutes ****



Wrapping up

Objectives:

- Provide an overview of surveillance
- Outline the components of a surveillance system
- Review key elements of data collection and analysis
- Review considerations for presentation of surveillance findings
- Provide practical surveillance examples for long-term care settings



thank
thank
you!

Surveillance and Applied
Epidemiology Interest Group
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