INFECTION PREVENTION

ANNUAL REPORT 2021 – 2022

Infection Prevention
August 2022
"Covid-19 banner, designed by Starline/Freepik"

northern health
the northern way of caring

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Executive **Summary**

The Northern Health Infection Prevention (IP) program's annual report highlights achievements and challenges facing Infection Prevention and Medical Device Reprocessing practices throughout the region.

Facilities and the associated staff are more familiar with Infection Prevention Program/Practitioners roles and responsibilities within the organization. There is an increased awareness that Infection Prevention support at the site level allows management to implement a preventative approach with communicable disease. With this support from Infection Prevention, leads and staff have become more confident in the implementation of infection prevention guidance.

This report summarizes the initiatives and accomplishments of the IP program during the 2021/22 fiscal year, and outlines major goals and continued priorities for the upcoming fiscal year.

Infection Prevention Health Care Report Card
and Indicators for 2021/22

Infection Prevention Health Care Report Card and Indicators for 2021/22					
Indicator	Status	Target	2021/22	Preferred Direction	Page #
Clostridium difficile	▲	< 0.30	0.32	↓	14
Methicillin-Resistant *Staphylococcus aureus*	◆	< 0.70	0.78	↓	15
Hand Hygiene Compliance	●	≥85%	91%	↑	11

*Cases per 1,000 patient days
^please see the Hand Hygiene section for a further discussion regarding the 2020/21 hand hygiene compliance rates
● Meeting target
▲ Within 10% of target
◆ Outside of target range by more than 10%

Additional Infection Prevention Indicators				
Indicator	Status	Target	2021/22	Page #
Carbapenemase-Producing Organisms	■	Reduction in health care associated transmissions	0	18
Surgical Site Infections	■	< 3 per 100 procedures	3 per 100 procedures	19
Outbreak Management	■	Reduction in # of outbreaks	12 COVID-19 Outbreak	26
			18 Covid-19 Cluster	
			2 ILI outbreaks	
			7 GI Outbreaks	

■ number of cases
^please see the Hand Hygiene section for a further discussion regarding the 2020/21 hand hygiene compliance rates
■ = minimal concerns: actual Meeting target
■ Within 10% of target
■ Outside of target range by more than 10%

Based on this year's report, the key priorities for 2022 - 2023 will be:

Introduction

Under the administrative direction of Fraser Bell, Vice President of Planning, Quality, and Information Management, the Northern Health Infection Prevention (IP) program is dedicated to the prevention and reduction of healthcare associated illness in Northern BC patients, residents, and employees through a variety of strategies summarized in this annual report.

The prevention of healthcare associated infections is an organizational wide responsibility, reflected in our motto “Infection Prevention is Everyone’s Business”. During 2020/21, the IP program has continued to provide infection prevention expertise, and support departments and front line staff.

The regional program provides on-site and consultative infection prevention and medical device reprocessing expertise to thirty-five acute care facilities, long term care facilities, home and community care, assisted living facilities, diagnostic and treatment (D&T) centres and health centres.

Northern Health is geographically divided into three health service delivery areas (HSDAs). Each of the areas is represented by a multidisciplinary infection prevention committee that reports to the NH Infection Prevention Council, the NH Medical Advisory Committee, and the Executive team.

Infection Prevention liaises with other programs such as Communicable Disease (Public Health), and Workplace Health & Safety (WH&S) regarding communicable diseases and outbreak management.

The program functions in accordance with international, national, and provincial guidelines and best practices across the continuum of care, and influences practice through the following:

- Obtains, manages and disseminates critical data and information, including surveillance for infections; and disseminates information to appropriate stakeholders.
- Develops and recommends best practices, policies, and procedures.
- Involved in infection prevention issues relating to all construction and renovation projects within NH to ensure that infection prevention strategies are followed during construction and renovation projects according to the Canadian Standards Association (CSA) protocols.
- Promotes and facilitates infection prevention education within the department, as well as healthcare personnel, patients and their families.
- Provides consultation and outbreak management support to all acute care facilities, long term care facilities, assisted living facilities, diagnostic and treatment centres, health centres, and community programs within Northern Health.
- Provides expertise, and outbreak management support to non-healthcare organizations located in the NH geographic region i.e. work camps.

Infection Prevention **Team Members**

Vice President, Planning, Quality, and Information Management – Fraser Bell

Medical Lead, IPAC – Dr. Abuobeida Hamour

Regional Manager, IPAC – Deanna Hembroff

Medical Device Reprocessing Regional Coordinator – Bonnie Mackenzie

Infection Prevention Practitioner/Epi-Tech – Bonnie Schurack

Infection Prevention Professionals –
Allan Robinson
Bonnie Schurack
Crystal Magnant
Debora Giese
Dinu Kuttamparambil
Janice Muir
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Michael Powell
Michelle Parkinson
Monica Sephton
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Working **Groups and Initiatives**

Guidelines and Reference Developed and Reviewed:

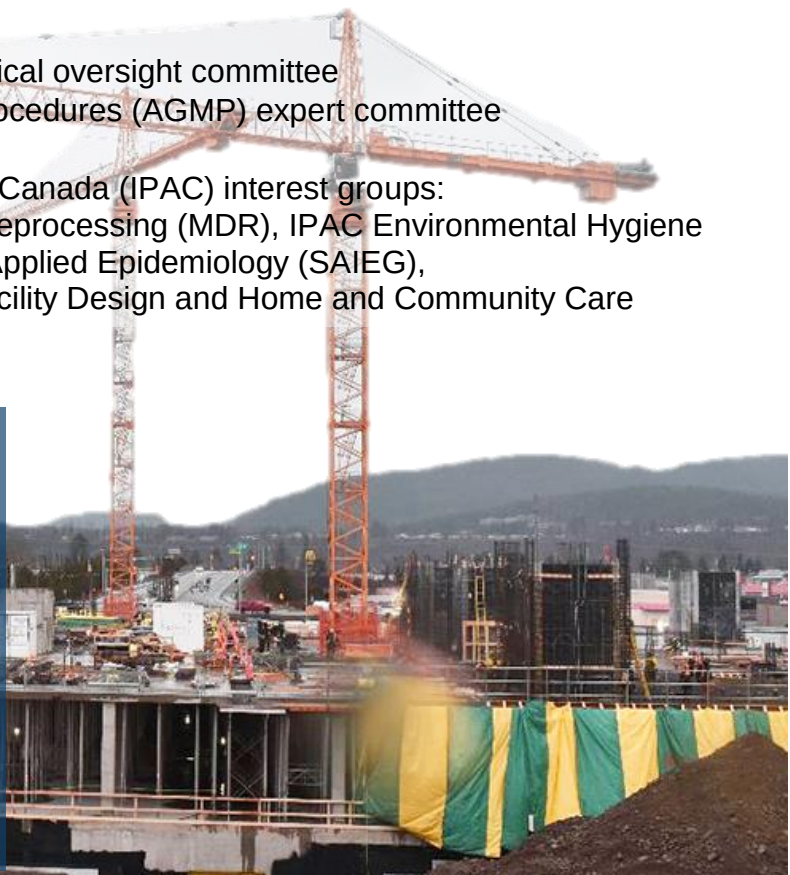
- COVID-19 Outbreak Management Guidelines in NH Inpatient units (AC and LTC) reviewed.
- COVID-19 Outbreak Management Guidelines for non-healthcare type facilities (i.e. work-camps) reviewed.
- Outbreak Quick Reference Guide updated #10-414-6252
- Pre-Cluster Poster developed
- Portable Fan Use and Maintenance Quick Guide developed.

Participated in the following Working Groups/Committees:

- Antimicrobial Stewardship working group
- COVID-19 IPAC, WH&S provincial working group
- COVID-19 Preparedness & Response for work camps located in NH
- Joint Occupational Health and Safety committee
- Long Term care (LTC) and Assisted Living (AL) COVID-19 task group
- LTC Accommodation capital working group
- Mortuary Management provincial committee
- NH Long Term Care community of practice
- NH Perinatal committee
- NH Skin and Wound committee
- NH PPE task group
- Pan Canadian Advisory Committee for the Measurement and Surveillance of Healthcare-Associated infections
- PICNet Education Working Group
- Personal Protective Equipment (PPE) clinical oversight committee
- Provincial Aerosol-Generating Medical Procedures (AGMP) expert committee
- Provincial PPE supply working group
- National Infection Prevention and Control Canada (IPAC) interest groups:
  Long Term Care (LTC), Medical Device Reprocessing (MDR), IPAC Environmental Hygiene Interest Group (EHIG), Surveillance and Applied Epidemiology (SAIEG),
  SSI Surveillance Canada, Health Care Facility Design and Home and Community Care

Participated in the following Working Groups Committees:

- **New Builds**: Mills Memorial Hospital, Dawson Creek District Hospital, Fort St. James Hospital, and UHNBC Surgical Tower
- **Large Renovation Projects**: Stuart Nechako Manor, Infectious Disease Units in NH Acute Care facilities



Education:

An integral part of the Infection Prevention program is the ongoing education and training in infection prevention practices, based on current evidence-based recommendations. Relevant and current information with regards to Infection Prevention and Medical Device Reprocessing department (MDRD) services is available on the OurNH website.

The majority of this year's employee educational needs were driven by the COVID-19 pandemic with the focus on "Back to Basics" including hand hygiene and PPE training. Outbreak management and protocols were also a priority teaching requirement.

As a result of size of gatherings restrictions, communication strategies continued to include Microsoft team videoconference and e-learning Hub.

All education opportunities located outside of NH facilities (i.e. university and college nursing programs) resumed as restriction eased.

In-person Infection prevention orientation for staff resumed.

Infection Prevention Professionals Education:

In keeping with the program's mandate to provide current infection prevention expertise, ICPs participated in the following education in 2021/22:

- 3 ICPs completed the CSA Infection Prevention During Construction, Renovation and Maintenance of Health Care Facilities Course
- 4 ICPs are currently enrolled in Canadian Infection Prevention Courses

Surveillance

The IPAC program carries out surveillance on a number of quality and patient safety indicators. This section of the report presents information on a number of these indicators. Surveillance case definitions can be found in Appendix 1.

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Hand Hygiene

Status	Target	Actual (2021/22)	Preferred Direction
●	≤85%	Acute Care Facilities (ACF): **91%**	↑
●	≤85%	Long Term Care Facilities (LTCF): **88%**	↑

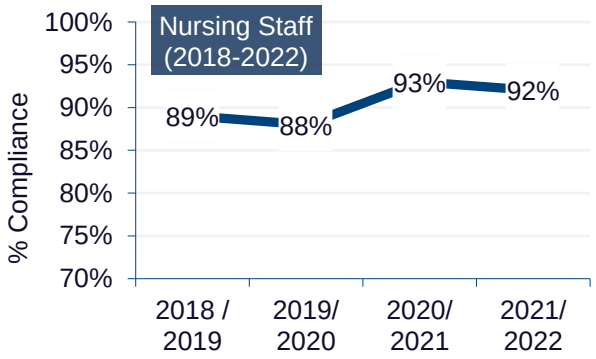
Hand hygiene (HH) with either soap and water or alcohol based hand rub is recognized as a key component in the prevention of Healthcare-associated Infections (HAIs). HH is required both before and after contact with patients/residents and their environment. The minimum provincial requirement is 200 observations per quarter for each facility with 25 or more beds. For facilities with fewer than 25 beds, the audit data is aggregated into NH data.

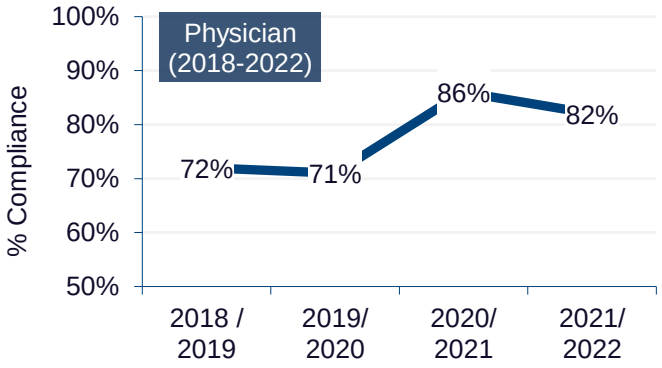
Ongoing challenges within NH are recruitment of HH auditors, and maintaining sustainability with auditing at both acute and long term care facilities.

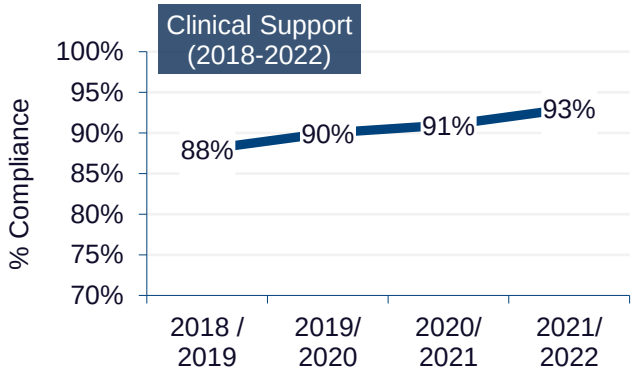
In 2021, the Hand hygiene self audit tool was introduced to Community and Primary Care.

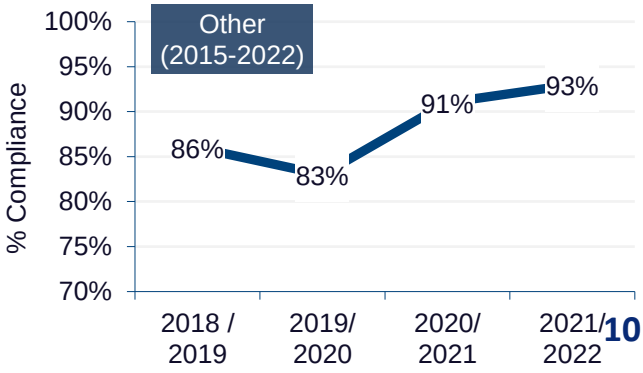
Provincial HH audit classification of staff/healthcare provider types is collated into four category codes:

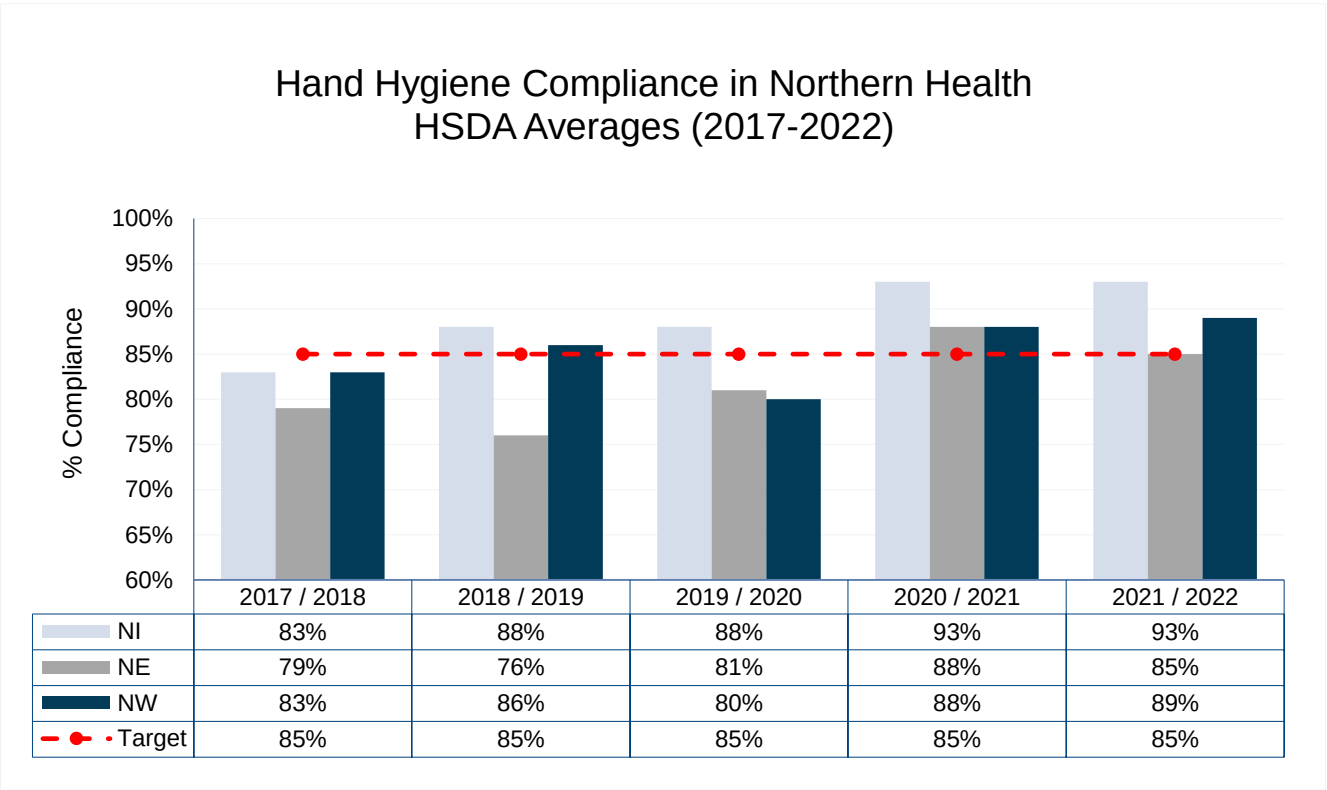
Nurse	NP/RN/RPN, LPN, Care Aide/Student Aide, Student (Nursing)
Physician	Physician, Medical Student/Resident
Clinical	Medical Technician, Respiratory Therapy, Lab personnel, Porter, Social Worker, Rehab Therapy, Dietician, Pharmacist
Other	Housekeeper, Plant Services, Volunteer, Food Services, Other











	2017 / 2018	2018 / 2019	2019 / 2020	2020 / 2021	2021 / 2022
NI	83%	88%	88%	93%	93%
NE	79%	76%	81%	88%	85%
NW	83%	86%	80%	88%	89%
Target	85%	85%	85%	85%	85%

Goals for 2021/22:

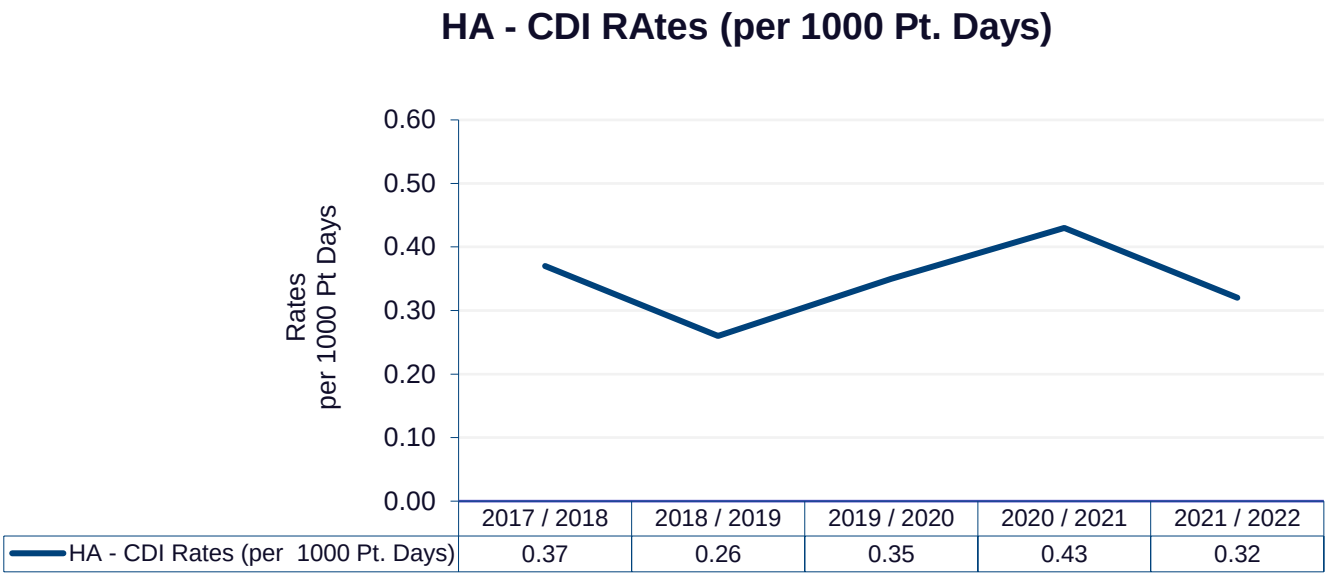
- All Northern Health Acute Care Facilities will complete and submit hand hygiene audits as per provincial requirements.
- All Northern Health Long Term Care Facilities will complete and submit hand hygiene audits as per provincial requirements.
- Westech Hand Hygiene web-based app for patients and visitors will be trialed.
- Community and Primary Care Hand Hygiene Self Auditing initiated on January 2021.

Healthcare-Associated Infection **Indicators**

Clostridium difficile Infection (CDI)

Status	Target	Actual (2021/22)	Preferred Direction
▲	< 0.30 per 1000 pt. days	0.32 per 1000 pt. days	⬇

Clostridium difficile is a spore forming bacterium that can cause infections of the gastrointestinal system. *Clostridium difficile* infection (CDI) is one of the most common infections acquired in health care settings as the physical environment plays a significant role in transmission of CDI, more so than any other Healthcare-associated Infection (HAI).



	2017 / 2018	2018 / 2019	2019 / 2020	2020 / 2021	2021 / 2022
HA - CDI Rates (per 1000 Pt. Days)	0.37	0.26	0.35	0.43	0.32

The annual rate of Healthcare-associated *Clostridium difficile* infection (HA-CDI) is the number of new cases of CDI in NH facilities, divided by the total number of in-patient days, multiplied by 1000.

Actions taken in 2021/22 include:

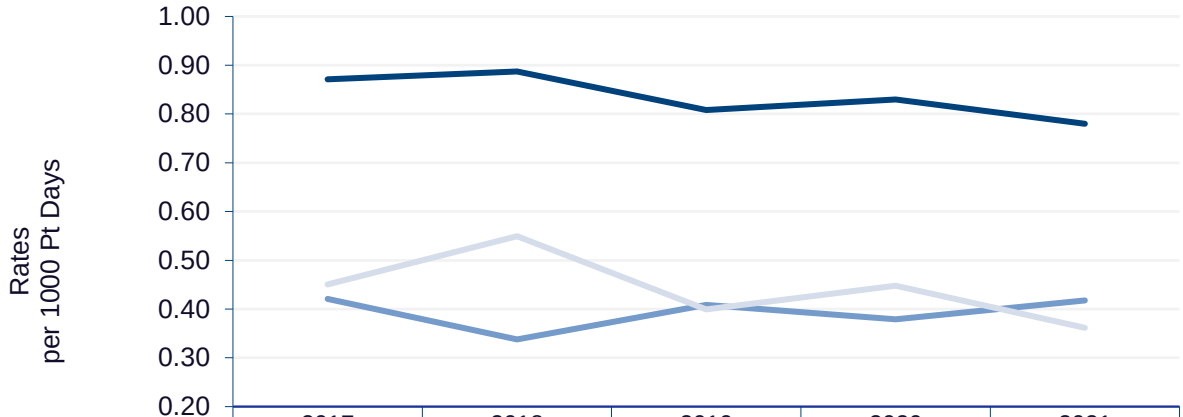
- Education provided on cleaning with sporicidal for all suspected and confirmed cases
- Facilitated increased communication between front line nursing staff and environmental services.
- Increased education sessions for Health Care Workers (HCWs) regarding importance of proper protocol, signage and precautions.
- Discussed with patients, families and visitors *Clostridium difficile* transmission.

Methicillin-resistant *Staphylococcus aureus* (MRSA)

Status	Target	Actual (2021/22)	Preferred Direction
◆	< 0.70 per 1000 pt. days	0.78 per 1000 pt. days	↓

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a strain of *Staphylococcus aureus* resistant to a number of antibiotics such as methicillin, penicillin, and amoxicillin. MRSA is primarily spread by skin to skin contact or contact with items and surfaces contaminated by the bacteria. The principle mode of transmission in healthcare facilities is considered to be from one (colonized or infected) patient to another via the contaminated hands of healthcare providers. Patients at greatest risk of acquiring MRSA are the elderly, those who have chronic diseases and/or undergoing invasive procedures.

MRSA Infection and Colonization Rates



	2017 /2018	2018 /2019	2019 /2020	2020 /2021	2021 /2022
Total MRSA (per 1000 Pt. Days)	0.87	0.89	0.81	0.83	0.78
Infections (per 1000 Pt. days)	0.42	0.34	0.41	0.38	0.42
Colonizations (per 1000 Pt. days)	0.45	0.55	0.40	0.45	0.36

The incidence rate of MRSA is the number of newly identified cases of MRSA (colonized and infected) acquired by patients as a result of their stay in a Northern Health acute care facility, divided by the total number of in-patient days, and multiplied by 1000.

Northern Health MRSA rates have decreased at 0.78.
Limitations include:

- Difficulty with accommodating patients with an ARO (s) or risk factors for AROs in appropriate single rooms due to overcapacity and Covid surge as well as due to many shared wards with older hospitals design structure.
- Staff disengagement with routine admission swabbing in part to expectations around pandemic.

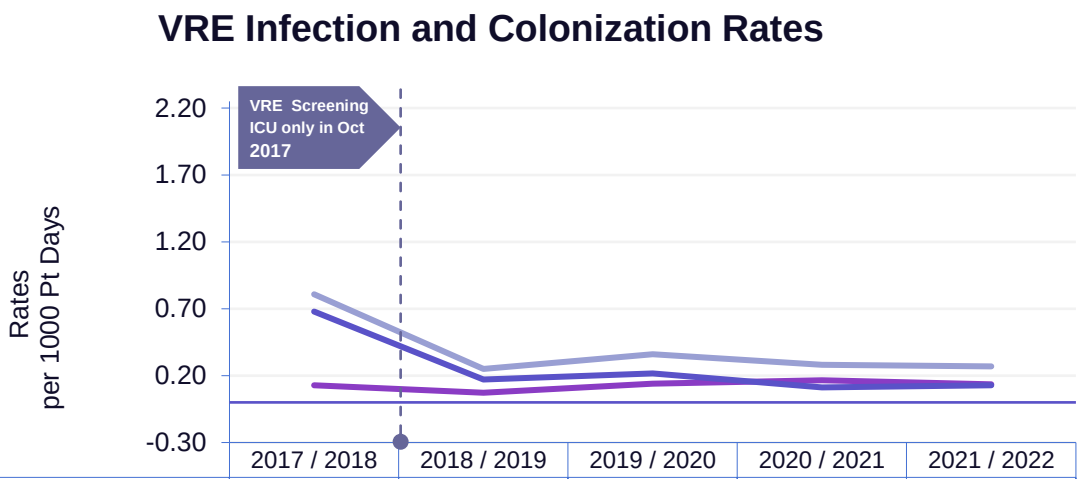
Ongoing Actions:

- All NH patients who test positive for an ARO have their health record flagged with that ARO alert.
- Continued 30-day prevalence screening of all previously tested negative in-patients.
- Infection prevention education for HCWs regarding importance of HH, environmental cleaning and appropriate cleaning of shared equipment.
- Infection prevention education for patients, families and visitors.
- Discussion with senior management around Healthcare-associated Infections (HAIs) of MRSA and VRE at operational team meetings.

Vancomycin Resistant *Enterococci (VRE)*

Status	Target	Actual (2021/22)	Preferred Direction
●	< 0.30 per 1000 pt. days	0.27 per 1000 pt. days	⬇

The incidence rate of Vancomycin-Resistant *Enterococci* (VRE) is the number of newly identified cases of VRE (colonized and infected) acquired by patients as a result of their stay in a Northern Health acute care facility, divided by the total number of in-patient days, and multiplied by 1000.



	2017 / 2018	2018 / 2019	2019 / 2020	2020 / 2021	2021 / 2022
Total VRE (per 1000 Pt. Days)	0.81	0.25	0.36	0.28	0.27
Infections (per 1000 Pt. days)	0.13	0.07	0.14	0.17	0.14
Colonizations (per 1000 Pt. days)	0.68	0.17	0.22	0.11	0.13

Ongoing Actions:

- All NH ICU patients who test positive for VRE have their health record flagged with that ARO alert.
- Infection prevention education for HCWs regarding importance of Hand Hygiene (HH), environmental cleaning and appropriate cleaning of shared equipment.
- Infection prevention education for patients, families and visitors.

Management of Carbapenemase Producing Organisms (CPO)

Carbapenemase Producing Organisms are gram negative bacteria that harbor Carbapenemase producing genes. These genes allow the organism to be resistant to the carbapenem family of antibiotics. Similar to VRE and MRSA, the most common mechanism of transmission is contact, both direct and indirect.

In 2021/22, one case of CPO was identified in NH.

Surgical Site Infections (SSI)

Surgical Site Infections (SSI) are the most common Healthcare-associated Infections (HAIs) as found in a prevalence study done by the CDC. SSI's remain a substantial cause of morbidity, prolonged hospitalization, and death.

SSI surveillance is conducted by IPs through post discharge surveillance. Surgical procedures surveyed for infection include: Caesarean section, total abdominal hysterectomy, total primary hip replacement, total primary knee replacement, and bowel resection (not including the rectum). Surveillance of antibiotic prophylaxis given within one hour of surgical cut time is also monitored.

Prophylactic antibiotic rates vary. Challenges include incomplete or nonexistent documentation when antibiotics were given.

Actions Taken in 2021 - 2022

- Patients are monitored for up to 6 months for total hip replacement (THR) and total knee replacement (TKR).
- Facilitate communication with surgeons regarding infections.
- Clusters are investigated and discussion for quality improvements occur.
- Education provided for staff regarding the rationale behind appropriate antibiotic use pre-operatively and the importance of documentation.
- Education for patients and families pre and post surgery.

Caesarean section:

Status	Target	Actual (2021/22)	Preferred Direction
	≤ 3 per 100 procedures	2 per 100 procedures	

Total C-sections are performed at **9** Northern Health facilities.

Outcome:

750 C-sections preformed in 2021/22.

- Antibiotics given within one hour of cut time - 79%. Rate of administration remains relatively unchanged from the previous year at 83%. (Challenges with finding documentation in the patient chart remains an ongoing issue, in particular emergency C/sections).
- 18 SSIs were identified
- The SSI rate was 2 per 100 procedures

Total Abdominal Hysterectomy (TAH):

Status	Target	Actual (2021/22)	Preferred Direction
🟡	≤ 4 per 100 procedures	4 per 100 procedures	⬇

Total Abdominal Hysterectomies are performed at **5** Northern Health facilities.

Outcome:

24 TAH performed in 2021/22.

- Antibiotics given within one hour of cut time - 92%. Rate of administration increased from the previous year at 82%.
- 1 SSIs were identified
- The SSI rate was 4 per 100 procedures

Total Primary Hip Replacement (THR):

Status	Target	Actual (2021/22)	Preferred Direction
🟡	≤ 2 per 100 procedures	5 per 100 procedures	⬇

Total Hip Replacements are performed at **4** Northern Health facilities.

Outcome:

279 THR performed in 2021/22.

- Antibiotics given within one hour of cut time - 97%. Rate of administration remains unchanged from the previous year at 96%.
- 13 SSIs were identified
- The SSI rate was 5 per 100 procedures

Total Primary Knee Replacement (TKR):

Status	Target	Actual (2021/22)	Preferred Direction
🟡	< 2 per 100 procedures	2 per 100 procedures	⬇

Total Knee Replacements are performed at **4** Northern Health facilities.

Outcome:

298 TKR performed in 2021/22.

- Antibiotics given within one hour of cut time - 80%. Rate of administration has a significant change from the previous year at 97%.
- 7 SSIs were identified
- The SSI rate was 2 per 100 procedures

Bowel Resection (not including rectum):

Status	Target	Actual (2021/22)	Preferred Direction
	< 10 per 100 procedures	10 per 100 procedures	

Bowel Resections are performed at **6** Northern Health facilities.

Outcome:

60 Bowel Resections performed in 2021/22.

- Antibiotics given within one hour of cut time - 88%. Rate of administration slightly increased from the previous year at 83%.
- 6 SSIs were identified
- The SSI rate was 10 per 100 procedures

Surgical Site Infections (SSI)

Benchmark and Rate Comparison with previous years:

Procedure	Benchmark*	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Abdominal Hysterectomy	1.10-4.05 per 100 procedures	6 per 100 procedures	3 per 100 procedures	7 per 100 procedures	4 per 100 procedures	4 per 100 procedures
Caesarean Section	1.46-3.82 per 100 procedures	4 per 100 procedures	3 per 100 procedures	3 per 100 procedures	3 per 100 procedures	2 per 100 procedures
Bowel Resection	**3.99-9.47 per 100 procedures	11 per 100 procedures	12 per 100 procedures	10 per 100 procedures	2 per 100 procedures	10 per 100 procedures
Total Primary Hip Replacement	0.67-2.40 per 100 procedures	3 per 100 procedures	4 per 100 procedures	4 per 100 procedures	2 per 100 procedures	5 per 100 procedures
Total Primary Knee Replacement	0.58-1.60 per 100 procedures	3 per 100 procedures	3 per 100 procedures	2 per 100 procedures	2 per 100 procedures	2 per 100 procedures

*Benchmark data from National Healthcare Safety Network (NHSN) report: Data Summary for 2006 through 2008, issued December 2009. Doi: 10.1016/j.ajic.2009.10.001

Cluster/Outbreak **Management**

With the successive waves of COVID-19, this has been a year unlike any other. In commitment to our motto - Infection Prevention is Everyone's Business, Infection Prevention worked tirelessly to provide leadership, updated cluster/outbreak policies and procedures, and provide training and support, as well as supporting resident/patient wellbeing.

Infection Prevention collected and provided data for the Ministry of Health regarding COVID-19 statistics (individual cases as well as NH facility outbreaks).

Protocols put in place by the Provincial Health Officer (PHO) and Northern Health to help prevent COVID-19 clusters/outbreaks included:

- Visitor restriction (essential and designated visitors only)
- Enhanced symptom screening on arrival to facility of all visitors, and service providers
- Enhanced symptom screening of all new or returning patients as well as daily screening of inpatients
- Rapid antigen testing for visitors.
- Restriction of COVID-19 symptomatic visitors and service providers (symptoms such as fever, cough, difficulty breathing, chills, sore throat, runny nose, vomiting or diarrhea)

Outbreak declarations became more nuanced with the arrival of the Omicron variant and widespread vaccination. Reduction in the severity of COVID-19 illness and changes in transmission patterns were observed. Thresholds previously used (e.g., one resident/patient case) to declare an outbreak were considered in the context of individual facility factors. The term "cluster" was deployed in situations where disease control measures did not exceed individual case management.

Of note, there were a total 30 Covid-19 related incidences (12 Outbreaks, 18 Covid-19 Clusters), 7 GI and 2 ILI outbreaks in any NH facilities this fiscal year.

There were a total of 12 COVID-19 outbreaks in NH facilities in 2021/22 listed in the below tables.

NH Acute Care COVID-19 Outbreaks and Clusters

OUTBREAKS						
Facility/Ward	# of Beds	Total Positive Clients	Total Positive Staff	Total Client Deaths*	Start/End Dates	Length of Outbreak
UHNBC - Rehab	23	3	0	0	Jan 4/21 – Jan 25/21	23 days
Dawson Creek Hospital	15	4	1	0	Apr 19/21 – May 19/21	31 days
Fort St John Hospital	33	4	3	1	Aug 27/21 – Sept 27/21	31 days
UHNBC - PCMU	30	20	9	2	Sep 24/21 – Nov 10/21	48 days
UHNBC - IMU	35	5	2	3	Oct 4/21 – Nov 10/21	38 days
G.R. Baker Memorial Hospital	30	5	5	1	Oct 7/21 – Nov 11/21	36 days
Bulkley Valley District Hospital	18	5	1	1	Oct 19/21 – Nov 17/21	30 days
CLUSTERS						
UHNBC - SSMU	24	8	5	0	Feb 15/22 – Feb 22/22	7 days
Kitimat General Hospital	15	8	5	0	Feb 16/22 – Feb 25/22	9 days
Dawson Creek Hospital	30	15	6	0	Feb 18/22 – Mar 7/22	17 days
Stuart Lake Hospital	13	8	2	0	Mar 8/21 – Mar 19/21	11 days

Long Term Care/Complex Care/Assisted Living COVID-19 Outbreaks and Clusters

OUTBREAKS							
Site and Type of Institution	City or Town	# of Beds	Total Positive Clients	Total Positive Staff	Total Client Deaths	Start/End Dates	Length of Outbreak
Acropolis Manor-west Pod	Prince Rupert	20	5	0	1	Apr 3/21 – May 6/21	33 days
Heritage Manor 2 (AL)	FSJ	21	5	0	0	May 18/21 – Jun 22/21	36 days
Jubilee Lodge	PG	66	24	3	6	Sep 4/21 – Oct 7/21	33 days
Wrinch Memorial Hospital (LTC side)	Hazelton	18	8	3	1	Sep 27/21 – Oct 28/21	32 days
Terraceview Lodge	Terrace	99	27	20	1	Feb 3/22 – Feb 22/22	20 days
CLUSTERS							
Peace Villa	FSJ	121	3	3	1	Nov 3/21 – Dec 3/21	31 days
Bulkley Lodge	Smithers	56	25	22	2	Jan 17/21 – Feb 5/22	20 days
Simon Fraser Lodge	PG	120	36	35	1	Jan 19/22 – Feb 28/22	41 days
Gateway Lodge	PG		20	31	1	Jan 31/22 – Feb 22/22	23 days
Peace Villa	FSJ	121	24	14	2	Jan 14/22 – Feb 25/22	43 days
Birchview Residences	PG	20	13	9	0	Feb 10/22 – Feb 23/22	13 days
The Pines	Burns Lake	35	15	2	0	Feb 10/22 – Feb 22/22	13 days
Parkside Lodge	PG	58	21	14	4	Feb 11/22 – Feb 22/22	12 days

Dunrovin Park Lodge	Quesnel	112	36	24	4	Feb 25/22 – Mar 4/22	18 days
McConnell Estates (AL)	Terrace	22	4	0	0	Feb 15/22 – Mar 4/22	8 days
Rotary Manor	Dawson Creek	10	9	10	0	Feb 28/22 – Mar 11/22	12 days
Rainbow Lodge	PG	18	4	3	1	Mar 1/22 – Mar 8/22	8 days
Terraceview Lodge	Terrace	99	18	9	0	Mar 7/22 – Mar 22/22	16 days
Bulkley Lodge	Smithers	56	19	15	2	Mar 24/22 – Apr 21/22	29 days

NH Acute Care and LTC Cluster/Outbreaks and Clusters – GI/ILI

GI OUTBREAK							
Site and Type of Institution	City or Town	# of Beds	Total Positive Clients	Total Positive Staff	Total Client Deaths	Start/End Dates	Length of Outbreak
UHNBC - SSMU	PG	24	18	7	1	Jan 8/22 – Jan 17/22	10 days
UHNBC - FMU	PG	24	7	2	0	Jan 16/22 – Jan 22/22	7 days
Parkside Lodge (LTC)	PG	58	14	13	1	Jan 12/22 – Feb 7/22	27 days
Simon Fraser Lodge	PG	120	7	0	0	Jan 6/22 – Jan 27/22	21 days
Terraceview Lodge LTC	Terrace	99	47	22	2	Mar 19/22 – Apr 11/22	24 days
UHNBC - FMU	PG	24	6	0	1	July 3/22 – July 19/22	16 days

Iris House	PG	20	3	1	0	Sep 22/22 – Sep 27/22	5 days
ILI OUTBREAK							
UHNBC - IMU	PG		7	0	0	Feb 5/22 – Feb 22/22	18 days
UHNBC - IMU	PG		4	0	0	Mar 21/22 – Apr 1/22	12 days

Lessons Learned

- **Timely Application of Precautions:** 0utbreak lessons were well documented and able to apply to other outbreaks in the NH region.

- **Communication is Key:** Early establishment of daily meetings and huddles were vital due to the scope and level of coordination required. There was shift from outbreak to cluster procedures in January. Meeting early on with the MHO to discuss the differences helped to address worries and staff were receptive to the new format. The communications office provided support for communicating with families.

- **LTC and ALC Mandatory Education**: Mandatory staff education to now include guidelines for N95 Fit Testing, and outbreak protocols & preparedness.

- **Multidisciplinary Approach:** Multidisciplinary collaboration facilitates effective teamwork in early detection and efficient management of outbreaks. The arrival of anti-COVID drugs necessitated the timely dissemination of information to pharmacy so that eligible patients/residents could be identified for treatment. Collaboration with emergency departments was required for long-term care residents needing IV medication administration.

- **Vaccination improved resident/patient outcomes:** Severity of illness decreased with double and triple vaccination, fewer admissions to hospital were seen with long-term care clusters and outbreaks.

- **Nature of unit dictates extent of precautions:** Isolating whole units became the exception instead of the norm with widespread vaccination, decreased severity of illness and focus on patient/resident mental health and wellbeing. Entire units were treated as potentially infectious when individual case isolation was not possible (i.e. non-compliant or wandering residents/patients, 4 bed wards).

- **Recognizing limitations:** Cohorting of staff was relied upon to help prevent transmission of the virus early in the pandemic, however staffing issues became worse with each successive wave of COVID-19. Outbreak management teams pivoted from strict cohorting to reinforcing appropriate donning/doffing of personal protective equipment.

Medical Device Reprocessing Department

Although yearly audits for Medical Device Reprocessing were delayed for a second year due to Covid-19 travel restrictions, areas of concern at the site level were addressed throughout the year. Educational needs were a priority for the first half of the year, followed by quality improvements and new hospital build involvement.

The provincial surgical renewal program brought a lot of attention to the Medical Device Reprocessing Department (MDRD). Increases in surgical procedures added extra workload in the MDRD and the need for extra staff was evident. Funding from the Province was provided for up to six Northern Health staff members to take the Medical Device Reprocessing Technician (MDRT) course through the College of New Caledonia in 2021 and up to fourteen in 2022. In all, nine individuals received an MDRT certificate. Of those nine, seven have been hired as casuals; four at UHNBC, one in Kitimat, one in Prince Rupert, and one in Smithers.

The education funding did not address all of Northern Health's MDRT shortages. A barrier to the educational opportunity included incomplete or denied applications into the CNC program, and lack of interest due to hourly wage of this career choice. Northern Health incorporated a theory only based course available either through Vancouver Community College or through Sterile Processing University as an acceptable qualification to being hired into the MDRD at remote sites. Three staff members and one Infection Prevention Practitioner have completed the course and received a certificate. Both Mills Memorial Hospital and UHNBC are in the process of orientating these individuals. A policy is in place for education requirements and yearly competencies.

End of life sterilizers and washers disinfectors were replaced at Kitimat, and Smithers. Renovations are occurring to the endoscopy cleaning room and MDRD including replacement of two washer disinfectors in Prince Rupert.

New build design and planning for Mills Memorial Hospital and Dawson Creek District Hospital continue to require assistance with design, flow, equipment needs, furnishings, and location in relation to the rest of the hospital. The department is unique and designers don't often understand that correct placement of walls, equipment and tables is key to a well run MDRD.

Initiatives for the 2022:

Working with Northern Health business analysts to substantiate the benefits of instituting a tracking system in the Medical Device Reprocessing Department and Operating Room.

Standardization of surgical trays and sets. This will be an important step prior to initiating a tracking system.

Continued work on establishing an endoscope cost per procedure contracts with Olympus and Northern Health stakeholders.

Continued work with the contract office to draft a regional service contract with Steris rather than individual site contracts.

Long Term Care Sites:

Audits were postponed due to Covid-19 travel restrictions.

Northern Health Facilities

Acute Care

Bulkley Valley District Hospital – Smithers
Chetwynd Hospital & Health Centre
Dawson Creek and District Hospital
Fort Nelson Hospital
Fort St. John Hospital
GR Baker Memorial Hospital – Quesnel
Haida Gwaii Hospital and Health Center
Kitimat General Hospital
Lakes District Hospital – Burns Lake
Mackenzie and District Hospital
McBride Hospital
Mills Memorial Hospital – Terrace
Prince Rupert Regional Hospital
Queen Charlotte Islands Hospital
St. John Hospital – Vanderhoof
Stuart Lake Hospital – Fort St. James
University Hospital of Northern BC – Prince George
Wrinch Memorial Hospital – Hazelton

Assisted Living Facilities

Alward Place Seniors Assisted Living - Prince George
Gateway Lodge Assisted Living Residence -
Prince George
Heritage Manor II – Fort St. John
Laurier Manor – Prince George
McConnell Estates - Terrace
Nick Grosse Assisted Living Residences – Masset
Summit Assisted Living Residences – Prince Rupert

Diagnostic and Treatment Centres, Health Centres

Atlin Hospital
Fraser Lake D&T Centre
Granisle Community Health Centre
Houston Health Centre
Hudson Hope Health Centre
Stewart Health Centre
Stikine D&T Centre – Dease Lake
Tumbler Ridge D&T Centre
Valemount D&T Centre

Home Community/Primary Care

Long Term Care

Acropolis Manor – Prince Rupert

Bulkley Lodge – Smithers
Dunrovin Park Lodge – Quesnel
Gateway Lodge – Prince George
Jubilee Lodge – Prince George
Kitimat Mountain View Lodge
Parkside Care – Prince George
Peace Villa – Fort St. John
Rainbow Lodge – Prince George
Rotary Manor – Dawson Creek
Simon Fraser Lodge – Prince George
Stuart Nechako Manor - Vanderhoof
Terraceview Lodge - Terrace
The Pines – Burns Lake
Body text

APPENDIX 1 – Surveillance Cases Definitions

Clostridium difficile infection (CDI):

A diagnosis of CDI applies to a person with:

- Presence of diarrhea (e.g. three liquid or loose stools within a 24 hour period) or toxic megacolon without other known etiology, and laboratory confirmation of the presence of *C. difficile* toxin A and or B (positive toxin or culture with evidence of toxin production or detection of toxin genes)
- Diagnosis of typical pseudo-membranes or sigmoidoscopy or colonoscopy or
- Histological/pathological diagnosis of CDI with or without diarrhea

A CDI case is considered healthcare-associated when:

- Patient develops symptoms in hospital equal to or greater than 72 hours after admission; **or**
- Symptoms occur in a patient that has been hospitalized or discharged within the previous 4 weeks, and the patient is not in a long term care facility

Antibiotic Resistant Organism (ARO) Case Definition:

An ARO case is defined as meeting ALL of the following criteria:

- Laboratory identification of an ARO;
- Patient must be admitted to an acute care facility
- ARO must be newly identified from the specimen collected at the time of hospital admission or during hospitalization
- Patient must have no known history of either infection or colonization with an ARO in any BC acute care facilities

Surgical Site Infection (SSI):

Surgical procedures surveyed for infection include: caesarean sections, total abdominal hysterectomies, total primary hip and knee replacements, and bowel resections that do not involve the rectum.

CDC SSI Definitions:

- Superficial Incision SSI – Occurs within 30 days *and* involves only skin and subcutaneous tissue *and* the superficial incision is opened by the surgeon *unless* the incision is culture negative. Does not include stitch abscess or infection at a localized stab wound/drain site. Diagnosis by surgeon or attending physician.

- Deep Incisional SSI – infection appears to be related to the operative procedure and involves deep soft tissues (fascial and muscle layers) of the incision. Evidence of abscess or infection is found on exam, during re-operation or by histopathologic/radiologic exam.

- Organ/space SSI: - infection appears to be related to the operative procedure and involves any part of the body, excluding the skin incision fascia or muscle layers that is

opened or manipulated during the operative procedure. Evidence of abscess or infection is found on exam during re-operation or by histopathologic/radiologic exam.

COVID-19-Like Illness Case Definition:

An acute onset of respiratory, systemic, or gastrointestinal illness, with ANY of the following symptoms (new or worsened), and no other definitive diagnosis*:

- Respiratory symptoms: cough, shortness of breath, rhinorrhea (runny nose), nasal congestion, sore throat, odynophagia (painful swallowing), loss of smell and/or taste
- Systemic symptoms: fever, chills, headaches, fatigue, or muscle aches
- Gastrointestinal symptoms: nausea, vomiting, diarrhea

*Note this does NOT include symptoms with a known cause, such as fever due to urinary tract infection, or diarrhea due to a new medication.

COVID-19 Outbreak Definition

Long-term care: Any ONE resident or Health Care Worker has a laboratory-confirmed diagnosis of COVID-19. (If the case is a Health Care Worker, they must have worked at the facility during their infectious phase AND had a PPE breach during this time.

Acute care: Any ONE admitted patient has a laboratory-confirmed diagnosis of COVID-19, AND the case investigation must conclude that the infection was most likely acquired at the facility, rather than prior to admission.

Gastrointestinal (GI) illness case definition:

A case of probable GI infection is defined as any one of the following conditions that cannot be attributed to another cause (e.g., laxative use, medication side effect, diet, prior medical condition):

- Two or more episodes of diarrhea in a 24-hour period above what is considered normal for that individual
- Two or more episodes of vomiting in a 24-hour period
- One episode each of vomiting and diarrhea in a 24-hour period
- One episode of bloody diarrhea
- Positive culture for a known enteric pathogen with a symptom of GI infection (e.g., vomiting, abdominal pain, diarrhea)

GI Outbreak Definition

Three or more cases of probable viral GI infection, potentially related within a four-day period, within a specific geographic area (e.g. unit, ward)

Influenza-like illness (ILI) case definition:

An acute onset of respiratory illness with cough and fever and with one or more of the following: headache, sore muscles/joints/, extreme fatigue/weakness or sore throat.

ILI Outbreak Definition

Two or more cases of Influenza like Illness in clients and/or staff within a seven-day period, with at least one case identified as a resident.

APPENDIX 2 – Abbreviations and Terminologies

NH – Northern Health
Acute Care – sites where a patient receives active but short-term treatment for a severe injury or episode of illness, an urgent medical condition or during recovery from surgery.
Alert – an alert is called when there is a high number or proportion of cases on a unit, but the number does not meet the predetermined level for an outbreak to be declared.
Benchmark – a point of reference for judging value, quality, change, or the like; standard to which others can be compared
Colonization – the presence and multiplication of microorganism without tissue invasion or damage.
GI – Gastrointestinal Illness
HEMBC – Health Emergency Management BC
ILI – Influenza-like illness
IP – Infection Prevention
IPP – Infection Prevention and Professional
Healthcare-Associated Infections (HAI) – infections patients get while staying in any healthcare facility, which include micro-organism from other patients, the environment or staff – not to be confused with facility-associated infections, which are acquired and identified at the same facility
SSI – Surgical Site Infection
UHNBC – University Hospital of Northern BC (Prince George)