Infection Prevention and Control (IPAC) Program Standard

A national standard developed by

Infection Prevention and Control Canada (IPAC Canada)

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A national standard developed by

Infection Prevention and Control Canada (IPAC Canada)

by the
IPAC Canada Working Group
for the
IPAC Program Standard
and
IPAC Program Audit Tool (PAT©)

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Supplement

An annex describing the methodology used to produce this IPAC standard, together with the literature search strategy, critical appraisal and stakeholder review process, is available on request to IPAC Canada.

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Partnerships

The following partners support the guiding principles of this

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cpsi·icsp   Canadian Patient Safety Institute
Institut canadien pour la sécurité des patients

CSA Group

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Abbreviations

ABHR	Alcohol-based Hand Rub
APIC	Association for Professionals in Infection Control and Epidemiology (U.S.)
ARO	Antibiotic-resistant Organism
ASP	Antimicrobial Stewardship Program
CDI	*Clostridium difficile* Infection
CEO	Chief Executive Officer
CIC®	Certified in Infection Control
CJD	Creutzfeldt-Jacob Disease
CPSI	Canadian Patient Safety Institute
CSA	Canadian Standards Association
EMC	Emergency Management Committee
ERP	Emergency Response Plan
FTE	Full-time Equivalent
HAI	Health Care-associated Infection
HCW	Health Care Worker
HVAC	Heating, Ventilation and Air Conditioning
ICP	Infection Control Professional
IPAC	Infection Prevention and Control
IPACC	Infection Prevention and Control Committee
ISQua	International Society for Quality in Health Care
MRSA	Methicillin-resistant *Staphylococcus aureus*
NICE	National Institute for Health and Clinical Excellence (U.K.)
OHS	Occupational Health Services
OMT	Outbreak Management Team
PHAC	Public Health Agency of Canada
PICNet	Provincial Infection Control Network (British Columbia)
PIDAC	Provincial Infectious Diseases Advisory Committee (Ontario)
PPE	Personal Protective Equipment
SENIC	Study on the Efficacy of Nosocomial Infection Control
SHEA	Society for Healthcare Epidemiology of America (U.S.)
SWOT	Strengths, Weaknesses, Opportunities and Threats
VRE	Vancomycin-resistant Enterococci
WHO	World Health Organization

Glossary

Additional Precautions (AP): The precautions (i.e., Contact Precautions, Droplet Precautions, Airborne Precautions) that are necessary in addition to Routine Practices for certain pathogens or clinical presentations. These precautions are based on the method of transmission (e.g., contact, droplet, airborne).

Administrative Controls: Measures put in place to reduce the risk of infection to staff or to patients (e.g., infection prevention and control protocols and procedures, education and training).

Airborne Precautions: Precautions that are used in addition to Routine Practices for patients known or suspected of having an illness transmitted by the airborne route (i.e., by small droplet nuclei that remain suspended in the air and may be inhaled by others).

Alcohol-based Hand Rub (ABHR): A liquid, gel or foam formulation of alcohol (e.g. ethanol, isopropanol) which is used to reduce the number of microorganisms on hands in clinical situations when the hands are not visibly soiled.

Antibiotic-resistant Organism (ARO): A microorganism that has developed resistance to the action of several antimicrobial agents and that is of special clinical or epidemiological significance (e.g., ESBL, MRSA, VRE).

Audit: *See IPAC Audit*.

Champion: In infection prevention and control, opinion leaders modeling the right behaviour.

Certification in Reprocessing: Successful completion of a recognized certification course in reprocessing practices administered by an accredited body, such as the Canadian Standards Association (CSA).

***Clostridium difficile* (*C. difficile*):** *Clostridium difficile* causes antibiotic-associated colitis or pseudomembranous colitis and is the most important cause of health care-associated infectious diarrhea. *C. difficile* produces hardy spores that are resistant to destruction by many chemicals used for cleaning and disinfection. Spores are shed in faeces, live in the environment for a long time, and may be transferred via the hands of health care workers.

Contact Precautions: Precautions that are used in addition to Routine Practices for patients known or suspected of having an infection that can be transmitted by direct or indirect contact.

Contractor: An individual or employer hired under contract to provide materials or services to another individual or employer. For the purposes of this document, contractors are included as *Staff*.

Culture of IPAC Safety: The shared commitment and demonstrated values, attitudes and actions of a health care organization's leaders and staff that support the belief that the work environment is to be safe from infection acquisition and transmission.

Denominator: In epidemiology, the population at risk.

Droplet Precautions: Precautions that are used in addition to Routine Practices for patients known or suspected of having an infection that can be transmitted by large infectious droplets.

Emergency Response Plan (ERP): A coordinated approach to the preparation for disasters and emergencies.

Engineering Controls: Mechanical measures that are put in place to reduce the risk of infection to staff or patients (e.g., heating, ventilation and air conditioning systems, room design, placement of hand washing sinks).

Fit-test: A qualitative or quantitative method to evaluate the fit of a specific make, model and size of an N95 respirator on an individual. Fit-testing is to be done periodically, at least every two years and whenever there is a change in respirator face piece or the user's physical condition which could affect the respirator fit.

Goals: Desired end-points in organizational development. Goals can be long-term, intermediate, or short-term.

Hand Care Program: A key component of hand hygiene that includes hand care assessment, health care worker education, provision of hand moisturizing products and provision of ABHR that contains an emollient.

Hand Hygiene: A general term referring to any action of hand cleaning. Hand hygiene relates to the removal of visible soil and removal or killing of transient microorganisms from the hands. Hand hygiene may be accomplished using an alcohol-based hand rub or soap and running water.

Hand Washing: The physical removal of microorganisms from the hands using soap (plain or antimicrobial) and running water**.**

Health Care-associated Infection (HAI): An infection associated with the delivery of health care that was not present prior to receiving health care.

Health Care Facility: A set of physical infrastructure elements supporting the delivery of health-related services (i.e., "the building"). A health care facility does not include a patient's home.

Health Care Organization: Any facility, corporation, agency, association, consortium or company where health care is provided. This includes organizations where emergency care is provided, hospitals, complex continuing care, rehabilitation hospitals, long-term care homes, mental health facilities, outpatient clinics, community health centres and clinics, physician offices, dental offices, independent health facilities, out-of-hospital premises, offices of other health professionals, public health clinics and home health care.

Health Care Worker (HCW): An individual who works in a health care organization and has direct contact with patients, including but not limited to a nurse, physician, dentist, nurse practitioner, paramedic and sometimes emergency first responder, allied health professional, unregulated health care worker, clinical instructor and student, housekeeping staff and volunteers. Volunteers are individuals who work without pay and are part of an organization's program delivery team. Health care workers have varying degrees of responsibility related to the work they do, depending on their level of education and their specific job/responsibilities.

Home Care: The delivery of a wide range of health care and support services to clients/patients for health restoration, health promotion, health maintenance, respite, palliation and for prevention/delay in admission to long-term residential care. Home care is delivered where clients/patients reside (e.g., homes, retirement homes, group homes and hospices).

Infection Prevention and Control (IPAC): The discipline concerned with preventing health care-associated infection.

Infection Prevention and Control (IPAC) Canada: A professional organization of persons engaged in IPAC activities in health care settings. IPAC Canada members include infection prevention and control professionals from a number of related specialties including nursing, epidemiology, medicine, laboratory technology and public health, as well as industry. The IPAC Canada website is located at: ipac-canada.org.

Internal Audit: An audit carried out by individuals who work in the health care organization.

IPAC Audit: A comprehensive and objective evaluation of the design and effectiveness of a health care organization's IPAC program against an approved standard.

IPAC Program: A unit in the health care organization that specializes in infection prevention and control and which is administered by a team of individuals with IPAC training and expertise.

IPAC Standard: An overarching requirement of a particular attribute of the IPAC program.

Leadership: The state or position of being a leader of a group of people or an organization, or the ability to do this.

Manager: A person who has accountability and responsibility for administering and/or supervising the operational affairs of a health care organization and/or who has authority over staff.

Measurable Objectives: Specific, measurable steps that can be taken to meet a goal.

Methicillin-resistant *Staphylococcus aureus* (MRSA): A strain of *Staphylococcus aureus* that is resistant to beta-lactam antibiotics, such as cloxacillin and cephalosporins.

N95 Respirator: A personal protective device that is worn on the face and covers the nose and mouth to reduce the wearer's risk of inhaling airborne particles. A NIOSH-certified N95 respirator filters particles one micron in size, has 95% filter efficiency and provides a tight facial seal with less than 10% leak.

Numerator: Each event that occurs among a population at risk (the denominator) for the event under surveillance.

Occupational Health Services (OHS): Preventive and therapeutic services provided in the workplace by trained occupational health professionals, e.g., nurses, hygienists, physicians**.**

Outbreak Management Team (OMT): A multidisciplinary committee that has the authority to implement changes in practice or take other actions that are required to control an outbreak.

Outcome Surveillance: Surveillance used to measure outcomes that can be attributed to care in a health care organization (e.g., health care-associated infections). An example of outcome surveillance related to the IPAC program is surveillance of infection rates.

Patient: For the purpose of this document, the term "patient" includes clients, patients, residents and others receiving health care.

Performance Indicator: A quantifiable measurement that reflects the critical success factors of a health care organization. Performance indicators are related to IPAC program goals or objectives and provide a means for tracking performance against that goal or objective, in order to guide action toward improvement and enhancement.

Personal Protective Equipment (PPE): Clothing or equipment worn for protection against hazards.

Policy: The documented principles by which a health care organization is guided in its management of affairs.

Process Surveillance: Surveillance used to assess or measure processes (things done to or for a client/patient/resident during their encounter with the health care system). An example of process surveillance related to the IPAC program is the assessment of compliance with procedures and/or standards of practice, e.g., by conducting planned audits.

Rationale: When applied to an IPAC standard, the scientific analysis, evidence, best practice or guidance to support or validate the standard.

Risk: IPAC-related threats or negative outcomes that can be expected to occur if a particular operation or practice does not meet the standard (i.e., is not performed or is performed incorrectly).

Scope: For the purpose of this document, the breadth of the IPAC program, encompassing the extent of the area, subject matter, target audience and/or stakeholders.

Staff: Anyone conducting paid activities in a health care organization, including but not limited to, health care workers and contract workers. See also, *Health Care Workers*.

Supervisor: Anyone who directs the work of another employee.

Surge Capacity: Sufficient capacity or appropriate resources for day-to-day operation and an ability to redirect resources in a time of need.

S.W.O.T Analysis: A structured planning method used to evaluate the strengths, weaknesses, opportunities and threats involved in a project or program.

Syndromic Surveillance: The detection of signs and symptoms of infectious diseases that are discernible before confirmed laboratory diagnoses are made.

Vancomycin-resistant Enterococci (VRE): Strains of *Enterococcus faecium* or *Enterococcus faecalis* that are resistant to vancomycin and/or contain the resistance genes vanA or vanB.

Visitor: Any person in the health care organization who is not under the direct control of the employer.

Work-life: The practice of providing initiatives designed to create a more flexible, supportive work environment, enabling staff to focus on work tasks while at work.

Executive Summary

Health care-associated infections (HAIs) are defined as infections that occur in association with, or related to, the provision of health care. Examples of HAIs include bloodstream infections, post-surgical infections, urinary tract infections and pneumonia related to the use of a ventilator. In recent years, novel and imported infectious diseases such as severe acute respiratory syndrome (SARS) and pandemic H1N1 influenza have also been transmitted within Canadian health care organizations and in such cases have been classified as HAIs.

HAIs are often associated with increased morbidity and mortality, contributing to approximately one-third of unexpected in-hospital deaths. They remain an important patient safety and quality issue, representing a significant adverse outcome of health care. In both acute and long-term care, outbreaks result in significant costs to the health care organization.

It is estimated that up to 70% of HAIs are preventable. The landmark *Study on the Efficacy of Nosocomial Infection Control (SENIC)* project estimated that one-third of HAIs in hospitals could be prevented if the essential components required for infection prevention and control (IPAC) programs were implemented. IPAC programs that have the required expertise and resources will assist and support the organization to improve patient safety by protecting patients, health care workers, visitors and others from HAIs, with the added benefit of reducing costs to the health care system. A properly resourced and effectively functioning IPAC program is essential to improving patient and health care worker safety.

In 2010, the Public Health Agency of Canada (PHAC) outlined the human and economic burden of HAIs, demonstrating the rationale and need for appropriate and adequate resources for IPAC programs. Recent data, however, indicate that IPAC programs in Canada and other countries are deficient in the essential resources and components required to be effective.

The purpose of the IPAC Program Standard is to describe the culture, scope and foundational framework necessary for the development of a successful IPAC program, synthesizing best practices, guidelines and recommendations from Canadian (national and provincial) bodies and international agencies, as well as incorporating significant findings from the current scientific literature. Recommendations from the following organizations have been used to support individual standards:

- Accreditation Canada
- Canadian Standards Association (CSA)
- Public Health Agency of Canada (PHAC)
- Provincial Infectious Diseases Advisory Committee (PIDAC)
- Provincial Infection Control Network (PICNet)
- National Institute for Health and Clinical Excellence (NICE)
- Society for Healthcare Epidemiology of America (SHEA)
- Association for Professionals in Infection Control and Epidemiology (APIC)
- World Health Organization (WHO)
- International Society for Quality in Health Care (ISQua)
- National/Provincial/Territorial Acts and Regulations

With a national voice representing IPAC professionals in all sectors of health care across all provinces and territories, IPAC Canada is a leader in the promotion of IPAC program best practices and is uniquely placed to develop and promote a national IPAC program standard.

This IPAC program standard is targeted to senior leaders engaged with the IPAC program in the health care organization and IPAC program staff, to use as a resource:

- for prioritizing and developing their IPAC program;
- as a way to obtain senior management support for the IPAC program;
- to ensure consistency in the recommended program elements across all Canadian health care settings; and
- to engage in strategic planning activities for the future.

This standard was developed by an IPAC Canada committee with input from provincial and national IPAC leaders. The intent of the document is to bring together IPAC program elements from national and provincial bodies as well as supporting evidence from the current IPAC literature into a single standard that can be used by IPAC professionals as they build and manage their IPAC program.

This document has undergone rigorous review from infection prevention and control authorities across the continuum of care, including IPAC Canada's Standards and Guidelines Committee and Programs and Projects Committee, and is aligned with requirements from Accreditation Canada. A supplement to this standard is available on request, which provides documentation on the development process for the standard including literature searches, stakeholder review processes and the process for risk grading of standards.

A.   Introduction

Background

Health care-associated infections (HAIs) are defined as infections that occur in association with, or related to, the provision of health care. Examples of HAIs include bloodstream infections, post-surgical infections, urinary tract infections and pneumonia related to the use of a ventilator. HAIs remain a patient safety issue and represent a significant adverse outcome of the health care system.[1-6]

> *Health care-associated infections (HAIs) impact the health care system in terms of cost, morbidity and mortality.*

It is estimated that 3% to 20% of hospitalized patients acquire an infection after admission to hospital.[7, 8] It has also been shown that patients with an HAI remain in hospital longer on average than patients without infection.[9, 10]

HAIs are often associated with increased morbidity and mortality, contributing to approximately one-third of unexpected in-hospital deaths.[11] Based on U.S. estimates of infection and using the observed incidence of HAIs and the average number of hospital discharges, it has been estimated that 220,000 incidents of HAI occur each year in Canada, resulting in more than 8,000 deaths.[12]

HAIs have a significant impact on health care spending as a result of prolonged hospital stay,[9, 10, 13] readmissions[9] and increasing consumption of costly resources.[7, 9, 10] Estimates suggest that infections with AROs add between CAD $39 and $52 million annually to hospitalization costs in Canada.[14]

In long-term care, outbreaks result in significant costs to the organization.[15-18] Estimates of the rates of HAIs in long-term care homes range from 1.8 to 13.5 per 1,000 patient care days,[19] which is comparable to that in the hospital setting.[20]

Purpose of the IPAC Program

It is estimated that up to 70% of HAIs are preventable.[12, 21-25] Many studies have outlined the human and economic burden of HAIs, demonstrating the rationale and need for appropriate and adequate resources for infection prevention and control (IPAC) programs. An effective IPAC program can reduce the burden associated with HAIs,[26, 27] resulting in fewer HAIs,[28-32] reduced length of hospital stay,[13] less antimicrobial resistance[33] and lower costs related to treatment for infections.[34]

> *Effective IPAC programs have been shown to decrease rates of HAIs.*

With changing trends in health care that have resulted in the provision of complex treatments outside of the acute care setting (e.g., ambulatory care, physician offices, long-term care and home settings), there is a need for IPAC programs that span the continuum of health care organizations. In long-term care, a 2005 survey showed that IPAC resources and programming fell far short of the suggestions of Canadian and U.S. experts.[35]

To improve health care safety and cost-efficiencies, appropriately resourced IPAC programs must be a standard of practice.[36] IPAC programs that have the required expertise and resources will assist and

support the organization to improve patient safety by protecting patients, health care workers, visitors and others from HAIs, with the added benefit of reducing costs to the health care system.[5, 7, 21]

IPAC Program Standard

There are few recent publications that provide sound evidence that can be used to determine which components are essential for IPAC programs in terms of effectiveness in reducing the risk of infections at the national level or at the local level of the health care organization. There is also a lack of consensus about what constitutes essential components of an IPAC program.[37] Publications from scientific societies, provincial agencies or other expert groups provide suggestions for IPAC program components based on expertise or other rationale. Some examples include:

> *Why do we need an IPAC Program Standard?*

- Accreditation Canada: *Infection Prevention and Control Standards*, available at: https://accreditation.ca/infection-prevention-and-control.

- Public Health Agency of Canada: *Routine Practices and Additional Precautions for Healthcare Settings (2013)*, available at: http://www.phac-aspc.gc.ca/nois-sinp/guide/summary-sommaire/tihs-tims-eng.php.

- Provincial Infectious Diseases Advisory Committee (Ontario): *Best Practices for Infection Prevention and Control Programs in Ontario in All Health Care Settings*, available at: http://www.publichealthontario.ca/en/eRepository/BP_IPAC_Ontario_HCSettings_2012.pdf.

> *What is the role of Accreditation Canada and other bodies in the development of this IPAC Program Standard?*

- World Health Organization: *Core Components for Infection Prevention and Control Programmes*, available at: http://apps.who.int/iris/bitstream/10665/69982/1/WHO_HSE_EPR_2009.1_eng.pdf.

- APIC/IPAC Canada: *Infection Prevention, Control and Epidemiology: Professional and Practice Standards*, available at: http://ipac-canada.org/photos/custom/OldSite/pdf/08PPS.pdf.

A distinction may be made between the respective roles of national and local programs in order to determine essential IPAC program components[37]:

- The national-level authority is responsible for the development and dissemination of national technical guidelines using the best evidence available for the basic set of guidelines. The health care organization adapts and implements national technical guidelines to the local level.

- The national-level health authority should, directly or by delegation, regulate, provide guidance, promote and supervise compliance with regulations.

- At the local level (health care organization), care must be provided in a safe and efficient manner for patients, staff and others.

- The IPAC program components of national-level and local-level programs should be aligned and consistent.

Standards are authoritative statements that reflect the expectations, values and priorities of the profession.[38] When applied to an individual, a standard is an expected and achievable level of performance against which actual performance can be compared.[39] Self-regulating professions are characterized by standards of practice, based on the values of the profession.

Very few professional organizations in Canada are in a position or have the expertise to develop and promote a national IPAC program standard. With a national voice representing infection prevention and control professionals in all sectors of health care across all provinces and territories, IPAC Canada is a leader in the promotion of IPAC best practices and able to identify standards that are part of effective IPAC programs.

The IPAC program standard draws together the available resources, scientific studies, guidelines and recommendations available in Canada related to the development, implementation and evaluation of IPAC programs across the continuum of care. The implementation of IPAC Canada's program standards will contribute to continuous safe patient care and IPAC practice in Canada.

Auditing the IPAC Program

An IPAC program audit is a comprehensive and objective evaluation of the design and effectiveness of a health care organization's IPAC program against an approved standard. Auditing the IPAC program is an opportunity to assess the IPAC culture, scope and program elements in a health care organization, to implement changes and to introduce remedial measures in collaboration with various departments and services.[40]

Staff and managers who are engaged and who actively participate in the IPAC program will be successful in improving IPAC processes and in reducing HAIs.[41] Results of audit activities that are fed back to managers and staff will drive improvements and develop teamwork.[42, 43]

The data derived from audits can be used to direct the IPAC program's annual goals and objectives. It also will assist in meeting the needs of the organization in relation to IPAC standards and safer health care practices. Modification of practice and subsequent demonstration of improvement in IPAC processes and outcomes 'closes' the audit 'loop'. This cycle is repeated until the chosen criteria are fulfilled and outcomes are satisfactory.[44] The infection control professional (ICP) who undertakes audits will act as a role model and change agent.[45]

There are no current resources in Canada that provide an audit tool for infection control professionals to audit their IPAC program. IPAC Canada's *IPAC Program Audit Tool (PAT©)* (prepared in conjunction with this document) assesses whether the IPAC program standards have been met. The PAT© has been published as a separate document, together with an auditing annex, *Auditing the Infection Prevention and Control (IPAC) Program*. Both the PAT© and the auditing annex may be found on the IPAC Canada website at: http://ipac-canada.org/audit-toolkit-new-users.php.

B.   IPAC Program Standard

The IPAC program standard has been developed in three sections: IPAC Culture, IPAC Program Scope and the IPAC Program Foundational Framework. Each section addresses fundamental aspects of infection prevention and control, as illustrated below.

WHY	**WHO**	**HOW**
is the IPAC program important?	**does the IPAC program impact?**	**is the IPAC program delivered?**
⬇	⬇	⬇
IPAC CULTURE	**IPAC PROGRAM SCOPE**	**IPAC PROGRAM FRAMEWORK**
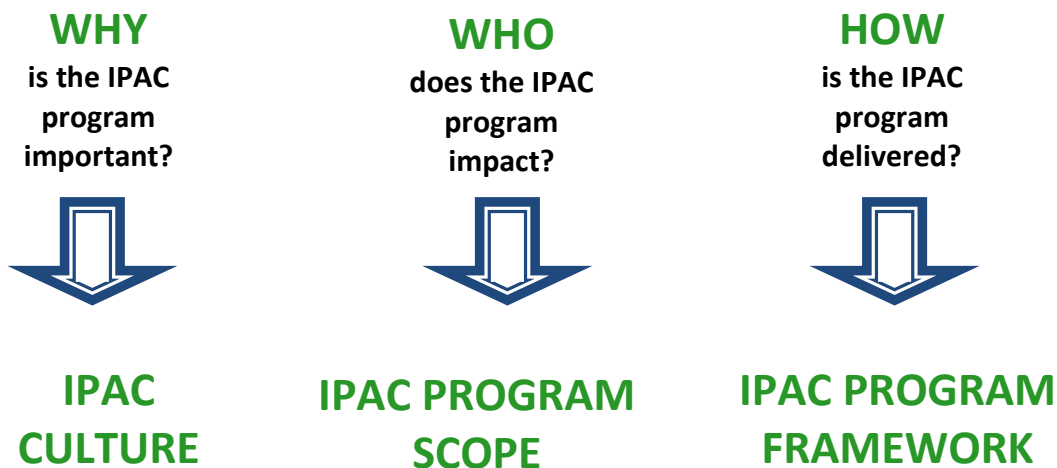
1.0   Culture of IPAC Safety in the Health Care Organization

A culture of IPAC safety in a health care organization is the shared commitment and demonstrated values, attitudes and actions of a health care organization's leaders and staff that support the belief that the health care environment is to be safe from infection acquisition and transmission.

1.1 IPAC Culture

The health care organization engages staff, physicians and volunteers in promoting an IPAC culture within the organization.[38, 46-49] It has been demonstrated that one of the significant predictors of adherence to IPAC practices is active involvement and commitment of senior administration to safety.[50] Partnership and collaboration with internal stakeholders is key to developing and disseminating guidelines and best practices within a health care organization. The IPAC team works with its partners to implement IPAC activities, education and awareness campaigns, such as participation in Infection Control Week activities.

An IPAC culture is embedded within the organization when the vision for a risk-free health care environment and associated reduction in HAIs is communicated to all stakeholders and staff through effective leadership,[51, 52] with open communication among all caregivers regarding IPAC initiatives.[53] Shared accountability has

> *IPAC CULTURE…*
>
> - *Is the IPAC program important to the organization?*
> - *Is there senior management support for the IPAC program?*
> - *Can the IPAC program be "felt" in the health care organization?*

been identified as critical to a sustained organizational culture change for IPAC programs.[54] Evidence of the IPAC culture is apparent when there is a communal responsibility for the IPAC process.[55] The organization's leaders communicate and model IPAC health and safety requirements throughout the organization. When infection prevention becomes part of the culture, there is reduced infection risk and improved patient safety.[52]

STANDARD 1	The health care organization's leaders and staff shall communicate, model and be actively involved, engaged and committed in developing and maintaining a culture of infection prevention throughout the organization.
Supporting Rationale[*]	PHAC, PIDAC, WHO, Auditor General of Alberta, Friedman

1.2   IPAC Program Mission, Vision and Values

Preventing infections in patients is a shared vision and goal of all who work in health care. Holmes[56] insists that all staff must understand their role with respect to the IPAC program, supported by widespread multidisciplinary engagement, with a clear message that everyone in the organization matters and everyone is responsible for preventing infections. This shared purpose has the backing and leadership of the Board and senior management.[56]

The IPAC program has a clear vision and purpose or mission that:

- is consistent with the organization's mission, vision and values;
- provides the basis for the IPAC program's planning and direction;
- is communicated to stakeholders; and
- is regularly reviewed.

The organization is responsibly governed to meet its defined IPAC program purposes and objectives. The governing Board identifies the IPAC program as critical in the organization's strategic plan to improve quality and patient safety. Annual operational plans support the achievement of the IPAC program's strategic plan, goals and objectives, and guide day-to-day operations. There is a culture of endorsement and accountability through administrative and Board-level support for IPAC program goals and priorities in the organization.[57]

STANDARD 2	There shall be a clear vision and Board-level support for the IPAC program in the health care organization.
Supporting Rationale	Jarvis, Holmes

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[*] **Supporting Rationale for the standard is the provincial, national or international body and/or scientific evidence that support the standard. References are included in the text. Abbreviations may be found in the glossary.**

1.3   IPAC Program Champions and Role Models

Champions and role models are opinion leaders modeling the right behaviour. It has been shown that staff compliance is significantly influenced by the behavior of other health care workers.[58-60] This includes medical staff engaged to champion the IPAC program. By being role models for best practices, these champions take personal responsibility and hold others accountable as part of an organization's internal responsibility system.[47] Specific key champions are used, depending on the nature of the initiative and the location of the initiative (e.g., hospital unit, department).[61]

Once primary beliefs are identified, persuasive communication can be effective in changing behavior,[62, 63] as demonstrated in recent years with organization-wide hand hygiene strategies. An essential component in the success of an effective hand hygiene program is the promotion of hand hygiene by champions and role models[64-68] within the health care organization. It has been shown that having hand hygiene champions and role models will have a positive impact on the motivation of staff and may reduce infection rates.[66, 69, 70] In two published studies of interventions to improve IPAC practices, the authors reported both a sustained improvement in practices and a subsequent significant reduction in HAIs.[71, 72] These studies shared a common emphasis on changing the organizational culture and expectations and included eliciting the support of thought leaders, who championed the interventions in the work setting.

STANDARD 3	*IPAC program activities and awareness campaigns shall be developed through partnership and collaboration with key stakeholders.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, WHO, Boyce

STANDARD 4	*An IPAC culture shall be promoted within the health care organization through the engagement of staff, physicians, volunteers, champions and role models.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, WHO, Boyce

1.4   IPAC Culture of Learning in the Organization

The organization promotes a culture of learning in relation to the IPAC program and ensures staff have time to participate in IPAC training and education.[47, 73] An organization is fulfilling its Work-life strategies (*see section 1.6, below*) when resources are provided for staff to do their jobs and when continued competence is supported through education.[74] By following the recommended IPAC protocols and best practices as taught, staff take pride in practicing good infection prevention and control as part of their daily routine.[47] The World Health Organization (WHO) identifies training (skills and curriculum) of IPAC professionals and health care workers as a priority.[48]

For more information regarding IPAC education, see section 2.2, *IPAC Education*.

STANDARD 5	There shall be a culture of learning in the health care organization that supports IPAC education for managers, staff and volunteers.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, WHO, NICE

1.5   IPAC Work-life

Work-life is "the practice of providing initiatives designed to create a more flexible, supportive work environment, enabling employees to focus on work tasks while at work".[75] Work-life effectiveness is a specific set of organizational practices, protocols, programs and a philosophy that recommends aggressive support for the efforts of everyone who works to achieve success both at work and at home.[76] This includes a strong commitment from management to organizational quality of work-life[74]; making the work culture more supportive of safe work improvement activities[74]; adding programs to meet life event needs; ensuring that policies give staff as much control as possible over their lives; and using flexible work practices as a strategy to meet the needs of both staff and workplace.

There is growing evidence that indicates that quality care is dependent upon a healthy and safe workforce and environment. A health care organization that supports work-life will value staff safety. A healthy and safe work environment is identified as a strategic priority.[74]

Health and wellness programs as a part of work-life include many IPAC program initiatives for the prevention of illness and injury to staff:

- IPAC program protocols and procedures that comply with relevant legislation are in place to protect staff.
- Health care workers are trained in risk assessment and use of personal protective equipment (PPE) as well as other safety equipment as required (e.g., hard hats and boots when inspecting a construction site).
- Access to research and best practice information related to staff safety is available.
- Resources are in place to protect staff from infectious diseases (e.g., PPE, hand hygiene equipment, immunization programs, sharps safety initiatives).
- Protocols are available for management of staff exposures, if they occur.
- Incidents are investigated to prevent recurrence (i.e., incident investigation).
- Action is taken to deal with non-compliance issues relating to the IPAC program.

STANDARD 6	The health care organization shall demonstrate commitment to work-life strategies for the prevention of staff infections.
Supporting Rationale	Accreditation Canada Requirement

1.6 Patient Safety

Patient safety is a strategic priority for the health care organization. The critical role that the IPAC program plays is recognized by accreditation organizations, whose patient safety goal is to reduce the risk of HAIs and their impact across the continuum of care.[77]

Clinical quality and patient safety have become a focus of governing boards of health care organizations in Canada.[78] The governing body is ultimately accountable for the quality and safety of the organization's services. It plays an important role in promoting an organizational culture that enhances patient safety.[79] Organizations are more likely to make safety and quality improvement a central feature if the governing body is aware of client safety issues and leads the quality improvement efforts.[79] Outcomes and processes of care are improved in organizations where the governing body is actively engaged in patient safety.[74]

Many elements of the IPAC program are viewed as indicators of quality of care.[80] Adherence to hand hygiene and medical equipment cleaning and disinfection/sterilization procedures are examples of practices that may result in infection if best practices are not followed. Infection rates and the results of IPAC process audits are key indicators to provide so that the organization's Board and senior management can measure if care is improving.

The IPAC program's role in patient safety is also aimed at the patients themselves, as well as family members and visitors to the organization. Examples of IPAC program interventions related to patient safety include:

- screening and risk assessment at admission and entry (e.g., to determine placement, personal protective equipment (PPE) needs (if any) and/or requirement for Additional Precautions);
- provision of information about Routine Practices, Additional Precautions, hand hygiene and PPE in a format that is easy to understand (e.g., fact sheets, brochures, individual instruction); and
- access to hand hygiene resources and PPE as required.

Opportunities may be provided for patients to become involved with planning and decision-making on quality improvement activities related to the IPAC program, if appropriate.[81] This might be done using a patient ombudsman, through patient surveys and/or patient feedback during outbreak investigations and root-cause analyses.

STANDARD 7	*Patient safety related to the IPAC program shall be a strategic priority for the health care organization.*
Supporting Rationale	Accreditation Canada Requirement, PHAC

2.0   Scope of the IPAC Program

The scope of the IPAC program may be defined as the breadth of the program and the extent of the target population or stakeholders impacted on or by the IPAC program.

2.1   IPAC Program Impact, Collaboration and Engagement

2.1.1   IPAC PROGRAM STAKEHOLDERS

The IPAC program addresses the needs and requirements of both internal and external stakeholders. Every IPAC program assesses who its stakeholders are, determines how to meet their needs and implements an IPAC program suited to those needs.[47] Decision-making processes are based on review of current population trends (e.g., demographic shift), with target populations identified for preventive interventions.[74] Epidemiological data are also analyzed to inform IPAC program processes and practice relating to trends and shifts in the organization's demographics.

> *IPAC PROGRAM STAKEHOLDERS…*
>
> - *WHO does the IPAC program reach?*
> - *WHAT are the internal and external boundaries of the IPAC program?*

There is a process to identify, assess and evaluate the IPAC program needs of stakeholders inside and outside the health care organization. Internal and external stakeholders are those who are impacted by IPAC issues. Written protocols and procedures for all key IPAC program functions and processes are developed with the input of internal and external stakeholders as appropriate and are used to guide the work of the IPAC program.[81]

Internal stakeholders include staff, patients and others who function within the health care organization. Assessing internal stakeholder needs might take the form of pre- and post-test questions, questionnaires or surveys administered to staff,[82] results of environmental scans, or pilot studies and reviews to identify engagement strategies and program needs.[83, 84]

A health care organization's IPAC program also impacts on other health care agencies and organizations such as ambulatory clinics, public health units, hospitals, long-term care homes, physician offices and/or home health care. For example, the implementation of a post-discharge surgical site surveillance program requires collaboration with physician offices and home health care services. In these cases, periodic practice audits (e.g., telephone/email surveys) and evaluation may be used to assess IPAC program knowledge and adherence to IPAC program recommendations in the community.[85]

IPAC program stakeholder needs are reassessed according to jurisdictional requirements or periodically as determined in agreement with stakeholders, to be sure that they are still being met. Continuous feedback and communication are important to ensure that the IPAC program is meeting its goals, establishing effective relationships and satisfying the needs of its stakeholders.[86] If possible, a system to measure improvements in environmental standards, clinical practice and awareness of the IPAC program is incorporated among a health care organization's stakeholders.[51, 84]

There is a process to provide IPAC program feedback to the stakeholders within the organization. This may be done through formal means, reports from audits and outbreaks, or through informal bulletins, newsletters and through the organization's intranet.

STANDARD 8	The IPAC program needs of internal and external stakeholders are identified, assessed, evaluated and reassessed on a regular basis.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.1.2 IPAC PROGRAM LIAISON AND COLLABORATION

The IPAC program has a relationship to all other departments within the organization. Optimal relationships are built and maintained within and outside the IPAC program (e.g., occupational health, public health). There is a communications process addressing both internal (within the organization) and external (e.g., public health, other health care organizations) communications on IPAC issues and other relevant health information.[36] There is transparent communication of all relevant surveillance data to staff and patients.

There is clear communication with all staff, patients and caregivers throughout the care pathway about HAIs, infection risks and how to prevent HAIs, to reduce harm from infection.[49, 81] Coordinated regional or national approaches to IPAC issues result in standardization of processes and allow comparison of outcomes, validation of methodologies and benchmarking.[87] The organization's IPAC program serves as an important link in regional systems.[88]

IPAC program issues are incorporated as a standing agenda item for other committees.[47] Where IPAC programs overlap with other programs, there may be mutual benefit to having an infection control professional (ICP) sit on the other department's committees, and vice versa. Multidisciplinary departmental teams, such as critical care,[53, 89, 90] paediatrics[91] and respiratory therapy,[92] can benefit from an ICP on the team due to improved communication, input into the decision making process and reinforcement of IPAC program initiatives.[57, 89, 93]

> **IPAC PROGRAM COLLABORATION...**
>
> - **HOW** does the IPAC program reach its stakeholders?
> - **HOW** does the IPAC program work with its partners?

> **IPAC PROGRAM ENGAGEMENT...**
>
> - **HOW** are stakeholders affected by the IPAC program?

Of particular importance is collaboration between internal and external partners during outbreaks or public health events.[36] Collaboration between the IPAC program and appropriate local and provincial public health departments for reporting of communicable diseases assists with the control of infectious diseases.[47] Timely communication assists organizations in determining priorities, preventing further cases of infection, effectively controlling clusters/outbreaks and minimizing the impact of the event.[47] Health care organizations have established procedures for receiving and responding appropriately to all international, national, provincial, regional and local health notices. Important health notices are communicated promptly to all staff responsible for case finding/surveillance and regular updates are provided.[47]

STANDARD 9	The IPAC program shall collaborate and liaise with internal and external partners.
Supporting Rationale	Accreditation Canada Requirement, PHAC

STANDARD 10	The IPAC program shall have a communications process to disseminate timely and/or critical IPAC information to internal and external partners.
Supporting Rationale	Accreditation Canada Requirement, PIDAC, PHAC

2.2   IPAC Education

Education and training are provided throughout the organization to promote and enhance a culture of client and family-centered care.[74] IPAC training and education that relates specifically to patient safety is provided at least annually to managers, staff and volunteers.[36, 74] Patients face a higher risk of serious infection in organizations without a structured IPAC education program that sets learning expectations, provides training and audits compliance with IPAC practices.[46]

2.2.1   IPAC STAFF EDUCATION IN THE ORGANIZATION

It is an expectation that staff and service providers in the health care organization have the knowledge, skills and training required to consistently implement effective IPAC practices in their area of work, as appropriate.[47, 73, 74] The organization's multi-faceted approach to the IPAC program includes an education program tailored to its IPAC program priorities, services and patient populations,[49, 63] that is directed to all who work in the organization.[47] IPAC educational programs meet the needs of the audience for which they are given[47] and are flexible enough to provide learning experiences for people with a wide range of educational backgrounds,[47, 73] particularly those providing direct patient care.[94] Staff not engaged in patient care will benefit from education on basic hygiene practices, immunization and attendance management protocols regarding staff illness.

WHAT is the scope of IPAC education?

Staff working in clinical areas have allocated time to achieve the IPAC education that is required.[73] In some provinces, periodic IPAC training and education are mandatory for all employees.[47] In some jurisdictions, attendance at IPAC education is documented and reported back to the manager to become a part of the individual's performance review.[47]

WHEN is IPAC education delivered?

STANDARD 11	An IPAC education program shall be provided annually, and periodically as required, to all staff working in the health care organization.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.2.2 IPAC EDUCATIONAL PROGRAM CONTENT

The content of the IPAC education program varies as determined by the needs of the organization and the scope of its services. Depending on the IPAC program objectives, the IPAC education program covers topics such as IPAC program protocols and procedures, IPAC core competencies for staff, and common HAIs affecting the organization.[49] The IPAC program also works with local health partners (e.g., public health) to capture and integrate into the education program content the lessons learned from the management of major infection outbreaks and other HAI incidents.[73]

> **WHAT** does IPAC education include?

As a minimum, the IPAC education program includes[95]:

- critical IPAC assessment skills / risk assessment;

- IPAC program basic standards of practice ("core competencies")[95, 96]:
    - hand-hygiene for staff, service providers, and volunteers[36];
    - concepts of Routine Practices[21];
    - concepts of Additional Precautions;
    - appropriate use of PPE;
    - safe management of sharps;
    - health care worker immunization;
    - work restrictions due to infectious diseases;
    - equipment cleaning and disinfection/sterilization[97];
    - environmental cleaning;

- basic microbiology and transmission of microorganisms;

- how and when to report IPAC-related incidents, injuries and issues of concern;

- information on common HAIs affecting the organization (e.g., methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), *Clostridium difficile* infection (CDI), device-associated infections); and

- additional IPAC resources available, both within and outside the organization.

In addition, staff are made aware of their specific IPAC responsibilities covered by their professional organizations, legislation, jurisdictional best practices and departmental protocols and procedures. Special education is provided for specific needs, e.g., during outbreaks, to provide information on new emerging infections, or when required based on the results of audits.[47] All health care workers are made aware of relevant new scientific innovations in the IPAC field.[21]

The IPAC education program also provides access to educational resources such as peer-reviewed IPAC journals and linkages with professional IPAC associations (e.g., IPAC Canada).

STANDARD 12	*IPAC education shall meet the IPAC program priorities of the health care organization.*
Supporting Rationale	Accreditation Canada Requirement, ISQua

STANDARD 13	*IPAC education programs shall include IPAC core competencies for staff.*
Supporting Rationale	PHAC, PICNet, Henderson

2.2.3   IPAC EDUCATIONAL PROGRAM DEVELOPMENT

IPAC education programs are based on adult teaching-learning principles.[21, 47] The IPAC team actively participates in development, coordination and the delivery of IPAC training initiatives within the organization.[21, 38]

The organizational IPAC education plan is developed by[38, 98]:

- assessing learner needs;
- setting clear goals and measurable objectives;
- considering setting, content, format, teaching materials that enhance learning;
- establishing a climate conducive to learning;
- preparing an evaluation; and
- implementing, evaluating and annually reviewing/revising the program.

The teaching methods used are sensitive to language, cultural background and educational level.[47] Educational materials are standardized to ensure ease of use and consistency.[63] Teaching formats are varied through the use of video and computer technology, group discussions with IPAC professionals and practical demonstrations. IPAC education is simple, clear and relevant to the policies of the organization.[47]

> *HOW is IPAC education delivered?*

STANDARD 14	*IPAC professionals shall participate in the development of the health care organization's IPAC educational programs using the principles of adult teaching and learning.*
Supporting Rationale	PHAC, SHEA

2.2.4 IPAC ORIENTATION

Orientation programs assist staff to understand their roles and responsibilities in relation to the organization's mission, goals and values. All staff, service providers and volunteers that have IPAC-related roles and responsibilities attend orientation programs that incorporate an IPAC component.[47, 49]

IPAC orientation programs include:

- introduction to the health care organization's IPAC program, IPAC staff, contact information and the types of services and resources provided by the IPAC program;

- information regarding an individual's IPAC responsibilities in relation to patient safety and the individual's personal safety;

- information on the organization's expectations regarding hand hygiene; and

- information on Routine Practices and Additional Precautions, including location of PPE and recognition of IPAC signage used in the organization.

In some organizations, additional instruction may be given to new staff with specific skill sets. For example:

- Staff in environmental services receive information regarding the organization's expectations for cleaning, particularly rooms on Additional Precautions.

- Staff with responsibility for equipment disinfection and decontamination may receive specialized training.[81]

- Staff working on surgical units are provided with education on prevention of surgical site infection.[98]

STANDARD 15	*There shall be an IPAC orientation program provided to new staff, service providers and volunteers carrying out IPAC-related duties in the health care organization.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.2.5 EVALUATION OF IPAC ORIENTATION AND ONGOING EDUCATION AND LEARNING TO INFORM DECISION-MAKING

Organizational learning is based on a range of intelligence sources and is used to inform, and feed into, clinical and risk management processes. The continuous quality improvement cycle is informed by conclusions from robust learning methodologies.[73]

There is regular, systematic generation and sharing of learning from the organization's own IPAC-related experiences, including good practice and adverse events. Feedback serves as an educational tool to stimulate change in care practices and to refine IPAC education programs.[47] Feedback is actively sought (e.g., surveys, post-education testing, education evaluations, suggestion boxes, process audits) or is based on reviews of organizational procedures and reports. For example:

- Results of process audits of practices and monitoring of care practices are incorporated into education and may be used to assess the effectiveness of educational interventions.[21, 47]

- The organization monitors compliance with IPAC program protocols and procedures and makes improvements to the education program based on the these results.[49]

- Ongoing monitoring of care practices is required to identify areas of continued concern and to assess the effectiveness of educational intervention.[21]

- IPAC-related incident investigations (e.g., blood and body fluid exposures) may be used to inform IPAC education.

Training materials are reviewed periodically to ensure consistency with current guidelines and best practices.[73] Feedback on education information and materials is obtained from users (including patients) and used to revise those materials or produce new materials.[63]

Processes have been put in place to learn from experiences outside the organization in relation to the IPAC program. This includes evidence that learning is occurring on a continual basis.[73]

STANDARD 16	*IPAC education shall be regularly evaluated and the education program revised accordingly.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, NICE

2.2.6 IPAC PROGRAM PROFESSIONAL DEVELOPMENT

Infection control professionals (ICPs) lead the development of the knowledge, skills and practices required for an effective IPAC program in the organization.[38] ICPs work with others to embed the IPAC program culture within the workforce[21] by conducting ongoing IPAC educational programs for staff and others working in the organization. ICPs have a health sciences background with teaching, problem-solving, communication and analytical skills that will allow them to plan, implement and evaluate their programs.[47] ICPs consistently utilize learning and development opportunities and solutions to improve the IPAC program.[38]

Continuing professional development and learning for ICPs is supported by the organization.[47, 74] The World Health Organization identifies training (skills and curriculum) of IPAC professionals as a priority.[48] Specialized ICP training needs are developed and provided as required.[48]

Education and training for ICPs includes[38, 47]:

- basic IPAC training from a recognized course (e.g., IPAC courses certified by IPAC Canada);

- ongoing development of ICP's own knowledge, skills and practice through formal continuing education, attendance at professional meetings, workshops and seminars;

- access to current IPAC literature, textbooks, journals and the internet; and

- networking resources and opportunities with peers in the IPAC field.

The health care organization encourages and supports specialized certification in infection control (CIC®) once the minimum requirements for certification have been met. Preparing for certification and

recertification fosters ongoing learning and maintenance of competence. Certification is maintained as part of the ICP's professional standards.[38]

STANDARD 17	The health care organization shall support continuing professional development and provide resources for continuing learning for infection control professionals.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, WHO

2.2.7   IPAC EDUCATION FOR PATIENTS AND VISITORS

Prevention of HAI requires that patients have access to up-to date, accurate information about HAIs provided in a suitable format.[73] Patients with an HAI are informed of their infection, the implications for their care, existing treatment(s) and control measures.[73] Staff have access to relevant patient information resources and current local surveillance information so they can communicate about HAIs effectively.[73] ICPs may assist staff in education of patients and visitors through developing and/or reviewing educational materials, such as information sheets pertaining to HAIs and other infections.[47] Patient information is based on the principles of health literacy and learning.[99, 100]

STANDARD 18	The health care organization shall communicate relevant information about minimizing infection risks to patients, caregivers and visitors.
Supporting Rationale	PHAC, NICE

2.3   IPAC Surveillance Program

2.3.1   THE ROLE OF SURVEILLANCE AND EPIDEMIOLOGY IN REDUCING HAIS

The collection, analysis and dissemination of surveillance data have been shown to be important factors in the prevention of HAIs.[24] IPAC surveillance systems are put in place to routinely gather data on targeted infections of relevance within the health care organization in order to monitor the effectiveness of IPAC strategies that are consistent with the organization's goals and objectives and to inform the organization's response to HAIs.[38, 47, 81] HAI rates can be significantly reduced by appropriate intervention methods in hospitals interested in quality management activities. For example, Haley showed that feedback of infection rates to surgeons was an essential surveillance component to reduce surgical site infection.[24] Infection rates are key indicators to provide to Boards as one of many measures of key patient outcomes.[78, 80] Establishing a surveillance program requires commitment from senior management.[101]

It is an expectation of people visiting or receiving treatment in a health care organization that the organization monitors infection rates and uses this information to adjust practice, where necessary.[102] Those who work, visit or receive care in a health care organization can expect the organization to be working collaboratively with other local health and social care providers to prevent and reduce harm

from infection. For example, it can be expected that the organization may close beds, restrict activities and/or limit visitors in response to an outbreak.[81]

The IPAC program plays an important role in patient safety with its overarching goal to reduce the risk of HAIs and their impact across the continuum of care.[77] Indeed, the success of an IPAC program is often defined by the organization's effectiveness in preventing the occurrence, or limiting the spread, of HAIs.[78]

STANDARD 19	**The health care organization shall have an IPAC surveillance program that addresses the organization's population-at-risk.**
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, NICE

2.3.2 IMPLEMENTING AN IPAC SURVEILLANCE PROGRAM

An active, ongoing, adequately resourced IPAC surveillance program to monitor HAIs that meets applicable regulations, mandatory reporting requirements, evidence and best practices is an organizational priority.[49, 81] The surveillance program is based on the population(s) served, services provided and previous surveillance data. Indicators and surveillance designs are based on the projected use of the data. Surveillance for some processes and outcomes is appropriately monitored on a continual basis; others may be monitored periodically.[47] The surveillance program is managed by highly trained IPAC staff who have allocated time provided to carry out the program.[103]

The IPAC surveillance program protocols and procedures include[81]:

- specific, locally defined objectives for the surveillance[37];
- recognized, standardized and written case definitions for indicators (numerator)[37, 38, 47];
- identification and description of sources of data[47];
- identification and description of population at risk (denominator)[47];
- processes for analysis, including calculation of rates;
- reporting mechanisms;
- benchmarks used for comparison[47]; and
- strategies for identifying and addressing deficiencies.

In the community, surveillance can be a challenge. Community services may be called on to extend hospital-based programs, such as surveillance for poster-operative infections in patients discharged home.

For more information about implementing an IPAC surveillance program, see the Provincial Infectious Diseases Advisory Committee (PIDAC)'s *Best Practices for Surveillance of Health Care-associated Infections in Patient and Resident Populations, 3rd edition*, available at:
https://www.publichealthontario.ca/en/eRepository/Surveillance_3-3_ENGLISH_2011-10-28%20FINAL.pdf.

STANDARD 20	The surveillance program shall be adequately resourced and managed by trained staff with dedicated time and appropriate tools to carry out the program.
Supporting Rationale	PHAC, PIDAC, Tsan

2.3.3   OUTCOME SURVEILLANCE

Outcome surveillance is surveillance used to measure key patient outcomes that can be attributed to their care in a health care organization,[104] including those that are otherwise difficult to measure, such as technical expertise and operator skill.[105]

The goals of IPAC outcome surveillance are to identify clusters and outbreaks (i.e., increases above baseline levels), to compare infection rates to external benchmarks and to measure internal improvement over time.[47] HAI indicators are provided to the health care organization's Board.

Outcome surveillance includes:

- determining measurable outcome indicators to be tracked, which may include infection rates and associated mortality rates[49];
- using standardized case definitions for infections;
- determining sources of infection data;
- identifying the population at risk for the specific outcome;
- conducting appropriate statistical analysis; and
- interpreting results.

A.   Indicators for Infection

When planning outcome surveillance, a health care organization assesses the types of patients that it serves, the key medical interventions and procedures that they undergo and the types of infections for which they are most at risk. This assessment is done to establish priorities for the surveillance system.[104] The most important infections are priorized to be included in the surveillance system.

Considerations when choosing indicators for infection include[47, 49, 104]:

- reportable diseases – these are legislated requirements of all health care organizations;

- mandatory reporting - the health care organization may be mandated to monitor specific infections to comply with provincial reporting requirements;

- accreditation review – tracking and trending some infections may be a requirement of accreditation;

- AROs such as MRSA and VRE;

- HAIs important to the organization's services and patient populations by virtue of their frequency, communicability, preventability and/or system impact (e.g., CDI, device-related infections, procedure-related infections, seasonal influenza, noroviruses, urinary tract infections and soft tissue infections in long-term care); and

- syndromic surveillance indicators - syndromic surveillance of respiratory infections and gastroenteritis is universally recommended for hospitals and long-term care homes in some provinces[104] and has the added benefit of detecting important HAIs, such as CDI.

STANDARD 21	*The health care organization shall follow targeted outcome indicators of significance to the organization's services. Legislated requirements shall be fulfilled.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

B. Data collection

Data collection methods are in place to provide the surveillance program with reliable information on HAIs in the health care organization. Important sources of infection data include:

- An accredited microbiology laboratory supports the surveillance plan by reporting all significant isolates in a convenient and accessible format in order to facilitate the identification of HAIs by IPAC staff. The microbiology laboratory supports the organization in identifying HAIs by ensuring timely access to laboratory analyses, including quick turnaround time for high-risk microorganisms such as *C. difficile*.[49]
- Staff, service providers and discharged patients report HAIs to the IPAC team.[49]
- Other areas or departments provide data and/or clinical indicators for surveillance, including access to computerized databases[47] (e.g., pharmacy data, operating room records).
- Admission data identify patients admitted with communicable diseases, patients flagged with AROs, and readmissions for post-surgical/ post-procedural infections.

STANDARD 22	*The health care organization shall have data collection methods in place to promptly detect health care-associated infection (HAI) trends.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

C. Definitions of Infection

In order to compare infection rates, both within a health care organization and against external benchmarks, standardized definitions for infections are used.[47, 49, 104] For example, the Canadian Nosocomial Infection Surveillance Program (CNISP) has published definitions for HAIs currently under surveillance across Canada, available at: http://www.phac-aspc.gc.ca/nois-sinp/projects/index-eng.php.

Most acute care surveillance definitions are based on the National Healthcare Safety Network (NHSN) system in the U.S. because of its long history of use, reliability, reproducibility and publication of benchmarks.[106] More information is available at: http://www.cdc.gov/nhsn/.

STANDARD 23	*Standardized definitions for HAIs shall be used for internal outcome surveillance and for comparisons with external benchmarks.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.3.4   PROCESS SURVEILLANCE

Process surveillance is an audit of practice that is done to verify that procedures and/or standards of practice are being followed and an action plan is in place to improve practice.[47] The advantages of process surveillance are that it is more sensitive to differences in the quality of care and it is a direct measure of quality.[105]

An IPAC audit is a systematic, quantified comparison of IPAC practice against established standards of current best practice in order to improve patient care and outcomes. The requirement for auditing in health care has always been present, but has become critical in recent years as programs strive to achieve their patient safety goals.[44, 49]

The audit process fills the gap between policy and practice. Stages in this process include setting standards, testing practice against these standards, providing results and constructive feedback to those audited, correcting practice where it falls short and re-testing to ensure that the standards are now being met. This cycle is repeated until the chosen criteria are fulfilled and outcomes are satisfactory.[44]

The health care organization identifies which performance measures to monitor based on its IPAC program priorities and health outcomes.[49] For example, if the results of outcome surveillance suggested an increased number of infections related to endoscopy procedures, an audit of IPAC practices in the Endoscopy department would be indicated.

IPAC Canada has developed several audit tools to monitor practice in acute care, prehospital care, long-term care and community care. It is envisioned that IPAC teams will plan and priorize the use of IPAC audit tools based on a review of their program goals and objectives, specific protocols and in response to clinical incidents.[44]

The IPAC Canada *Audit Toolkit* is available from IPAC Canada at: http://ipac-canada.org/audit-toolkit-new-users.php.

STANDARD 24	*The health care organization shall follow targeted process indicators of significance to the organization. Legislated requirements shall be fulfilled.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.3.5 ANALYSIS AND BENCHMARKING

Results of process and outcome surveillance are collated, analyzed and reported in a timely fashion.[47, 107] IPAC staff apply epidemiologic principles and statistical methods, including risk stratification, to identify target populations, analyze trends and risk factors and design and evaluate prevention and control strategies.[96] A plan for improvements, including organizational accountability, is developed by the targeted area in conjunction with the IPAC team, based on the results of surveillance.[47]

Effective analysis of surveillance data includes:

- describing data in terms of person, place and time;

- calculating risk-adjusted infection rates (e.g., surgical site infection rates based on surgical class);[104]

- benchmarking infection rates against historical internal data as well as external benchmarks, where available;[104]

- investigating the source or cause of the HAI using epidemiological, root-cause, or statistical analysis;[49]

- consulting with other experts, including infectious diseases physicians, medical microbiologists, nurses, public health, or other professionals;[49]

- critically evaluating the significance of findings and making recommendations for improvement based on those findings.[38]

External benchmarks are found on several websites, for example:

- Ontario: Health Quality Ontario reports, available at: http://www.hqontario.ca/Public-Reporting/Patient-Safety.

- National: Canadian Nosocomial Infection Surveillance Program (CNISP) reports, available at: http://www.phac-aspc.gc.ca/nois-sinp/projects/index-eng.php.

- International: U.S. National Healthcare Safety Network (NHSN) reports, available at: http://www.cdc.gov/nhsn/datastat/index.html.

Electronic surveillance programs are available to assist with the collection, analysis and dissemination of surveillance data.

More information regarding detailed analysis of surveillance data, including risk stratification, is available from PIDAC's *Best Practices for Surveillance of Health Care-associated Infections in Patient and Resident Populations, 3rd edition*, available at: https://www.publichealthontario.ca/en/eRepository/Surveillance_3-3_ENGLISH_2011-10-28%20FINAL.pdf.

STANDARD 25	*The health care organization shall apply epidemiological principles to surveillance data to investigate the source/cause of HAIs, identify risk factors for infection, analyze trends, identify clusters and outbreaks and make recommendations for improvement based on findings.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.3.6 REPORTING IPAC SURVEILLANCE RESULTS

The health care organization establishes plans to disseminate surveillance information appropriately and in a regular and timely way (e.g., quarterly reports to all departments).[49, 104] Depending on the results gathered by tracking HAI rates, the organization determines what surveillance information is shared, in what format it is made available (e.g., printed reports, website posting), and who will receive the information (e.g., the governing body, senior management, staff, service providers). Certain HAIs must be reported to national and provincial public health agencies (e.g., reportable infections, mandatory provincial reporting).[49]

The organization shares trends in HAIs and significant findings with other organizations, public health agencies, and the community.[49] The frequency and location of certain HAIs must be reported to authorities such as public health agencies. Reporting requirements vary per jurisdiction.

STANDARD 26	*The health care organization shall share surveillance information widely and in a timely manner.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.4   Antimicrobial Stewardship

Antimicrobial agents, an important health intervention, may result in unintended consequences including toxicity to the patient, *C. difficile* infection and the development of microorganisms resistant to antimicrobial agents that may have a substantial impact on the health and safety of patients and the resources of the health care organization.[36]

Effective antimicrobial stewardship includes appropriate antimicrobial selection, dosing, route and duration of therapy. The primary focus of an antimicrobial stewardship program (ASP) is to optimize the use of antimicrobials to achieve the best patient outcomes, limit the potential for emergence of antimicrobial resistance, reduce treatment costs and minimize drug-related adverse events, thus promoting patient safety.[36, 108-110] Antimicrobial use data is used by hospitals to measure the effects of antimicrobial stewardship strategies and provide feedback to providers.[50]

Effective antimicrobial stewardship, in combination with a comprehensive IPAC program, has been shown to limit the emergence and transmission of AROs.[111] Studies indicate that ASPs are cost-effective, providing savings through reduced drug costs and avoidance of antibiotic resistance.[36] Antimicrobial stewardship should be part of a health care organization's quality improvement program.[112]

The organization implements an ASP in collaboration with specific stakeholders, including IPAC staff, pharmacy and microbiology.[36, 81] The IPAC program plays an important role in an organization's ASP. IPAC staff[111, 112]:

- actively support ASP committees;
- perform surveillance for AROs and other HAIs, monitoring and reporting trends over time;
- use surveillance data to inform risk assessment and planning for prevention of infection;
- translate surveillance data and infection rates to staff and administrators; and
- understand the principles of prudent antibiotic use, such as:

  - switching from intravenous to oral antibiotics;
  - use of narrowest spectrum antibiotics once sensitivity results are available;
  - avoiding antibiotics known to be associated with emergence of bacterial resistance;[113, 114]
  - increasing the use of antimicrobials thought to reduce the frequency of multidrug-resistant microorganisms;[115] and
  - awareness of ASP guidelines.

STANDARD 27	IPAC staff shall actively support antimicrobial stewardship in the health care organization.
Supporting Rationale	Accreditation Canada Requirement, PHAC

2.5   Hand Hygiene Program

Hand hygiene, a basic IPAC practice, protects patients, staff and visitors from acquiring and transmitting microorganisms in a health care organization. Hand hygiene is considered the most important and effective IPAC measure to prevent the spread of HAIs.[65, 116]

An organizational hand hygiene policy and procedure establishes clear standards and expectations for hand hygiene practice, supports the prevention of transmission of microorganisms and promotes the safety of patients, staff and visitors.[37, 66, 69, 116-118] Health care organizations develop and implement a hand hygiene program, including the provision of hand hygiene agents available at the point-of-care in acute care hospitals and easily accessible in all other health care organizations.[49, 119]

The hand hygiene program includes[49, 65, 116, 117]:

- demonstrable senior administration commitment;

- written protocols and procedures that address:
  - barriers to effective hand hygiene (e.g., long fingernails, nail enhancements, hand and arm jewellery and impediments such as splints, dressings or compression garments)
  - indications for hand hygiene
  - IPAC and occupational health staff involvement in selection of hand hygiene agent(s)
  - management of soap containers (e.g., no "topping up")
  - hand lotion use
  - use of alcohol-based hand rub (ABHR)

- provision of dedicated hand washing sinks;

- easy access to hand hygiene agents at point-of-care;

- provision of 70-90% ABHR;

- education for staff that includes indications for hand hygiene (e.g., PIDAC's *Four Moments,* WHO's *Five Moments of Care*), proper hand hygiene techniques and appropriate hand care;

- provision of information for patients and visitors on hand hygiene;

- visible reminders about hand hygiene indications and technique;

- promotion of hand hygiene by champions and role models;

- a program to monitor hand hygiene compliance with audits of hand hygiene practices and feedback to individual employees, managers, chiefs of service and the Board via the Infection Prevention and Control Committee; and

- a hand care program.

For more information about implementing a hand hygiene program:

- PHAC's *Hand Hygiene Practices in Healthcare Settings*, available at: http://publications.gc.ca/site/eng/430135/publication.html.

- PIDAC's *Best Practices for Hand Hygiene in All Health Care Settings*, available at: http://www.publichealthontario.ca/en/eRepository/2010-12%20BP%20Hand%20Hygiene.pdf.

- WHO *Guidelines on Hand Hygiene in Health Care*, available at: http://www.who.int/gpsc/5may/tools/9789241597906/en/.

For more information about measuring compliance with hand hygiene practices:

- PIDAC's *Best Practices for Hand Hygiene in All Health Care Settings*, available at: http://www.publichealthontario.ca/en/eRepository/2010-12%20BP%20Hand%20Hygiene.pdf.

- The U.S. Joint Commission's *Measuring Hand Hygiene Adherence: Overcoming the Challenges*, available at: http://www.jointcommission.org/assets/1/18/hh_monograph.pdf.

STANDARD 28	*The health care organization shall have an organization-wide hand hygiene program that includes administrative leadership, protocols, procedures and support.*
Supporting Rationale	PHAC, PIDAC, WHO

STANDARD 29	*There shall be a multidisciplinary approach to the evaluation, selection and purchase of hand hygiene agents.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

STANDARD 30	*Hand hygiene resources shall be readily available and accessible at point-of-care.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, WHO

STANDARD 31	*Hand hygiene education shall be provided to all individuals working in the health care organization.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

STANDARD 32	*There shall be a process to measure hand hygiene compliance that includes monitoring and feedback.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.6   Patient Flow

IPAC program standards for the containment and control of transmissible infections are met with regard to placement, accommodation and flow of patients within the health care organization. IPAC staff are part of the multidisciplinary patient flow team to ensure appropriate decisions are taken within the limits and constraints of the facility, including unusual contagious events that may impact patient flow (e.g., outbreaks).

Barriers to optimal patient flow include situations where the demand for services exceeds the organization's capacity to deliver those services, impairing seamless transitions through the continuum of patient care.[74] From an IPAC perspective, this might include situations where single rooms are required to contain transmission of microorganisms, but sufficient single rooms are not available, resulting in delays in patient flow. IPAC staff work with clinical staff and placement services to arrange for alternative accommodations, such as cohorting, that would free beds and eliminate bottlenecks.

IPAC staff are also be called upon to assist with improved patient flow during outbreaks and infectious disease emergencies, such as epidemics.[36, 74] Examples include:

- establishing priorities for single beds;
- creation of extra bed capacity by cohorting patients having the same microorganism;
- working with environmental services to improve bed-cleaning turnaround times;
- facilitating the transfer of information between departments or services; and
- liaising with community agencies to facilitate discharge of patients with infectious diseases.

STANDARD 33	***IPAC staff shall be involved in decision-making when patient placement, accommodation and flow is hampered by the presence of infectious disease.***
Supporting Rationale	Accreditation Canada Requirement, PHAC

2.7   Outbreak Management

The health care organization has appropriate resources to manage an outbreak. An organizational risk assessment determines the IPAC program needs related to outbreaks with infections that are spread by different routes (e.g., contact, droplet, airborne) and the capacity of the organization to implement the precautions required for each.[47]

Outbreaks or clusters of infection in community care organizations may be managed by public health when the organization does not have sufficient trained internal resources.

2.7.1   OUTBREAK PROTOCOLS AND PROCEDURES

There are protocols and procedures for outbreak detection, identification, investigation, response and control. Outbreak protocols are based on best practices and are in line with applicable local, provincial and/or federal regulations. The organization's protocols and procedures address how to manage emerging, rare, or problematic organisms, including AROs, as well as food-borne outbreaks.[49]

STANDARD 34	***The health care organization shall have protocols and procedures for outbreak detection, identification, investigation, response and control.***
Supporting Rationale	Accreditation Canada Requirement, PHAC

2.7.2   IDENTIFICATION OF AN OUTBREAK

An outbreak is an increase in the occurrence of a complication or disease above the background or expected rate.[98] An outbreak may be one episode of a rare occurrence (e.g., anthrax) or many episodes of a common occurrence (e.g., MRSA). Early intervention to prevent outbreaks or limit the spread of infections once an outbreak has been identified will interrupt transmission of disease, decreasing the impact on patient health, care and cost.[47]

Most outbreaks in health care organizations are detected through routine surveillance, which detects increases in infection rates above the norm for a particular period of time. Outbreaks of infectious diseases that are not included in routine surveillance are identified through other means, such as recognition of a cluster of similar infections by nursing / medical staff or through review of microbiology reports.[98]

The health care organization has a program with the capacity to identify the occurrence of clusters or outbreaks of infectious diseases in a timely manner.[21, 49, 120] The program includes[47, 98]:

- ongoing surveillance on the incidence of HAIs to identify increases above the norm;
- reporting mechanisms for clinical staff to report clusters or potential outbreaks to the IPAC program;
- timely review of microbiology reports to identify unusual clusters or a greater than usual incidence of specific microorganisms; and
- prompt recognition of sentinel organisms (e.g., anthrax, tuberculosis).

STANDARD 35	*The health care organization shall identify outbreaks of infectious diseases, including sentinel organisms, in a timely manner.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, Mayhall

2.7.3   OUTBREAK RESPONSE AND CONTROL

Infectious disease incidents and outbreaks are managed in hospitals through the implementation of a multidisciplinary outbreak management team (OMT).[47, 81, 107] The OMT is convened by the IPAC Committee or the IPAC team investigating the outbreak. In long-term care homes and community-based organizations, outbreaks may be managed by public health.

Members of the OMT are chosen based on the nature and location of the outbreak, so that the appropriate departments and functions are represented.[47, 107] At a minimum, the OMT includes representation from key stakeholders including the IPAC program, nursing, medicine/surgery, microbiology, occupational health, environmental services, public relations, joint health and safety chairpersons and administration.[47] Other members are added based on the location, characteristics and implications of the outbreak.

The OMT has the authority to institute changes in practice or take other actions that are required to control the outbreak, including but not limited to[47]:

- relocating patients;
- cohorting patients and staff;
- confining patients to their rooms;
- restricting admissions and transfers;
- restricting visitors;
- communicating urgent information;
- increasing environmental cleaning in the outbreak area[49]; and
- obtaining additional cultures as required.

The management of an outbreak involves the IPAC team from the initial detection stage to the final reporting and evaluation stage. To investigate an outbreak fully and identify all possible cases as well as attempt to

identify the source of the outbreak, IPAC staff have access to all necessary patient information, including medical, nursing, laboratory and administrative records.[47]

ICPs may lead or be involved in any, or all, of the following[107]:

■ analysing the information available on the outbreak and seeking any necessary further evidence to establish its nature and scale, based on epidemiological principles (i.e., characterization of outbreak in terms of person, place, time)[49];

■ informing and involving relevant colleagues and partner organizations in a timely manner;

■ developing clear, accurate and timely messaging with colleagues, partner organizations and others throughout the outbreak;

■ establishing agreement on the control measures to be taken to minimize exposure to hazards and to reduce risks and prevent secondary or further spread or exposures;

■ reviewing the availability of resources to implement the control measures throughout the duration of the outbreak;

■ ensuring accurate records of the investigation and management of the outbreak are maintained throughout the process;

■ providing staff education as required;

■ reviewing the investigation and management of the outbreak and modifying measures as required; and

■ evaluating the outbreak and making recommendations for future improvement.[49]

The roles and responsibilities of the IPAC team as well as other staff (e.g., nursing, environmental services) are clearly defined in outbreak protocols and procedures.[49] Protocols define what authority the ICP has during an outbreak, including implementing outbreak management measures such as closure of the affected unit.[47]

Appropriate microbiology laboratory capacity is essential for the detection and investigation of outbreaks. In an outbreak, the microbiology laboratory is capable of providing timely results to the outbreak management team and, when necessary, has access to methods of assessing clonality (sameness) of organisms causing the outbreak.[47]

STANDARD 36	Outbreaks in the health care organization shall be managed by a multidisciplinary team that includes IPAC program representation and organizational leadership.
Supporting Rationale	PIDAC, PHAC, Burnett

STANDARD 37	*Infection control professionals (ICPs) shall be involved in the analysis and evaluation of outbreaks in the health care organization.*
Supporting Rationale	PIDAC, PHAC, Burnett

STANDARD 38	*Access to timely microbiology laboratory reports shall be provided during an outbreak.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

2.7.4 COMMUNICATION AND COLLABORATION DURING AND FOLLOWING AN OUTBREAK

The health care organization has a policy and procedures for communication and reporting internally to staff and externally to other health agencies and the community during an outbreak.[49] There is an individual identified as the communications source within the organization.

Outbreak information is summarized, reviewed and shared within the health care organization as soon as possible once the outbreak is detected and on an ongoing basis until the outbreak is over. Recommendations from outbreak analysis and review are shared with staff, physicians, senior leadership and the governing body.[49]

The health care organization collaborates with partners, such as public health agencies, during outbreaks[49] in order to communicate accurate and timely information and coordinate strategies to mitigate risk. Information is reported to the appropriate authorities in line with the applicable regulations for the region.[49] Following an outbreak, a summary report including background information, details of the investigation, results, and recommendations is made available to partners, other organizations and the community.[49]

Additional facility expertise and resources, if required, is obtained from[47]:

- public health units;
- formal consultation arrangement with experts in infectious diseases and/or health care epidemiology (e.g., contracted services);
- regional/provincial infection control networks;
- academic health sciences centres; and
- linkages with other organizations (e.g., IPAC Canada chapters).

STANDARD 39	*There shall be a communications strategy in place during an outbreak that includes dissemination of timely information and outbreak status both internally and externally.*
Supporting Rationale	Accreditation Canada Requirement, PHAC

2.7.5 POST-OUTBREAK FOLLOW-UP AND EVALUATION

Following an outbreak, the health care organization reviews its protocols and procedures and makes improvements as needed to prevent a recurrence of the outbreak.[49] This might include recommendations for additional resources (material and/or human), education, or changes to program protocols or equipment. The health care organization also works with local health partners to review and improve the management of major outbreaks.[81]

STANDARD 40	*The health care organization shall use the results of outbreak investigations to make improvements.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, NICE

2.8   Emergencies, Disasters and Major Incidents

The IPAC program has a role to play in the effective response to emergencies, disasters and major incidents that are related to the prevention and control of infections when significant challenges are presented to the organization's systems that may result in changes to infrastructure (e.g., water shortages, power outages), unexpected influx of patients (e.g., natural disasters, emergency response to community incidents), or when expanded or extended care capabilities are needed over a prolonged period of time to deal with incidents caused by infectious diseases (e.g., pandemics, unusual pathogens, bioterrorism).

2.8.1   IPAC PROGRAM PLANNING FOR EMERGENCIES, DISASTERS AND MAJOR INCIDENTS

The organization prepares for disasters and emergencies, including those impacting the IPAC program, by developing and implementing an emergency response plan (ERP).[74] The ERP identifies immediate actions needed to respond to disasters and emergencies in a coordinated manner. The ERP defines the roles and responsibilities of team members, including IPAC staff, and establishes lines of authority. The roles and responsibilities will vary depending on the form of the emergency or disaster.[74] Pandemic planning is part of the organization's overall plan for disasters and emergencies.[49]

The ERP anticipates catastrophic events and addresses all hazards identified from wide consultation by the organization's leaders, including IPAC staff; risk assessments; and action plans developed from audits of emergency preparedness. The results from post-drill analysis and debriefings are also used to inform the ERP and emergency procedures as necessary.[74]

The ERP is aligned with those of partner organizations and local, regional and provincial governments to facilitate coordinated, large-scale responses as required.[74]

The IPAC program's role in the emergency response plan includes, but is not limited to:[49, 74, 121-124]

- ◼ **IPAC staffing:** IPAC staff are available as needed when there are issues relating to prevention and control of infection. The emergence of new infectious diseases such as SARS (Severe Acute Respiratory Syndrome) has emphasized the need for surge capacity in IPAC programs as well as in other health care services. The concept of surge capacity is based on sufficient capacity or appropriate resources for day-to-day operation and an ability to redirect resources in a time of need.[125]

- **Surveillance:** Accurate records of infection incidence and transmission are maintained by IPAC staff and used to help inform control measures. IPAC staff develop line listing forms to keep track of cases.

- **Patient placement:** IPAC staff oversee the movement and accommodation of patients with infections (or exposure to patients with infections), within and outside the organization. This may also include restricting visitors.

- **Staff placement:** Staff are cohorted to care for selected groups of patients who have the same infection, to reduce the risk of transmission to other patients/staff.

- **Communications:** IPAC staff assist with dissemination of critical information about infection prevention to staff and other key internal stakeholders; provide signage to educate and inform staff, patients, visitors and contractors; communicate with external agencies (e.g., public health) and the community on IPAC issues; and receive, respond to and promptly communicate Important Health Notices.

- **Staff education and training:** IPAC staff ensure that consistent IPAC messaging and information is delivered to staff, particularly regarding novel microorganisms. IPAC staff develop forms and templates related to IPAC interventions and responses to emergencies, disasters and major incidents, such as lack of potable water, flooding, sewage backup, loss of power.

- **Materials management:** IPAC staff may facilitate adequate supplies of ABHR, PPE, supplies for environmental cleaning and disinfection, supplies for equipment reprocessing and other supplies related to IPAC practice.

- **Environmental services:** IPAC staff assist with problem-solving issues relating to acquisition and provision of large amounts of clean linen, as well as storage and disposal of increased amounts of waste. Increased environmental cleaning may be required in some instances (e.g., during floods, sewer backups). IPAC staff can offer assistance in determining the number of environmental services staff required in the event of a pandemic or novel infection incident.

- **Dietary:** IPAC staff assist with problem-solving issues relating to safe food preparation, storage and delivery in the face of infrastructure challenges such as flood or loss of potable water.

- **Sanitary facilities:** IPAC staff assist with problem-solving issues relating to loss of potable water and/or sewer (e.g., back-up water supplies, temporary chemical toilets, hand hygiene agents).

- **Post-mortem care:** IPAC staff assist with problem-solving issues relating to post-mortem care when highly infectious agents are involved.

The ERP is tested for emergency response that recognizes, responds, contains and communicates on issues priorized by the organization or required by law, e.g., regular drills to test emergency management issues, or surge capacity procedures to deal with an influx of patients over a brief or extended period.

There is a separate plan for each existing facility/site and for temporary health care sites associated with the organization, that follow the same or similar plans.

STANDARD 41	There shall be a written response plan with input from IPAC staff to address IPAC issues related to emergencies, disasters and incidents.
Supporting Rationale	Accreditation Canada Requirement, PHAC, APIC

2.8.2 COMMAND AND MANAGEMENT OF EMERGENCIES, DISASTERS AND MAJOR INCIDENTS

There is an emergency/disaster management committee (EMC) with IPAC program representation. The role of the IPAC member on the committee relates to issues dealing with the incidence or transmission of infection and includes:[74, 121, 123]

- evaluating the thoroughness and effectiveness of the organization's existing IPAC program in relation to the IPAC emergency, to identify areas where additional IPAC interventions are required;

- assessing the information available on the IPAC emergency and seeking further evidence, if required, to establish its nature and scale; this may be a one-time (e.g., in the case of a sewer backup) or an ongoing procedure (e.g., in the case of a large-scale pandemic);

- establishing the appropriate IPAC response using local emergency/disaster planning guides; this might include unit or facility closures and/or visitor restrictions;

- informing and involving relevant colleagues and partner organizations in a timely manner as necessary and consistent with emergency/disaster plans;

- communicating clear, accurate and timely information with colleagues, partner organizations and others throughout the emergency/disaster in a manner that effectively manages risk and supports effective teamwork;

- establishing agreement on the IPAC measures to be taken to minimize exposure to IPAC hazards, to reduce risks and to prevent further spread or exposures;

- liaising with other IPAC-related experts in the management of emergencies, disasters and major incidents;

- understanding the organization's physical facilities (e.g., building layouts, ventilation systems) and the limitations and capabilities of the building(s) to make appropriate IPAC-related decisions (e.g., appropriate patient placement, cohorting, implementation of Additional Precautions);

- preparing or consulting on the preparation of education materials for staff, volunteers, patients, visitors and others in the organization; and

- participating in debriefing evaluations and making recommendations for future improvements.

STANDARD 42	*The emergency management committee shall have IPAC program representation to address specific issues related to the prevention and control of infections during the emergency.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, APIC

2.8.3 PREPAREDNESS TRAINING FOR EMERGENCIES, DISASTERS AND MAJOR INCIDENTS

There is a process for staff to report urgent IPAC issues in a timely fashion (e.g., sterilization failures, structural damage, flooding, sewer backup). IPAC-related education is provided to support the all-hazard emergency response plan, to create awareness and enhance the skills required to develop, implement, maintain and execute the ERP.[74]

IPAC-related education and training related to emergency response includes:

- Staff know when and to whom to report IPAC-related emergencies and major incidents.
- Staff are aware of reporting procedures related to infectious illnesses.
- Staff know who to contact to obtain additional IPAC-related supplies in the event of shortages (e.g., PPE, ABHR).
- Staff are encouraged to attend scheduled emergency drills and exercises (including IPAC-related emergencies).[74]
- Staff are available to provide extra environmental cleaning capacity, if needed.[47]

STANDARD 43	*The emergency response plan shall include IPAC-related emergency response training and exercises appropriate to staff responsibilities and ensure that adequate resources are available for the training of all working staff.*
Supporting Rationale	Accreditation Canada Requirement, PHAC

2.9 Role of Occupational Health in the IPAC Program

There is evidence that the health care organization has a proactive and accessible Occupational Health Service (OHS) or access to trained occupational health providers. This includes evidence of a high level of competence in all areas related to the IPAC program, to ensure the welfare of staff (including short-term and contract workers). In addition, the OHS places emphasis on preventing blood borne infections, tuberculosis, vaccine-preventable diseases and acute respiratory and gastrointestinal infections.[81]

2.9.1 RELATIONSHIP BETWEEN IPAC AND OHS PROGRAMS

The IPAC program supports a healthy and safe work environment. The health care organization's leaders participate in defining how the IPAC program is incorporated within the organization as a strategic

priority, and provide support for safe work environment improvement activities. The Board is updated by the organization's leaders on IPAC-related healthy and safe work environment priorities and progress toward achieving the organizational priorities.[49]

There is IPAC program representation on the health care organization's Joint Health and Safety Committee and IPAC issues affecting OHS are included on the committee's agenda.[47] IPAC staff may act as an expert resource in response to incidents, complaints and claims. Conversely, there is OHS representation on IPAC committees.

STANDARD 44	***The health care organization's leaders shall provide support for IPAC-related health and safety requirements as a strategic priority within the organization and ensure that IPAC program protocols and procedures are incorporated into the fabric of the work environment.***
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, Provincial/Territorial Occupational Health and Safety Acts and Regulations

2.9.2   OHS POLICIES AND PROCEDURES RELATING TO THE IPAC PROGRAM

Individuals who work in health care are frequently exposed to infectious diseases. They may pose a risk to patients and staff if they develop a communicable disease. The OHS and IPAC programs work collaboratively to develop protocols and procedures for health care staff that have implications, such as placement evaluations, healthy workplace programs, immunization programs and exposure follow-up protocols. [1, 22, 61, 89]

The health care organization's leaders ensure that the organization's OHS program has in place current health and safety protocols and procedures for staff, including contracted staff and volunteers.[49] An organizational risk assessment is used to formulate strategies to reduce IPAC-related issues to staff, taking into account relevant legislation and published guidelines. Examples of high-risk activities include performing aerosol-generating medical procedures; handling sharps; cleaning up body fluid spills; and exposure to contaminated medical equipment and waste. In community health organizations, occupational health issues might be referred to public health or to a family physician.

OHS program protocols and procedures that incorporate IPAC program components include:

- assessment of disease communicability among staff, including an immunization program;
- management of health care workers who have been exposed to infectious diseases, including post-exposure prophylaxis, attendance management protocols and indications for work restrictions;
- safe handling of sharps and biohazardous materials;
- education and training in Routine Practices and the correct use of PPE, including a respiratory protection program; and
- implementation of a hand care program.

STANDARD 45	Health and safety protocols relating to the IPAC program comply with relevant IPAC legislation, guidelines and best practices.
Supporting Rationale	Accreditation Canada Requirement, PHAC, Provincial/Territorial Occupational Health and Safety Acts and Regulations

STANDARD 46	The IPAC component of the Occupational Health Services (OHS) program shall be developed jointly by OHS and IPAC staff.
Supporting Rationale	Accreditation Canada Requirement, PIDAC

2.9.3   IPAC COMPONENTS OF STAFF AND JOB RISK ASSESSMENT

There is a process in place to identify IPAC risks associated with employment in a health care organization. The health care organization evaluates IPAC risks inherent in the workplace (e.g., availability of sharps containers, hand hygiene equipment, adequate ventilation) and implements suitable engineering controls, where possible, to safeguard staff. The health care worker evaluates IPAC risks related to the tasks he/she will be performing, and takes steps to avoid or eliminate the risk (e.g., putting on PPE, obtaining immunizations, teaching respiratory etiquette to patients).

At the time of employment, all staff are evaluated by OHS for conditions relating to communicable diseases that can be spread and/or acquired in the health care organization.[47, 49] This includes vaccination status, assessment for latent or active tuberculosis and serologic screening for vaccine-preventable diseases, if indicated.[47]

For more information regarding IPAC risk assessment and controls, visit:

■ PIDAC's *Routine Practices and Additional Precautions in All Health Care Settings*, available at: http://www.publichealthontario.ca/en/eRepository/RPAP_All_HealthCare_Settings_Eng2012.pdf.

STANDARD 47	There shall be a process for evaluating health care workers for communicable diseases at hire, following exposure and additionally as required. This process will include a means to maintain documentation of immunity status.
Supporting Rationale	Accreditation Canada Requirement

STANDARD 48	*There shall be a process to evaluate potential IPAC risks in the workplace and to ensure that controls are in place to manage the risk(s).*
Supporting Rationale	PIDAC, Provincial/Territorial Occupational Health and Safety Acts and Regulations

A. Immunization

All health care organizations have an immunization program in place to screen and offer appropriate vaccinations to staff and physicians, to protect them from occupationally-relevant communicable diseases.[49] This program could be extended to volunteers, contracted staff and others, as appropriate. Immunization programs follow provincial and federal guidelines, such as those produced by the National Advisory Committee on Immunization (NACI), available at: http://www.phac-aspc.gc.ca/naci-ccni/.

Information on health care worker vaccination status is easily accessible and kept in a confidential, electronic database. Adequate resources to implement an annual influenza vaccine program are in place. In some jurisdictions, annual influenza vaccination is a condition of continued employment in, or appointment to, the health care organization.[47]

STANDARD 49	*There shall be a vaccination protocol and procedure for health care workers.*
Supporting Rationale	Accreditation Canada Requirement, Provincial/Territorial Occupational Health and Safety Acts and Regulations

B. Attendance Management Policies

The health care organization establishes a clear expectation that staff do not come into work when ill, and supports this expectation with appropriate attendance management protocols.[47, 49]

Individuals working in health care organizations are exposed to many microorganisms from the patients in their organizations. Outbreaks have been reported in which health care workers have been severely affected, representing a large number of the cases reported.[126-130] Work restrictions prevent staff with communicable infections who may place others at risk from coming into direct contact with patients, food or sterile supplies, devices and equipment. They include limiting duties and responsibilities and taking precautions, such as wearing personal protective equipment.

The health care organization has work restrictions for staff, service providers, volunteers or students with transmissible infections that follow national, provincial and OHS guidelines.[49]

STANDARD 50	*There shall be a process and/or protocol and procedures to prevent staff from working while ill with a communicable disease.*
Supporting Rationale	Accreditation Canada Requirement, Public Health Act

C. Response and Investigation of IPAC-related Injuries and Exposures

OHS protocols and procedures address post-exposure follow-up and prophylaxis, when indicated,[47] using a framework developed for the response and investigation of IPAC-related injuries (e.g., needlesticks, blood and body fluid exposures, breaches of practice resulting in exposure to infectious agents).

There is a close liaison between IPAC and OHS staff to ensure proper exposure and outbreak management, including staff contact tracing.[47]

STANDARD 51	*The health care organization shall provide counselling, follow-up and work restriction recommendations for IPAC-related injuries resulting in exposure to infectious agents.*
Supporting Rationale	Accreditation Canada Requirement, Public Health Act

D. Handling of Sharps and Biohazardous Materials

The health care organization follows its protocols and procedures and legal requirements when handling biohazardous materials.[49] The *Transportation of Dangerous Goods Act, 1992* regulates the movement of biohazardous materials in Canada.[131] The Canadian Standards Association (CSA)'s *Handling of Waste Materials within Health Care Facilities*[132] provides guidance for waste management of biohazardous materials. Most provinces also have their own regulatory framework for handling and transporting biohazardous materials.

Contaminated sharps (needles, syringes, blades, clinical glass) pose the most significant risk of blood borne infection to staff. Policies which support prevention and management of these injuries are implemented in all health care organizations.[37, 47, 49, 133] Sharps are removed and discarded at the point-of-use in appropriate puncture-resistant sharps containers.[49]

Safety-engineered devices are used for sharps and other high-risk materials.[49] In some provinces this is a legislated requirement.[134]

STANDARD 52	*There shall be a sharps injury prevention program in place that includes the use of safety-engineered devices for sharps and other high-risk materials.*
Supporting Rationale	Accreditation Canada Requirement, Provincial/Territorial Occupational Health and Safety Acts and Regulations

E. Personal Protective Equipment (PPE)

The health care organization provides PPE that is readily available, easily accessible and appropriate to the task.[135] The quality of the PPE is evaluated prior to purchase.

Health care workers are trained in how to select PPE based on point-of-care risk assessment - the type of exposure anticipated, durability, appropriateness to the task and fit.[135]

Health care organizations have protocols and procedures for putting on and taking off PPE correctly, in a manner that does not lead to contamination. Staff are trained on appropriate PPE selection, use, removal and disposal.[49, 135] There is a written procedure for safe PPE removal to prevent recontamination and staff are trained in the procedure. Reusable PPE (e.g., gown) is discarded and not reused until cleaned.

Staff who are required to wear an N95 respirator to provide care to patients participate in a respiratory protection program at least every two years.[47] A respiratory protection program includes[136]:

- a health assessment;
- N95 respirator fit-testing, according to CSA standards; and
- training in the use of an N95 respirator.

IPAC staff have access to appropriate safety apparel/equipment if required to adequately carry out their duties (e.g., hard hats and closed steel-toed boots to inspect construction sites).

STANDARD 53	*Personal protective equipment (PPE) shall be readily available and easily accessible.*
Supporting Rationale:	Accreditation Canada Requirement, PIDAC, Provincial/Territorial Occupational Health and Safety Acts and Regulations

STANDARD 54	*The health care organization shall provide training in the appropriate selection, use, removal and disposal of PPE.*
Supporting Rationale:	Accreditation Canada Requirement, PIDAC, Provincial/Territorial Occupational Health and Safety Acts and Regulations

STANDARD 55	*There shall be a respiratory protection program in place in the health care organization.*
Supporting Rationale:	CSA, PIDAC, Provincial/Territorial Occupational Health and Safety Acts and Regulations

F. Hand Care Program

There is a proactive hand care program to assess and maintain the skin integrity of health care workers who perform frequent hand hygiene.[47, 116, 118] A hand care protection program for health care workers is a key component for improving effective and safe hand hygiene practices to protect the health care worker and the patient from infections. If the skin integrity of a health care worker cannot be maintained, the health care worker is offered modified work that does not require frequent hand hygiene.[47]

A hand care program includes[116, 117]:

- hand care assessment;
- staff referral to OHS or to his/her health care worker if skin integrity is an issue;
- provision of ABHR that contains moisturizers; and
- hand care moisturizers that will not interfere with ABHR or damage gloves, and is approved by the health care organization.

IPAC and OHS staff are consulted and involved in all hand hygiene product selection and trials in the health care organization.[47] Products chosen for hand hygiene are of proven benefit to skin. Hand care lotion is readily available to staff free of charge and products chosen do not interfere with glove integrity or interact with other hand hygiene products.[47]

STANDARD 56	There shall be a hand care program in place for staff in the health care organization.
Supporting Rationale	PHAC, PIDAC, WHO, Provincial/Territorial Occupational Health and Safety Acts and Regulations

2.10   IPAC Program Protocols and Procedures

2.10.1   GENERAL PRINCIPLES FOR DEVELOPMENT AND MAINTENANCE OF IPAC PROGRAM PROTOCOLS AND PROCEDURES

The organization maintains IPAC program protocols and procedures that are based on applicable regulations, evidence and best practices. IPAC program protocols and procedures are in accordance with organizational priorities and are based on a risk assessment to identify high-risk activities.[49] Risk assessments are completed in collaboration with IPAC staff and other departments in the organization. Examples of high-risk activities include performing aerosol-generating medical procedures; handling spills, specimens, and sharps; and exposure to contaminated medical devices/equipment and waste.[49]

The IPAC team works in partnership with others in the organization to develop clear and robust IPAC program protocols and procedures that are[47, 49, 107]:

- clear and concise;
- relevant to the organization;
- practical to implement;
- accessible to all staff; and
- written with input from staff, patients and families, when appropriate.

As a minimum, IPAC program protocols and procedures include information and criteria for key IPAC program components[49]:

- hand hygiene;
- Routine Practices;
- Additional Precautions; and
- aseptic technique when performing invasive procedures and handling injectable products.

Protocols and procedures are relevant and evidence-based.[47, 49] They are consistent with regulatory and legal requirements; national and provincial standards, guidelines and best practices; evidence from the scientific literature; and results from the organization's own surveillance, internal audits and investigation reports. Resource materials used to develop protocols and procedures are accurate, current and support good quality improvement practice.

To maintain currency and relevancy, there is a process in place to ensure that IPAC program protocols and procedures are reviewed and updated on a regular basis[21, 37, 47, 49, 107] in accordance with the organization's review process and as new evidence becomes available (e.g., annually, quarterly, every three years). The evaluation includes assessing the effectiveness of existing protocols to identify areas for improvement.[107] Changes to applicable regulations, evidence and best practices are also incorporated into protocol updates.[49] Staff, patients and stakeholders are included in the review process.

Staff, service providers and volunteers know where to find IPAC program protocols and procedures and have ready access to paper or electronic formats.[47, 79] Compliance with IPAC program protocols is monitored and improvements are made based on the results.[47, 49, 73] This process includes a mechanism for staff, volunteers, patients and families to report non-compliance with IPAC program protocols and procedures.[49] Staff compliance can be monitored using process audits (see section 2.3, *Surveillance*). IPAC Canada has developed a number of audit tools, available on the IPAC Canada website.

Protocols and procedures are linked to educational programs and action plans for implementation.[47] The IPAC team provides expert advisory support for IPAC protocol implementation within the organization,[107] and works in partnership with others to educate staff, when necessary.[47, 107]

STANDARD 57	*There shall be organizational-wide IPAC program protocols and procedures that are current, evidence-based, are in accordance with organizational priorities and are accessible to all staff, volunteers, students and others who work in the health care organization.*
Supporting Rationale	Accreditation Canada Requirement, PIDAC, Burnett

STANDARD 58	*IPAC program protocols and procedures are linked to organization-supported educational programs with action plans and clearly defined accountability for implementation.*
Supporting Rationale	PHAC, PIDAC

2.10.2 DEPARTMENTAL PROTOCOLS AND PROCEDURES

IPAC staff provide expert input to the development of departmental protocols and procedures.[107] The IPAC program is consulted and provides input when any department is developing protocols that have implications for the IPAC program. In addition to OHS protocols and procedures that pertain to IPAC-related subjects (e.g., sharps safety, use of personal protective equipment, immunization), other departmental protocols and procedures that contain IPAC staff input include, but are not limited to the following[47]:

- HVAC (heating, ventilation and air conditioning systems);
- facility design and construction;
- purchasing and procurement of equipment and supplies;
- environmental cleaning and disinfection;
- laundry and waste handling;
- cleaning, disinfection, and sterilization of medical devices;
- contractor agreements; and
- dietary and food handling.

Where services are contracted to an external provider, the organization has a process to define the role and responsibilities of the contractor in relation to IPAC issues and ensure organizational standards are being met and protocols and procedures are followed.[49] Involving IPAC staff in the tendering and contract development stage will assist in identifying and mitigating IPAC risks.

A. The Health Care Environment

Environmental surfaces have been implicated in HAI transmission. Health care organizations are accountable for maintaining a clean and safe physical environment.[49, 137-141] This includes effective environmental cleaning and safe waste handling. Adequate resources, including human resources, are devoted to environmental cleaning to ensure that the quality of cleaning meets IPAC best practices.[138]

An environmental risk assessment may be done by IPAC staff in conjunction with Environmental Service's staff. The risk assessment includes information about the types of patients seen in an area, the amount of traffic in the area, the type of activities performed in the area and the probability of being exposed to body fluids. Using these criteria, a risk assessment of the physical environment can be developed based on risk of transmission of microorganisms. This determines the necessary frequency of cleaning, the level of disinfection and the number of staff required to maintain the required level of cleaning.[49, 138]

Protocols and procedures for effective environmental cleaning in a health care organization include:

- written procedures for cleaning and disinfecting patient rooms and shared equipment that includes standards and frequencies for daily cleaning and post-discharge cleaning[49, 138];

- written procedures for cleaning and disinfecting rooms of patients who are on Additional Precautions[49] (e.g., MRSA, VRE, *C. difficile*);

- education and continuing education for cleaning staff that incorporate IPAC program principles[49, 138];

- increased capacity for outbreak management[49, 138]; and

- ongoing review of procedures, including monitoring, process audits and feedback to staff. Feedback becomes part of the employee's performance review.[49, 138]

When cleaning services are contracted to external providers, the health care organization establishes and maintains a contract with each provider that requires consistent levels of quality and adherence to accepted standards of IPAC practice. The quality of services provided is monitored by the organization.

For more information regarding assessment of cleanliness and quality control as well as sample written procedures for environmental cleaning and disinfection, see PIDAC's *Best Practices for Environmental Cleaning for Prevention and Control of Infections in All Health Care Settings*, available at:
http://www.publichealthontario.ca/en/eRepository/Best_Practices_Environmental_Cleaning_2012.pdf.

Biomedical waste (which includes human tissue, body fluids and contaminated sharps) represents a small proportion of waste generated by health care organizations and poses little risk if managed according to standards.[49, 132] Protocols and procedures regarding handling and biomedical waste[49]:

- meet local, regional, provincial and national regulations; and
- include IPAC program input on waste handling issues.

Contaminated linen is handled carefully to avoid the transmission of microorganisms within the organization. Clean linen is transported and stored in a manner that prevents contamination by dust.

B. Cleaning, Disinfection and Sterilization of Medical Equipment/Devices

The medical literature is replete with documented events of person-to-person transmission of infection associated with improper reprocessing of medical devices and equipment. The health care organization follows reprocessing protocols for reusable medical equipment/devices that meet manufacturer's recommendations, current standards and are based on a risk classification system.[37, 47, 49, 142-147] Protocols and procedures for cleaning, disinfection and sterilization of medical equipment/devices:

- are developed with input from the IPAC team, who evaluate, monitor and review the effectiveness of decontamination processes for equipment and environment[107, 144];

- are based on a recognized classification system, such as Spaulding's[148] criteria, that classifies reprocessing levels according to potential risk of infection[49, 144];

- follow manufacturer's instructions[143, 144];

- meet IPAC program protocols and best practices[142-144];

- are in accordance with legislated requirements[143]; and

- define steps along the full spectrum of reprocessing, including[142-144]:

  - handling of contaminated equipment;
  - cleaning/soaking equipment prior to transport;
  - preparing equipment for transport;
  - transporting contaminated equipment;
  - disassembling equipment, if required;

- washing equipment (manual or automated);
- rinsing equipment;
- disinfecting or sterilizing equipment, including use of process monitors;
- drying and reassembly of equipment;
- inspecting equipment; and
- storing equipment.

Protocols and procedures for cleaning, disinfection and sterilization apply to anyone reprocessing medical equipment/devices in the health care organization, including clinics, endoscopy, emergency rooms and clinical imaging. If reprocessing activities are contracted to external providers, the health care organization verifies that each external provider follows accepted standards of practice for reprocessing and monitors the quality of services provided.[49, 144]

There are also protocols and procedures for:

- management of single-use medical devices/equipment[144];

- loaned, shared, consigned and leased medical devices that include transport to and from the organization and handling of devices that have not been adequately reprocessed prior to arrival[49, 144, 149];

- staff involved in reprocessing demonstrate competency and, ideally, certification in medical device reprocessing from a recognized certification program[49, 143, 144]; and

- management of failures in disinfection and sterilization processes, including ability to track all reprocessed medical equipment/devices for identification and follow-up measures.[49, 144]

C. Creutzfeldt-Jakob Disease (CJD)

Protocols and procedures for Creutzfeldt-Jakob Disease (CJD) are indicated for health care organizations that provide neurosurgical services.[49] Protocols and procedures include:

- completing a pre-operative assessment for high-risk surgical procedures;

- completing a pre-operative assessment for high risk patients; and

- having either:

  - a dedicated set of neurosurgical, neuroendoscopic and ortho-spine devices to be used when the diagnosis of CJD has been made or is suspected pre-operatively; or

  - disposable equipment that is quarantined immediately post-surgery and prior to reprocessing until the post-operative diagnosis of CJD is either validated or ruled out.

For more information on CJD, refer to:

- PHAC's guidelines for *Classic Creutzfeldt-Jakob Disease in Canada*, available at: http://www.collectionscanada.gc.ca/webarchives/search/results/index-e.html?q=Creutzfeldt-Jakob

- Public Health England's Creutzfeldt-Jakob disease (CJD): guidance, data and analysis, available at: https://www.gov.uk/government/collections/creutzfeldt-jakob-disease-cjd-guidance-data-and-analysis.

D. Facility Design, Construction and Maintenance

Environmental conditions related to HVAC are established to contain and prevent the transmission of microorganisms.[49, 150-153] There is a validation process in place to ensure airborne isolation rooms, operating rooms and protective environments for transplant or severely compromised patients meet standards.

IPAC principles are adhered to during design of new facilities or redevelopment of existing facilities and during construction, renovation and maintenance activities, up to and including commissioning, to provide a safe environment for patients and staff and minimize the risk of HAIs.[47, 81, 137, 150, 154-156] The organization consults with the IPAC team when planning and designing the physical environment. This includes planning for new construction and renovation projects.[49]

Protocols and procedures for facility design, construction and maintenance define the role of the IPAC team and include[47, 74, 107, 150, 154, 155, 157]:

- identifying IPAC-related risks and risk levels associated with the project (e.g., *Aspergillus* and *Legionella*);
- identifying legislation, national guidance and outcomes/indicators relating to the project;
- ensuring that HVAC systems in the construction area meet current standards;
- identifying staff and affected patient population that will be impacted by the project;
- identifying barriers and preventive measures that will be put into place during the project (e.g., hoarding, negative pressure, dust controls);
- identifying cleaning and disinfecting requirements during and following the project;
- identifying safe transportation routes for waste materials;
- inspecting premises regularly and at completion of the project to ensure that optimal environmental conditions are maintained;
- monitoring compliance with barriers and preventive measures; and
- having authority to halt projects if there is a risk to patient or staff safety.

For more information about IPAC program involvement in construction and renovation, refer to:
- Canadian Standards Association:

  - Canadian Standards Association. CAN/CSA Z8000-11. *Canadian Health Care Facilities*.

  - Canadian Standards Association. CAN/CSA Z317.13-12. *Infection Control during Construction, Renovation and Maintenance of Health Care Facilities.*

  - Canadian Standards Association. CAN/CSA Z317.2-10. *Special Requirements for Heating, Ventilation, and Air Conditioning (HVAC) Systems in Health Care Facilities*.

E. Materials Management

There is a process to include IPAC staff in the purchase and procurement of medical equipment and supplies. The role of the IPAC program is to assess potential risks or impacts on infection prevention and control related to reprocessing of the equipment, occupational health and safety risks related to infection (e.g., creation of aerosols by the equipment) and IPAC environmental risks related to

disposal of the equipment, components of the equipment or supplies required for the use of the equipment.[74]

Medical equipment that is chosen for purchase is capable of being cleaned, disinfected and/or sterilized according to Spaulding's[148] criteria as well as the most current standards, best practices and legislative requirements.[142-145]

In organizations where medical devices and equipment are outsourced, e.g., loaned, consigned, or leased, the organization applies the same selection process as for medical devices and equipment that are purchased, and follows the same process to select suppliers.[149]

F. Dietary

Protocols and procedures define mechanisms and processes that are in place to prevent foodborne illnesses in the organization. Standards and regulations for food preparation, handling and storage are followed. These apply to food prepared in-house or contracted out, as well as for food prepared or dispensed in patient/staff kitchenettes or kitchens.[49]

Where food services are inspected by government agencies, the organization is compliant with the inspection process and follows-up on areas for improvement identified by inspectors.[49]

STANDARD 59	*The health care organization's services/clinics/departmental protocols and procedures shall include IPAC staff input and interventions to prevent and control IPAC risks.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, Burnett

2.11   IPAC Program Research Initiatives

ICPs remain current in IPAC best practices through evidence-based research, consensus and established guidelines.[36, 38] Findings from published research are incorporated into the health care organization through practice, education and/or consultation.[36, 38] Research evidence includes reports on informal epidemiologic studies, e.g., outbreak/cluster investigations and surveillance findings. ICPs collect, collate, analyse and synthesise qualitative and quantitative data and information using appropriate methods,[107] and share this with co-workers and other colleagues to enhance knowledge and drive improvements.[38]

ICPs also participate in formal research and quality improvement projects that will result in improved patient care and prevention of infections and lead to advancements in the IPAC field.[47, 107] Participation in research activities may be independent or collaborative. In IPAC programs affiliated with academic health science centres and teaching hospitals, ICPs collaborate with, and/or support others, in research that will help to inform the practice of infection prevention, control and epidemiology.[38, 81] The IPAC program is adequately resourced to enable research initiatives.[158] Whenever possible, cost analysis is incorporated into IPAC research.[38]

Novel initiatives are showcased through publications, poster/oral presentations at conferences and other means to enhance the body of IPAC knowledge.[38]

STANDARD 60	*IPAC staff shall participate in quality improvement initiatives and/or research.*
Supporting Rationale	Accreditation Canada, PIDAC, Burnett

STANDARD 61	*Results of IPAC program quality improvement initiatives and/or research shall be shared with key stakeholders.*
Supporting Rationale	PHAC, Friedman

STANDARD 62	*Results of IPAC program quality improvement initiatives and/or research shall be incorporated into the IPAC program.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, Burnett

3.0   IPAC Program Foundational Framework

> ***THE IPAC PROGRAM…***
> - ***HOW*** *should the IPAC program be structured?*
> - ***WHO*** *should staff the IPAC program?*
> - ***WHAT*** *resources are required for the IPAC program?*

3.1   IPAC Program Governance and Leadership

The Oxford dictionary defines leadership as *"the action of leading a group of people or an organization, or the state or position of being a leader".*[159] In the IPAC field, it has been shown that effective organizational leadership plays an important role in activities related to the prevention of HAIs, cultivating a culture of excellence and inspiring staff.[160]

ICPs and hospital epidemiologists often play more important leadership roles in their health care organization's patient safety activities than do senior executives. In their multisite study, Saint et al.[160] concluded that leadership plays a key role in HAI prevention and that the challenging process of translating the findings of IPAC research into practice can be eased by leaders who heed the advice and experiences of their IPAC colleagues.

Clinical governance refers to the framework through which health care organizations are accountable for ensuring that rigorous systems are established so health care safety and quality is monitored and supported, evaluated and continuously improved.[161, 162] The IPAC program is an essential part of governance, maintaining a high clinical profile and a high management profile.

3.1.1   IPAC PROGRAM VALUE TO THE GOVERNING BOARD

Clinical governance has positioned the quality of health care as a direct responsibility of the Chief Executive Officer (CEO) and the Board of a health care organization. Clinical governance resides at all levels of a health care organization and the organization ensures commitment through active executive participation and sponsorship.[161] The clinical governance framework for IPAC programs, including responsibility and accountability, extends from the point-of-care up to the health care organization's executive and governing Board.[161] Support from the health care organization's executive is one of the key elements to a successful IPAC program.[161]

A well-functioning and supported IPAC program demonstrates value and cost-effectiveness to the organization. Three decades ago, the SENIC Study provided evidence that an organized IPAC program was not only effective, but also cost-effective, by contributing to a reduction in HAIs, reduced length of hospital stay, and decreased costs of treatment for HAIs.[24] Vandijck[77] stresses the importance of investing in IPAC programs as an organizational-wide priority. Organizational executive support includes adequate resourcing of IPAC programs. Limited executive support is seen as a weakness of an IPAC program.[161]

The Board demonstrates to patients, the public, staff and itself that it is making continuous progress towards meeting all of its commitments related to the IPAC program.[81] There is evidence of regular communication from the CEO to the Board regarding their expectations of patients, visitors and staff in relation to the IPAC program.[81]

STANDARD 63	*The IPAC program shall be an essential part of governance and maintain a high clinical and management profile.*
Supporting Rationale	Haley, NICE, Tropea

3.1.2   IPAC PROGRAM'S ROLE IN THE HEALTH CARE ORGANIZATION'S STRATEGIC PLAN

A comprehensive, whole-scale organizational approach is required to ensure that an effective IPAC program is implemented. It cannot be developed by an individual specialist team or by an isolated group of committed experts.[163] The responsibility for the IPAC program in the health care organization lies primarily with the senior administration of the organization. The CEO within an organization's leadership structure demonstrates commitment and leadership to the IPAC program.[163]

The health care organization's leaders provide support for the development and implementation of the IPAC program's operational plans to achieve the IPAC program's strategic plan, goals and objectives and to guide day-to-day operations.[49] Implementation of the program rests not only with the IPAC team, but also with nursing managers, Environmental Services, OHS, directors of medical services, central reprocessing and other departments and individuals in the facility impacted by the effective delivery of the program.[47, 49]

STANDARD 64	*The governing Board shall identify the IPAC program as integral to the health care organization's strategic plan to improve quality and patient and staff safety.*
Supporting Rationale	Accreditation Canada Requirement, PHAC

3.1.3   IPAC PROGRAM POSITIONING AND REPORTING RELATIONSHIPS

The IPAC program is essential to the health care organization. The positioning of the reporting relationship of the IPAC program within a health care organization affects the "power" of the program to enact change within the organization. The IPAC program must have direct reporting to the governing Board through the executive. At the very least, reporting is to a senior level that crosses all department levels within the health care organization, for example Risk /Quality Management.

There is evidence that management has appropriately placed the IPAC program within the health care organization so that it has the most functional use and is accountable across all departments. Senior management can explain why the IPAC program is placed where it is and how this results in the most

effective impact on the organization (e.g., under risk management vs. under nursing or laboratory). The IPAC program shall be consistently applied across the organization.

STANDARD 65	The IPAC program shall be positioned in the organization such that there is an effective reporting conduit to senior management.
Supporting Rationale	PHAC

3.1.4   CLINICAL RISK RELATED TO THE IPAC PROGRAM

Clinical quality and patient safety are important to health care organizations.[78] HAIs are surpassed only by medication errors as the most common adverse event affecting hospitalized patients.[6] Reducing clinical risks, such as preventing and controlling infections, results in safe and effective care.

Infection rates and other raw hospital data on key counts such as deaths, surgical complications, patient complications and patient satisfaction are key performance indicators to provide to Boards so that they can measure if the care is getting better.[80] The Canadian Patient Safety Institute (CPSI) through its *Safer Healthcare Now!* initiatives recognizes several IPAC program strategies to reduce the incidence of preventable morbidity and mortality associated with the delivery of health care.[164-166]

The critical role of the IPAC program in patient safety is also recognized by accreditation organizations, whose safety goal is to reduce the risk of HAIs and their impact across the continuum of care.[77] Accreditation Canada requires hospitals to complete a risk assessment to identify and address high-risk activities, such as performing aerosol-generating medical procedures; handling spills, specimens and sharps; and exposure to contaminated waste.[49]

Health care organizations are required to[49]:

■   adhere to IPAC guidelines and consensus recommendations;

■   deliver appropriate IPAC education and training to staff;

■   monitor infection rates and benchmark this information throughout and outside the organization;

■   formulate and initiate strategies to reduce risk, considering relevant legislation and published guidelines; and

■   continuously initiate actions to further improve their processes.

An integrated risk management approach is used to mitigate and manage IPAC risks in the organization.[49] There is evidence that the Board is aware that risk monitoring mechanisms are in place in each clinical area and that each area is accountable for compliance with IPAC program protocols and procedures.[81] IPAC-related patient and staff process and outcome indicators (e.g., hand hygiene rates, device-related infection rates) are reported to the Board on a regular basis, disseminated throughout the organization and shared with external stakeholders. ICPs are involved in the development of key staff performance indicators relating to the IPAC program.[81]

The health care organization's leaders assess IPAC risks and opportunities that have been identified and incorporate strategies to address them within the strategic plan.[49] The health care organization's leaders understand the organizational environment and consider any anticipated changes that may be an IPAC risk or present an opportunity for the organization.[49] Mechanisms are in place to inform the Board on IPAC control measures that have been implemented.[81]

STANDARD 66	The health care organization shall have a structured process for mitigating infectious disease risks.
Supporting Rationale	Accreditation Canada Requirement, PHAC, NICE

3.2   IPAC Program Administration

3.2.1   IPAC PROGRAM DEVELOPMENT

The responsibility for the IPAC program in the health care organization lies primarily with the senior administration of the organization. Implementation of the program rests not only with the IPAC team, but also with nursing managers, Environmental Services, OHS, directors of medical services, central reprocessing and other departments and individuals in the facility impacted by the effective delivery of the program.[47]

Continuing support for the IPAC program is an organizational priority.

Prior to implementing an IPAC program, and periodically thereafter, **there is an initial review of the entire health care organization (organizational risk assessment)** for the strengths, weaknesses, opportunities and threats related to IPAC practices (i.e., SWOT analysis). The results from this analysis are used to assist in prioritizing the needs of the program and are strategically aligned with organizational priorities. This is a dynamic process that is flexible enough to respond to evolving organizational needs.[47]

In order to achieve these goals in a cost-effective manner, an active, effective, organization-wide IPAC program is planned and developed with multidisciplinary and senior management support.[47, 167]

Conducting an initial organizational risk assessment is key to the development of an effective IPAC program.

Changes in practice are unlikely without administrative support and multidisciplinary efforts.[168] The IPAC program cannot be developed and implemented by IPAC staff alone, without input and support from other departments across the health care organization. One of Accreditation Canada's requirements is that "the organization has a collaborative approach to supporting the IPAC program".[49] This means that the IPAC program functions are planned, developed, implemented and evaluated by an IPAC team or committee having interdisciplinary membership.[47, 49] The IPAC program requires accountability from all areas and organization-wide support.[47]

Collaboration between the IPAC program and other departments and good working relationships are essential.[169] IPAC activities are linked with those of key stakeholders in the organization.[47] For example, IPAC staff are represented on the facility's Health and Safety Committee and the IPAC component of the

OHS program is developed jointly by OHS and IPAC staff.[47] The development of multidisciplinary quality improvement committees in a health care organization include IPAC representation.[170]

IPAC program activities are based on a continuous quality improvement approach where the processes and outcomes are continuously reviewed and improved.[47] The IPAC program is planned and developed based on organizational priorities, legislative requirements, evidence and best practices.[49] In recent years, increases in IPAC program resources appear to have been driven by crises[171] (e.g., Severe Acute Respiratory Syndrome in Ontario, *C. difficile* outbreak in Quebec), and often the resources are withdrawn once the crisis has passed. IPAC program deliverables are based on the acuity and activity of the health care organization and the volume and complexity of the ICP's work.[47]

An organizational risk assessment is conducted on an annual basis,[133] regardless of the type of health care organization. Ongoing, systematic evaluation of the organizational risk assessment is important to ensure that protocols, procedures and programs are consistent across the health care organization, achieve their stated objectives and are in compliance with current applicable regulations.[49, 133]

The reliability, validity and application of IPAC practice are evaluated and compared to recognised published literature and best practices[49]:

- Published IPAC literature is critically reviewed when developing the IPAC program and IPAC services.

- Surveillance and epidemiological data are analyzed to inform IPAC processes.

- National, regional, and legal requirements are incorporated into IPAC protocols and procedures.

- IPAC deficiencies and priorities are evaluated on a regular basis to determine compliance with best practices using appropriate quality indicators/benchmarks. This may be part of process or outcome surveillance.

- IPAC records or statistics are analyzed to identify trends and needs.

Several documents outline in detail the various components of an IPAC program:

- PIDAC's *Best Practices for Infection Prevention and Control Programs in Ontario*, 3rd edition, May 2012. Available at:
  http://www.publichealthontario.ca/en/eRepository/BP_IPAC_Ontario_HCSettings_2012.pdf.

- World Health Organization: *Core Components for Infection Prevention and Control Programmes*, available at:
  http://apps.who.int/iris/bitstream/10665/69982/1/WHO_HSE_EPR_2009.1_eng.pdf.

STANDARD 67	The IPAC program shall be developed in collaboration with key stakeholders in the health care organization.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

STANDARD 68	IPAC program deliverables shall be based on the acuity, complexity and care activities of the health care organization.
Supporting Rationale	PHAC, PIDAC

3.2.2 IPAC PROGRAM GOALS AND OBJECTIVES

The goal of a functioning IPAC program is to protect patients, staff and visitors from HAIs, resulting in improved survival rates, reduced morbidity associated with infections, shorter length of hospital stay[47] and reduction in lost time by staff.

IPAC program goals are evidence-based,[43, 170, 172] with measurable objectives that are reviewed annually and revised based on program change and risk assessment of IPAC issues.[43, 47, 173] These goals are relevant to care activities across the spectrum of health care organizations including acute care, complex continuing care, rehabilitation hospitals, long-term care homes, ambulatory settings and home health care programs.[21, 120, 174] IPAC program goals are consistent with legislated requirements.[81] IPAC program goals shall be presented to, and shall be supported by, senior management and the Board.

The IPAC program is organization-wide, with clearly defined objectives in collaboration with other members of the health care organization. Essential objectives include:

- There is an annual review of IPAC program goals.

- IPAC program goals are supported and followed by senior management and the Board.

- IPAC program initiatives are evaluated at appropriate intervals and deliverables are revised as necessary, resulting in ongoing evaluation and continuous improvement of the IPAC program.

- There is a process to manage critical data and information, including surveillance for HAIs.

- There is a coordinated approach used for effective IPAC program management. Responsibility and authority are delegated to individuals who can deliver the required outcomes, with timely communication of infection-related issues and relevant practices to management and staff to facilitate improvement.

- Both proactive and reactive IPAC program services (including IPAC education and training) are coordinated and delivered by IPAC staff in conjunction with partners across the health care organization.

- Evidence-based practice, standards and guidelines are implemented through organization-specific protocols and procedures.

- There is prompt reaction to outbreaks at all levels within the health care organization.

- There is effective response to major IPAC-related incidents.

- Target populations are identified for IPAC program preventative interventions (e.g., through process and outcome surveillance).

STANDARD 69	IPAC program goals shall be evidence-based.
Supporting Rationale	Accreditation Canada Requirement, PHAC

STANDARD 70	IPAC program goals shall have measurable objectives that are reviewed/revised annually.
Supporting Rationale	PIDAC, Madani

3.2.3 IPAC COMMITTEE

The IPAC team in the health care organization has the support of an Infection Prevention and Control Committee (IPACC) or working group structured to include representation from stakeholders and partners across the organization[49] including, but not limited to, ICPs, OHS, Environmental Services/Housekeeping, nursing and medical representation from key clinical programs including infectious diseases, Microbiology, local public health and senior management.[120] This multidisciplinary committee reports to the Board of Directors through the Medical Advisory Committee (for hospitals) and/or senior management.[47] All facilities and agencies accredited by Accreditation Canada require this to be a formal committee structure.[49]

The IPACC is responsible for[47, 49]:

- annual goal-setting and strategic planning for the IPAC program and the IPACC;
- ensuring that the IPAC program meets current legislated standards and requirements as well as the requirements of the facility;
- advocating for resources necessary to accomplish the goals of the program;
- acting in an expert advisory capacity on controversial issues (e.g., impact of closure of clinical departments due to outbreaks);
- reviewing patient safety/risk management/quality assurance initiatives related to HAIs; and
- IPAC program evaluation.

The frequency of IPACC meetings should be based on:

- the objectives of the IPAC program;
- requirements of Accreditation Canada (for accredited facilities);
- requirements of provincial legislation;
- time required to effectively review IPAC program surveillance data and related analyses;
- policy approval processes; and
- time required to effectively monitor program goals and activities.[175, 176]

There is a process in place to ensure that items or issues brought to the IPACC for review are addressed in a timely manner. There is appropriate follow-up on important issues, particularly those relating to risk management or patient safety.

The terms of reference for the IPACC are reviewed annually to ensure that the committee membership adequately represents IPAC program needs in the health care organization and that IPACC goals have been met.

STANDARD 71	There shall be a multidisciplinary IPAC committee that reports to senior management, to support the IPAC program.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

STANDARD 72	The IPAC committee shall set annual goals for the IPAC program, advocate for resources to accomplish program goals, review IPAC program quality improvement initiatives and evaluate achievement of IPAC program deliverables.
Supporting Rationale	Accreditation Canada Requirement, PHAC

3.2.4   IPAC INFORMATION MANAGEMENT

Data, information and knowledge systems are planned to provide reliable, timely service and to support the IPAC program's objectives and its internal and external needs.[177] Surveillance for HAIs is an important component of the IPAC program, but is labour-intensive. The implementation of an automated surveillance program has the benefits of increased accuracy, timeliness of results and is less labour-intensive.[178] Electronic access to data is the foundation for an electronic surveillance system.[72]

IPAC program information management protocols and systems meet current information needs, anticipate future needs, and enhance organizational performance. There is dedicated computer access within the IPAC department. Where relevant, new technology, innovation and practice are incorporated into protocols and procedures[81] (e.g., use of hand-held devices to collect surveillance and audit data).

A. IPAC Program Information Management Plan

There is an IPAC program information management plan that defines how the IPAC program will[74, 177]:

- define and priorize current and future information needs[74]; IPAC programs will have different needs based on the program's goals and individual mandates;

- capture, analyse, enter and transmit data;

- report accurate data results in a standardized way internally and, where applicable, externally;

- support, educate and train IPAC staff in the processing and use of information, including the optimal use of technology (computers, software programs, communications equipment, use of hand-held devices to collect data);

- manage surge capacity in the face of outbreaks, emergencies and disasters;

- incorporate flexibility to manage change and future needs;

- maintain confidentiality, integrity and security of data[74]; and

- manage record retention and information storage.

STANDARD 73	*The IPAC program's information management protocols and plans shall meet current information needs, anticipate future information needs and enhance IPAC program performance.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, ISQua

STANDARD 74	*The use of confidential patient information for IPAC program purposes shall comply with federal and provincial legislation and ethical standards of privacy and confidentiality.*
Supporting Rationale	Accreditation Canada Requirement, Federal/Provincial/Territorial Privacy Acts and Regulations

B. Record Retention and Information Storage

Data, information and knowledge resources are stored for ease of access.[177] Processes are in place for the recovery of data and data systems in case of disaster or system failures.

Records pertaining to the IPAC program are kept for organization's approved period (e.g., minimum three years). This includes investigation reports, IPAC committee meeting minutes, education and training records, statistics and epidemiology databases.[179]

3.2.5   IPAC PROGRAM RESOURCES

Vandijck[77] stressed the importance of investing in IPAC programs, which includes allocating resources needed for optimal programs. In 2003, Zoutman[12] et al showed a positive correlation between adequately resourced IPAC programs and the amount of infection surveillance that was being done in an acute care setting. Increased surveillance for AROs and targeted IPAC education have been shown to have a positive effect on reducing ARO rates.[33]

IPAC program resources include material, financial and human resources. The resources needed to support the IPAC program depend on the size of the organization, the type of services provided and the mandate of the IPAC program.[49]

It is essential that the health care organization supports an effectively functioning and resourced IPAC program aimed at improving patient and health care worker safety. In addition to the material and financial resources, there is a need for professionals who are certified in infection control.[47] The IPAC program resources are reviewed on a regular basis (e.g., annually).

STANDARD 75	*The health care organization shall regularly review the resources needed to support the IPAC program.*
Supporting Rationale	Accreditation Canada Requirement, PHAC

A. Access to Microbiology Laboratory Services

The IPAC program has access to an accredited microbiology laboratory that supports the surveillance program by reporting all significant microbiological isolates (e.g., positive blood and respiratory cultures, rapid detection of antibiotic-resistant organisms) in a convenient and accessible format in order to facilitate the identification of HAIs by IPAC staff.[47, 49] Ideally, IPAC staff can access Microbiology data systems themselves from their own computers or via direct data linkage with IPAC data programs.

The microbiology laboratory is adequately resourced to provide quick turnaround for high-risk organisms such as *C. difficile* and to assist with outbreak investigation in a timely fashion.

STANDARD 76	*The IPAC program shall have the support of an accredited microbiology laboratory.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

B. Budget Requirements

There is appropriate resource allocation for the IPAC program that is sustained and ongoing. There is a sufficient budget to fund the IPAC program that includes[47]:

- intellectual resources (e.g., books, manuals, guidelines, online resources, subscriptions), including maintenance of resources;
- material resources (e.g., office equipment, electronic equipment such as computers and software, education and training materials, audio-visual materials);
- human resources (e.g., IPAC physician, ICPs, secretarial support); and
- continuing education (e.g., attendance at conferences, teleconferencing, videoconferencing, webinars, training courses).

STANDARD 77	*There shall be appropriate financial resources allocated to the IPAC program.*
Supporting Rationale	PHAC, PIDAC

C. Staffing Requirements

Staff with IPAC expertise are available at a clinical and organizational level to the health care organization. There is management support for the organization's IPAC program objectives and IPAC staff are supported to deliver quality services.[56]

Administrative Support

The health care organization provides administrative assistance to the IPAC program.[47] Support staff allow the ICP(s) to attend to IPAC program needs outside the office. Depending on the complexity of the IPAC program, administrative support might include document development, database entry for surveillance data, recording meeting minutes, development of presentation materials (e.g., brochures, fact sheets, posters), response to emails and phone calls, and printing of materials.

STANDARD 78	The IPAC program shall have sufficient support staff to meet the IPAC program goals of the health care organization.
Supporting Rationale	PHAC, PIDAC

Infection Control Professional (ICP)

The ICP position is a dedicated position. Regardless of the size of the facility, the expected number of hours per week that are devoted to infection prevention and control must be clearly stated and protected.[47]

ICP staffing levels are related to the type of care services provided by the health care organization and will vary depending on volume, complexity and acuity. Staffing should not be based exclusively on total bed numbers.[47, 49] The following recommendations have been published[47]:

- a minimum ratio of 1.0 full-time equivalent (FTE) ICP per 115 acute care beds[180];
- a minimum ratio of 1.0 FTE ICP per 100 occupied acute care beds if there are high risk activities (e.g., dialysis)[181-183];
- additional ratio of 1.0 FTE ICP per 30 intensive care beds be considered where ventilation and haemodynamic monitoring are routinely performed;
- 1.0 FTE ICP per 150 occupied long-term care beds where there are ventilated patients, patients with spinal cord injuries and dialysis or other high acuity activities[22];
- 1.0 FTE ICP per 150-200 beds in other organizations depending on acuity levels.

New ICPs are enrolled in an approved IPAC training program (minimum 80 hours) within the first six months of entering the profession[38] (e.g., IPAC Canada's basic online program, available at: http://ipac-canada.org/ipac-canadas-novice-online-ipac-course.php) and are mentored by an experienced ICP after hire. IPAC mentorship is made immediately available to a new ICP when the

individual has no previous IPAC experience. It has been estimated that it takes at least five years for an ICP to be fully competent to manage 80% of the problems that can arise, given the scope and variability of IPAC issues. ICPs are encouraged to join their professional association (i.e., IPAC Canada).

It is an expectation that the ICP continues to seek education, knowledge and skills related to the IPAC program in the following areas[38]:

- Epidemiology, including outbreak management
- Infectious diseases
- Microbiology
- Patient care practices
- Asepsis
- Disinfection/sterilization
- Occupational health
- Facility planning/construction
- Emergency preparedness
- Learning/education principles
- Communication
- Product evaluation
- Information technology
- Program administration
- Legislative issues/Policy making
- Research

It takes at least five years for an ICP to be fully competent to manage 80% of the problems that can arise, given the scope and variability of the IPAC issues that can arise.

IPAC Canada endorses as a core requirement for the position of ICP the achievement and maintenance of certification in infection prevention and control (CIC®) from the Certification Board of Infection Control and Epidemiology Inc. (CBIC). Certification signifies that the specialized body of knowledge required for competent performance of current IPAC practice has been attained and maintained. An ICP prepares for certification through a combination of a recognized course(s), on the job mentoring and life-long learning. The CIC® should be completed between 2-5 years of assuming the roles and responsibilities of infection prevention and control.[184]

The CIC® credential (Certified in Infection Control) is available from the Certification Board of Infection Control and Epidemiology (CBIC). For more information:

http://www.cbic.org/

The health care organization has at least one ICP who is Certified in Infection Control (CIC®), or who will obtain certification when eligible, depending on the acuity of the facility.[38, 47] Education is provided that will enable new ICPs to obtain CIC® designation[47] and to maintain certification.

STANDARD 79	The health care organization shall dedicate and protect ICP hours for the IPAC program appropriate to the acuity and volume of care in the health care organization.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

STANDARD 80	ICPs shall be supported by the health care organization to maintain competency in IPAC practice.
Supporting Rationale	PHAC, IPAC Canada/ APIC

STANDARD 81	ICPs shall be certified in infection prevention and control when eligible.
Supporting Rationale	PIDAC, IPAC Canada/ APIC

IPAC Physician

The health care organization has access to a qualified IPAC physician who has knowledge, expertise and training in IPAC program elements.[47, 49] The IPAC physician works with ICPs to provide input and support into the program. There is also benefit to having access to an epidemiologist to assist with data management during large outbreaks.

Acute care settings have a dedicated in-house or contract physician with IPAC knowledge and expertise to support the IPAC program and to engage the medical community in IPAC program activities.[21] An infectious diseases physician or other physician with knowledge of infectious diseases may provide this support. Long-term care facilities should consider an IPAC-trained physician on at least a consultative basis.[120] The physician should have specialized post-graduate training in IPAC program elements. In many smaller hospitals and nursing homes, the local Medical Officer of Health may act as the IPAC physician resource to the IPAC program.

Medical staff from other specialties may act as IPAC program champions. Protected time is allocated to achieve defined objectives in this role.[81]

STANDARD 82	The health care organization shall have access to a qualified IPAC physician to provide input into the IPAC program.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, Haley

D. Continuing Education Requirements

The health care organization ensures that ICPs maintain their knowledge and skills through continuing education relevant to their professional practice and re-certification in infection control every five years.[47] Continued competency can be maintained formally through online courses, local or national conferences and webinars, or via informal methods such as independent learning, networking with colleagues or mentoring. This learning is occurring on a continual basis.[81]

ICPs remain current on IPAC best practices through evidence-based research, consensus and review of established guidelines.[36, 38] Findings from published research are incorporated into the health care organization through practice, education and/or consultation.[36, 38] Research evidence includes reports on informal epidemiologic studies, e.g., outbreak/cluster investigations and surveillance findings. ICPs collect, collate, analyse and synthesise qualitative and quantitative data and information using appropriate methods,[107] and share this with co-workers and other colleagues to enhance knowledge and drive improvements.[38]

IPAC work teams and individuals are supported in their IPAC endeavours, knowledge and practice. IPAC training resources are reviewed on a regular basis to ensure consistency with established evidence and with professional and occupational standards.[81]

E. Intellectual/Technical Requirements

The organization ensures the availability of key resources to support the IPAC program as required by legislation, best practices and the organization's strategic plan.[47, 49] Ready access to, and retrieval from, the organization's data systems are essential to support key IPAC program functions, such as surveillance and outbreak investigation. IPAC staff receive required training and support when new electronic equipment and/or software programs are installed.

Information Retrieval (*information coming in*)

Sources of information retrieval for IPAC program purposes include:

- ready access to, and retrieval of, demographic data from the organization's information systems (e.g., electronic patient record, laboratory results, pharmacy systems);

- relevant standards, guidelines and best practices necessary to develop the IPAC program manual and other protocols and procedures; and

- linkages to other organizational plans, such as the strategic, business or quality plans.[177]

Information Analysis (*information handling*)

Data and information are analysed and the results used to inform decision- making and meet program objectives.[177] Robust physical systems are required to support data management.

IPAC staff use analysed data and retrieved information to:

- inform IPAC processes and practice;

- inform education and training; and

- to engage the support of patients and the public for IPAC activities (e.g., published hand hygiene rates).

Information Dissemination (*information going out*)

The IPAC team communicates with colleagues and external groups for information-sharing, professional support and direction. Access to modern communication equipment (e.g., intranet, internet, teleconferencing, videoconferencing) is essential to maintain these required components of the program. Access may be on-site, or combined with other sites in a centralized location within the organization.

Data and information are disseminated to others, provided that copyright requirements are followed and the appropriate permissions are received. In the case of personal data, confidentiality must be preserved (e.g., use non-nominal data).[177]

The following are basic resources needed to ensure that the intellectual requirements of the IPAC program are met:

- access to a computer and the internet;

- access to current and relevant standards, guidelines, best practices and legislation necessary to develop the IPAC program manual and other protocols and procedures[47, 49] (e.g., regional, national and international organizations such as PHAC, CSA, Centers for Disease Control and Prevention (CDC), IPAC Canada, WHO;

- access to the electronic patient record in organizations where this is available. Ideally there is the ability for IPAC staff to "flag" patients electronically when they need to be followed up on subsequent visits;

- access to electronic laboratory records and other health information systems (e.g., pharmacy systems, surgery records);

- a means to analyse the organization's electronic data as they relate to IPAC program activities (e.g., for surveillance, analysis of outbreaks).

- access to electronic modes of communication for collaboration and participation in group discussion, including electronic mail, webinars, online IPAC training, document viewing and sharing, teleconferencing and/or videoconferencing; and

- electronic equipment maintained by competent information technology (IT) staff.

STANDARD 83	IPAC staff shall have access to intellectual resources required to satisfy the functions of the IPAC program.
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC

STANDARD 84	IPAC staff shall be equipped with current electronic tools to support the IPAC program.
Supporting Rationale	PHAC, PIDAC

STANDARD 85	*IPAC staff shall have electronic access to internal and external communication resources for the purpose of collaboration and education.*
Supporting Rationale	PHAC, PIDAC

3.3 IPAC Performance Management

Shared accountability for infection control has been identified by Jarvis[57] as critical to an organizational climate change for the IPAC program. There is a need to "engage everybody" in the IPAC program process. There must be a communal responsibility within the organization, supported by the backing and leadership of the CEO and senior management.

How is IPAC quality achieved?

Preventing infections in patients is a shared vision and goal of all who work in health care. Holmes[56] insists that all staff must understand their role, supported by widespread multidisciplinary engagement with a clear message that everyone in the organization matters and everyone is responsible for preventing infections.

Teamwork rather than individual interventions relies on leadership adaptability, mutual performance monitoring and support. Specific IPAC-related responsibilities are written into the job descriptions for all staff, including managers and supervisors. Staff at all levels can explain how their IPAC performance is evaluated.

3.3.1 ASSESSMENT AND ACCOUNTABILITY OF SENIOR MANAGEMENT

Managers and supervisors have accountability and responsibility for IPAC initiatives affecting their staff and patients. There is an expectation from patients that staff have the necessary skills and knowledge to undertake IPAC-related initiatives in their area of work. It is the responsibility of senior management to ensure that staff are trained and competent in IPAC practices.[81]

Senior management communicate their commitment to the IPAC program at least annually through compliance monitoring and assessment of staff performance.[81] There is evidence of regular communication from the CEO on the organization's expectations of staff, patients, volunteers and visitors in relation to the IPAC program.[81]

STANDARD 86	*The health care organization's leaders shall develop and implement a defined and integrated quality management system to assess IPAC performance and improve IPAC quality in the health care organization.*
Supporting Rationale	Accreditation Canada Requirement, PHAC

3.3.2 ASSESSMENT AND ACCOUNTABILITY OF IPAC PROGRAM STAFF

IPAC program staff (ICPs, epidemiologists, physicians) have demonstrated IPAC expertise. ICPs are prepared to be certified in IPAC within two years of hire. Specific IPAC responsibilities are written into IPAC contracts, job descriptions and program manuals.

Performance reviews for all IPAC program staff are conducted on a planned basis, e.g., annually. The performance review includes the following components[63]:

- a discussion of achievements and improvement opportunities;
- a plan for additional training, education and development to enhance the staff member's performance and career opportunities;
- recognition and acknowledgement of IPAC achievements (e.g., re-certification every five years); and
- assurance that IPAC training and competencies are kept up to date.[81]

Both the individual being assessed and the manager/supervisor doing the assessment sign the final assessment summary. The organization also has a process for dealing with staff who are not performing satisfactorily.

IPAC self-assessment auditing tools may also be used by IPAC staff to evaluate their IPAC performance, such as IPAC Canada's self-assessment audit tools.

STANDARD 87	*ICPs and other IPAC staff shall demonstrate competence in infection prevention and control.*
Supporting Rationale	PHAC, ISQua, NICE

3.3.3 ASSESSMENT OF STAFF KNOWLEDGE, ACCOUNTABILITY AND ADHERENCE TO IPAC PRINCIPLES

Performance management includes activities which ensure that goals are consistently being met in an effective and efficient manner. IPAC performance management is an ongoing process of communication between supervisors/managers and staff that occurs throughout the year, in support of accomplishing the IPAC program's strategic objectives of the health care organization.

A system for monitoring and improving staff compliance with IPAC program protocols and procedures is developed and implemented at all levels in the health care organization. There is evidence of a Board-approved IPAC program accountability framework. This includes evidence of specific responsibilities allocated to staff working in, or coming into contact with, clinical areas, as reflected in their job descriptions and performance appraisals.[81]

There is evidence that all staff working in clinical areas have an appraisal and development plan that includes discussion of IPAC-related issues and practices. This includes evidence that staff working in both clinical and non-clinical areas have clear objectives in relation to the IPAC program which are linked to the organization's objectives.[81]

Comprehension of infection control principles is vital to the protection of both staff and patients.[40] All employees must be familiar with their role in the IPAC program. Work teams and individuals are supported in their IPAC-related endeavours, knowledge and practice.

Staff performance is regularly assessed in partnership with each staff member and the assessment is documented.[49] Employees are evaluated on their individual IPAC performance and adherence to IPAC practices is part of the performance review.[47] Employees are enabled to understand their contribution, communicate their views and take an active part in processes and challenges behaviors. There is evidence that staff are provided with feedback on their IPAC-related performance. This includes evidence that they are given support to carry out their IPAC responsibilities.[81]

Process and outcome audits are used to monitor the effectiveness of individual employees and/or groups or teams. The purpose of using a knowledge and practice survey as part of the audit process is to ascertain the level of infection control knowledge, to determine whether perception of knowledge is genuine, and to evaluate whether knowledge is applied in the workplace setting.[40] On-site managers engage in tours to observe and reinforce IPAC practices and behaviours. Results of process audits of practices and monitoring of patient care practices are incorporated into education and are used to assess the effectiveness of educational interventions.[47] For example, compliance with hand hygiene must be audited, as a requirement of Accreditation Canada. Results are shared with staff, service providers and volunteers; and a plan is developed to improve education and training.[49]

STANDARD 88	*An IPAC performance management program shall be evident in the health care organization, including an IPAC performance review for staff.*
Supporting Rationale	Accreditation Canada Requirement, PHAC, PIDAC, Provincial/Territorial Occupational Health and Safety Acts and Regulations

3.4 Assessment and Evaluation of the IPAC Program

In line with requirements of Accreditation Canada, IPAC program quality improvements are identified as a strategic priority in health care organizations, and resources are allocated to support quality improvement activities. It is the responsibility of the organization's senior management team[74]:

- To promote learning from quality improvement results; and
- To make decisions informed by research and evidence, patient and staff experiences, and ongoing quality improvement results.

The health care organization periodically monitors compliance with IPAC program protocols and procedures to assess awareness and compliance.[47,49] Based on the results, a quality improvement program is then formulated and implemented, taking into account the organization's priorities, objectives and available resources.

3.4.1 EVALUATING THE IPAC PROGRAM

Internal evaluation of the IPAC program is done to determine if program resources (financial, material and human) are adequate to meet program goals. Implementing a standardized IPAC program audit (e.g., see *Annex*) will identify areas of shortfall in the IPAC program[185] and lead to significant

improvements in IPAC practice.[186] Process and outcome evaluation of the IPAC program is documented and recommendations for improvement are based on these findings. There is evidence that the agreed key performance indicators are used by the Board to monitor IPAC program performance.[81] This evaluation includes the extent to which the health care organization, with its partners, is able to achieve its IPAC program goals and objectives.

External evaluation of the IPAC program includes the extent to which the health care organization, with its partners, is able to achieve its mandate and goals to decrease the risk of HAIs and to improve health care safety.[36, 47] IPAC program activities are based on a continuous quality improvement approach where the processes and outcomes are reviewed and improved at least annually.[47] Outcome indicators reflect the effectiveness of the health care organization in protecting patients, health care workers, visitors and others from HAIs as well as determine the cost-effectiveness of program activities.[47]

There is a process to evaluate the impact of having an IPAC staff presence on a multidisciplinary committee or team. For example, one way to do this would be to demonstrate a progressive and sustained change in the HAI rate following the addition of an ICP to a department's team.[90]

STANDARD 89	*There shall be a process to evaluate the quality of the IPAC program.*
Supporting Rationale	Accreditation Canada Requirement

3.4.2   CONTINUING IMPROVEMENT IN THE IPAC PROGRAM

A successful quality assurance program includes learning from the results obtained.[81] This includes learning from positive as well as negative or surprising results. There should be a balance between learning from the results and focusing on the result.

Ongoing improvements to the IPAC program should be informed by the results of the IPAC program audit via an action plan, feedback and re-audit.[51, 86, 93, 101, 185, 187, 188] Target goals and the strategic plan are reviewed and revised to reflect changing epidemiology and priorities of the health care organization. The process for making ongoing improvements to the IPAC program includes:

- providing dedicated time to reflect on results of audits and program evaluations;
- providing mechanisms for collective feedback and reflection, such as briefings or focus groups[49];
- developing action plans for improvement with timely but realistic time frames, in partnership with affected stakeholders and based on best practices;
- ensuring adequate senior level support for implementation of action plans, including allocation of resources necessary for improvements;
- providing opportunities for education and increased awareness of both staff and managers[186];
- implementing action plans, followed by re-audits[51, 185, 187];
- sharing lessons learned with staff, service providers, patients and peer networks[49, 189]; and

- providing adequate resources to the IPAC program when new programs are developed that have IPAC program implications (e.g., facility-wide hand hygiene program, construction).

STANDARD 90	The health care organization shall make ongoing improvements to its IPAC program.
Supporting Rationale	Accreditation Canada Requirement, PHAC, NICE

Summary of IPAC Program Standards

SECTION 1: CULTURE OF IPAC SAFETY IN THE HEALTH CARE ORGANIZATION

1.1 IPAC CULTURE

1. The health care organization's leaders and staff shall communicate, model and be actively involved, engaged and committed in developing and maintaining a culture of infection prevention throughout the organization.

1.2 IPAC PROGRAM MISSION, VISION AND VALUES

2. There shall be a clear vision and Board-level support for the IPAC program in the health care organization.

1.3 IPAC PROGRAM CHAMPIONS AND ROLE MODELS

3. IPAC program activities and awareness campaigns shall be developed through partnership and collaboration with key stakeholders.

4. An IPAC culture shall be promoted within the health care organization through the engagement of staff, physicians, volunteers, champions and role models.

1.4 IPAC CULTURE OF LEARNING

5. There shall be a culture of learning in the health care organization that supports IPAC education for managers, staff and volunteers.

1.5 IPAC WORK-LIFE

6. The health care organization shall demonstrate commitment to work-life strategies for the prevention of staff infections.

1.6 PATIENT SAFETY

7. Patient safety related to the IPAC program shall be a strategic priority for the health care organization.

SECTION 2: SCOPE OF THE IPAC PROGRAM

2.1 IPAC PROGRAM IMPACT, COLLABORATION AND ENGAGEMENT

8. The IPAC program needs of internal and external stakeholders are identified, assessed, evaluated and reassessed on a regular basis.

9. The IPAC program shall collaborate and liaise with internal and external partners.

10. The IPAC program shall have a communications process to disseminate timely and/or critical IPAC information to internal and external partners.

2.2 IPAC EDUCATION

11. An IPAC education program shall be provided annually, and periodically as required, to all staff working in the health care organization.

12. IPAC education shall meet the IPAC program priorities of the health care organization.

13. IPAC education programs shall include IPAC core competencies for staff.

14. IPAC professionals shall participate in the development of the health care organization's IPAC educational programs using the principles of adult teaching and learning.

15. There shall be an IPAC orientation program provided to new staff, service providers and volunteers carrying out IPAC-related duties in the health care organization.

16. IPAC education shall be regularly evaluated and the education program revised accordingly.

17. The health care organization shall support continuing professional development and provide resources for continuing learning for infection control professionals.

18. The health care organization shall communicate relevant information about minimizing infection risks to patients, caregivers and visitors.

2.3 IPAC SURVEILLANCE PROGRAM

19. The health care organization shall have an IPAC surveillance program that addresses the organization's population-at-risk.

20. The surveillance program shall be adequately resourced and managed by trained staff with dedicated time and appropriate tools to carry out the program.

21. The health care organization shall follow targeted outcome indicators of significance to the organization's services. Legislated requirements shall be fulfilled.

22. The health care organization shall have data collection methods in place to promptly detect health care-associated infection (HAI) trends.

23. Standardized definitions for HAIs shall be used for internal outcome surveillance and for comparisons with external benchmarks.

24. The health care organization shall follow targeted process indicators of significance to the organization. Legislated requirements shall be fulfilled.

25. The health care organization shall apply epidemiological principles to surveillance data to investigate the source/cause of HAIs, identify risk factors for infection, analyze trends, identify clusters and outbreaks and make recommendations for improvement based on findings.

26. The health care organization shall share surveillance information widely and in a timely manner.

2.4 ANTIMICROBIAL STEWARDSHIP

27. IPAC staff shall actively support antimicrobial stewardship in the health care organization.

2.5 HAND HYGIENE PROGRAM

28. The health care organization shall have an organization-wide hand hygiene program that includes administrative leadership, protocols, procedures and support.

29. There shall be a multidisciplinary approach to the evaluation, selection and purchase of hand hygiene agents.

30. Hand hygiene resources shall be readily available and accessible at point-of-care.

31. Hand hygiene education shall be provided to all individuals working in the health care organization.

32. There shall be a process to measure hand hygiene compliance that includes monitoring and feedback.

2.6 PATIENT FLOW

33. IPAC staff shall be involved in decision-making when patient placement, accommodation and flow is hampered by the presence of infectious disease.

2.7 OUTBREAK MANAGEMENT

34. The health care organization shall have protocols and procedures for outbreak detection, identification, investigation, response and control.

35. The health care organization shall identify outbreaks of infectious diseases, including sentinel organisms, in a timely manner.

36. Outbreaks in the health care organization shall be managed by a multidisciplinary team that includes IPAC representation and organizational leadership.

37. Infection control professionals (ICPs) shall be involved in the analysis and evaluation of outbreaks in the health care organization.

38. Access to timely microbiology laboratory reports shall be provided during an outbreak.

39. There shall be a communications strategy in place during an outbreak that includes dissemination of timely information and outbreak status, both internally and externally.

40. The health care organization shall use the results of outbreak investigations to make improvements.

2.8 EMERGENCIES, DISASTERS AND MAJOR INCIDENTS

41. There shall be a written response plan with input from IPAC staff to address IPAC issues related to emergencies, disasters and incidents.

42. The emergency management committee shall have IPAC representation to address specific issues related to the prevention and control of infections during the emergency.

43. The emergency response plan shall include IPAC-related emergency response training and exercises appropriate to staff responsibilities and ensure that adequate resources are available for the training of all working staff.

2.9 ROLE OF OCCUPATIONAL HEALTH IN THE IPAC PROGRAM

44. The health care organization's leaders shall provide support for IPAC-related health and safety requirements as a strategic priority within the organization and ensure that IPAC program protocols and procedures are incorporated into the fabric of the work environment.

45. Health and safety protocols relating to the IPAC program comply with relevant legislation, guidelines and best practices.

46. The IPAC component of the Occupational Health Services (OHS) program shall be developed jointly by OHS and IPAC staff.

47. There shall be a process for evaluating health care workers for communicable diseases at hire, following exposure and additionally as required. This process will include a means to maintain documentation of immunity status.

48. There shall be a process to evaluate potential IPAC risks in the workplace and to ensure that controls are in place to manage the risks.

49. There shall be a vaccination protocol and procedure for health care workers.

50. There shall be a process and/or protocol and procedures to prevent staff from working while ill with a communicable disease.

51. The health care organization shall provide counselling, follow-up and work restriction recommendations for IPAC-related injuries resulting in exposure to infectious agents.

52. There shall be a sharps injury prevention program in place that includes the use of safety-engineered devices for sharps and other high-risk materials.

53. Personal protective equipment (PPE) shall be readily available and easily accessible.

54. The health care organization shall provide training in the appropriate selection, use, removal and disposal of PPE.

55. There shall be a respiratory protection program in place in the health care organization.

56. There shall be a hand care program in place for staff in the health care organization.

2.10 IPAC PROGRAM PROTOCOLS AND PROCEDURES

57. There shall be organizational-wide IPAC program protocols and procedures that are current, evidence-based, are in accordance with organizational priorities and are accessible to all staff, volunteers, students and others who work in the health care organization.

58. IPAC program protocols and procedures are linked to organization-supported educational programs with action plans and clearly defined accountability for implementation**.**

59. The health care organization's services/clinics/departmental protocols and procedures shall include IPAC staff input and interventions to prevent and control IPAC risks.

2.11 IPAC PROGRAM RESEARCH INITIATIVES

60. IPAC staff shall participate in quality improvement initiatives and/or research.

61. Results of IPAC program quality improvement initiatives and/or research shall be shared with key stakeholders.

62. Results of IPAC program quality improvement initiatives and/or research shall be incorporated into the IPAC program.

SECTION 3: IPAC PROGRAM FOUNDATIONAL FRAMEWORK

3.1 IPAC PROGRAM GOVERNANCE AND LEADERSHIP

63. The IPAC program shall be an essential part of governance and maintain a high clinical and management profile.

64. The governing Board shall identify the IPAC program as integral to the health care organization's strategic plan to improve quality and patient and staff safety.

65. The IPAC program shall be positioned in the organization such that there is an effective reporting conduit to senior management.

66. The health care organization shall have a structured process for mitigating infectious disease risks.

3.2 IPAC PROGRAM ADMINISTRATION

67. The IPAC program shall be developed in collaboration with key stakeholders in the health care organization.

68. IPAC program deliverables shall be based on the acuity, complexity and care activities of the health care organization.

69. IPAC program goals shall be evidence-based.

70. IPAC program goals shall have measurable objectives that are reviewed/revised annually.

71. There shall be a multidisciplinary IPAC committee that reports to senior management, to support the IPAC program.

72. The IPAC committee shall set annual goals for the IPAC program, advocate for resources to accomplish program goals, review IPAC program quality improvement initiatives and evaluate achievement of IPAC program deliverables.

73. The IPAC program's information management protocols and plans shall meet current information needs, anticipate future information needs and enhance IPAC program performance.

74. The use of confidential patient information for IPAC program purposes shall comply with federal and provincial legislation and ethical standards of privacy and confidentiality.

75. The health care organization shall regularly review the resources needed to support the IPAC program.

76. The IPAC program shall have the support of an accredited microbiology laboratory.

77. There shall be appropriate financial resources allocated to the IPAC program.

78. The IPAC program shall have sufficient support staff to meet the IPAC program goals of the health care organization.

79. The health care organization shall dedicate and protect ICP hours for the IPAC program appropriate to the acuity and volume of care in the health care organization.

80. ICPs shall be supported by the health care organization to maintain competency in IPAC practice.

81. ICPs shall be certified in infection prevention and control when eligible.

82. The health care organization shall have access to a qualified IPAC physician to provide input into the IPAC program.

83. IPAC staff shall have access to intellectual resources required to satisfy the functions of the IPAC program.

84. IPAC staff shall be equipped with current electronic tools to support the IPAC program.

85. IPAC staff shall have electronic access to internal and external communication resources for the purpose of collaboration and education.

3.3 IPAC PERFORMANCE MANAGEMENT

86. The health care organization's leaders shall develop and implement a defined and integrated quality management system to assess IPAC performance and improve IPAC quality in the health care organization.

87. ICPs and other IPAC staff shall demonstrate competence in infection prevention and control.

88. An IPAC performance management program shall be evident in the health care organization, including an IPAC performance review for staff*.*

3.4 ASSESSMENT AND EVALUATION OF THE IPAC PROGRAM

89. There shall be a process to evaluate the quality of the IPAC program.

90. The health care organization shall make ongoing improvements to its IPAC program.

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