



*An Assessment of Infection Control  
Activities across the Province of British  
Columbia*

**Part Two: Framework for Staffing and  
Core Competencies Training Designed for  
Infection Control Programs**

**March 2007**

# Acknowledgements

This document could not have been produced without the dedicated work of the members of the PICNet Needs Assessment Working Group:

- Dr. Elizabeth Bryce, Co-chair, Vancouver Coastal Health
- Colleen Hawes, Co-chair, Fraser Health Authority
- Joanne Archer, Northern Health Authority
- Dr. Ian Connell, Fraser Health Authority
- Dan Costello, Vancouver Island Health Authority
- Bruce Gamage, Provincial Health Services Authority
- Nicki Gill, Interior Health Authority
- Janice de Heer, Interior Health Authority
- Jacqueline Hlagi, Provincial Health Services Authority
- Betty Johnson, Fraser Health Authority
- Dave Keen, Fraser Health Authority
- Margaret Litt, Coordinator, Provincial Infection Control Network
- Colleen McEachern, Interior health Authority
- Shelley Myatovic, Interior Health Authority
- Phyllis Stoffman, Provincial Infection Control Network (Consultant)
- Dr. Annalee Yassi, University of British Columbia

We welcome your comments and questions about this document. Please direct your correspondence to:

Margaret Litt, Coordinator  
Provincial Infection Control Network (PICNet)  
Room 2083  
655 West 12<sup>th</sup> Ave.,  
Vancouver, British Columbia  
V5Z 4R4  
[picnet@bccdc.ca](mailto:picnet@bccdc.ca)

## Table of Contents

<a href="#">INTRODUCTION .....</a>	<a href="#">4</a>
<a href="#">SECTION ONE .....</a>	<a href="#">6</a>
DEVELOPING AN INTEGRATED INFECTION CONTROL PROGRAM .....	6
FOUR CORE ELEMENTS IN AN INFECTION CONTROL PROGRAM .....	6
COST EFFECTIVENESS OF AN EFFECTIVE INFECTION CONTROL PROGRAM .....	8
<a href="#">SECTION TWO.....</a>	<a href="#">10</a>
STAFFING RATIOS FOR INFECTION CONTROL .....	10
CURRENT STAFFING.....	10
STAFFING RECOMMENDATIONS .....	10
<a href="#">SECTION THREE.....</a>	<a href="#">14</a>
TRAINING AND ORIENTATION .....	14
<a href="#">SECTION FOUR.....</a>	<a href="#">17</a>
CORE COMPETENCIES FOR INFECTION CONTROL .....	17
COMPETENCY TABLE FOR HEALTH CARE WORKERS .....	20
PROFESSIONAL COMPETENCY STANDARDS.....	26
<a href="#">SECTION FIVE.....</a>	<a href="#">32</a>
TRAINING MODULES CURRENTLY IN USE IN BC .....	32
TRAINING MODELS DEVELOPED IN OTHER JURISDICTIONS THAT CAN BE ADAPTED FOR USE IN BC: .....	34
<a href="#">APPENDIX 1.....</a>	<a href="#">37</a>
DEFINITIONS OF AGREED UPON ROLES AND RESPONSIBILITIES ACROSS THE CONTINUUM OF HEALTHCARE IN BC FOR STAFF WORKING IN INFECTION PREVENTION AND CONTROL.....	37
<a href="#">APPENDIX 2.....</a>	<a href="#">46</a>
CURRENTLY AVAILABLE INFECTION CONTROL EDUCATIONAL AND TRAINING RESOURCES .....	46
<a href="#">REFERENCES .....</a>	<a href="#">56</a>

## Introduction

PICNet's **Assessment of Infection Control Activities across the Province of British Columbia March 2006** identified three key priority areas for intervention:

- A. Surveillance/Best Practices,
- B. Staffing
- C. Education/Training.

This document addresses **staffing and education/training**. The assessment survey results found:

1. *Insufficient number of skilled staff to provide infection control services*
2. *Inconsistent standards for the education and training needed to develop the skill set for providing infection control services.*

This document provides a framework for health authorities to establish standards for staffing infection prevention and control programs (IPC) and fulfilling infection control training needs for *all health care workers across the continuum of care*.

The requirements for a successful infection prevention and control program include:

- 1) core elements of the infection control program
- 2) core competencies for:
  - a) designated infection control program staff
  - b) **all health care workers**
- 3) roles and responsibilities for personnel involved in IPC
- 4) staffing ratios and staffing recommendations

This framework outlines the four core elements necessary for an integrated infection control program across the continuum of care: (Acute, Residential, Transitional and Home and Community). Health Authorities can then use this framework to identify gaps in their current programs (outlined in PICNet's *Assessment of Infection Control Activities across the Province of British Columbia March 2006* document) and requirements for best practices.

This approach is similar to other jurisdictions in North America, Europe, and Australia where strategies to control healthcare associated infections are based upon: <sup>1</sup>

---

<sup>1</sup> Winning Ways: Working Together To Reduce Healthcare Associated Infection In England. Report From The Chief Medical Officer, Department of Health, UK. December 2003.

1. Setting clear standards for infection control.
2. Developing high quality surveillance systems.
3. Making healthcare associated infections a key feature of quality and patient safety programs.

### **Infection Prevention and Control Team**

**All** HCWs are members of the infection prevention and control team. IPC is everyone's responsibility –the designated IPC program staff are responsible for monitoring the policies, formally educating health care staff, and performing ongoing surveillance of hospital acquired infections, but the actual work of preventing infections is up to **all** the nurses, allied health professionals, physicians, housekeeping and maintenance workers, and all support staff who have any role in patient care—direct or indirect.

*Everyone has a role in preventing and controlling infections. It is up to the health care organizations to provide their staff with the tools they need to play this role – this includes training, ready access to hand hygiene products and feedback so they know how they are doing.*

# SECTION ONE

## Developing an Integrated Infection Control Program

The development of an integrated infection prevention and control program *throughout all health care sectors in BC* is a priority. Changes in the Canadian healthcare system over the past decade have contributed to the increased risk for HAI – higher patient acuity in both acute and residential care, more invasive procedures, increase in numbers of vulnerable high risk patients: the “elderly elderly” (over 85), and immune-suppressed transplant and oncology patients.

### Four Core Elements in an Infection Control Program <sup>2</sup>

- I. Developing, Implementing and Monitoring Surveillance of Healthcare Associated Infections.
- II. Setting and Recommending Policies and Procedures to Prevent Adverse Events.
- III. Intervening Directly to Prevent the Transmission of Infectious Disease.
- IV. Receiving and Maintaining Adequate Resources to Support Effectiveness of the Program.

*(See Appendix 1, Page 2 for the PICNet Working Group’s consensus on confirmed functions within infection control.)*

#### **I. Developing, Implementing and Monitoring Surveillance Of Health Care Associated Infections.**

- The collection, analysis, and dissemination of surveillance data has been shown to be the single most important factor in the prevention of nosocomial infections (hospital acquired infections).<sup>3</sup>
- A well designed surveillance program, based on sound epidemiological principles, is essential for performing all other necessary activities of the infection control program<sup>4, 5</sup>

---

<sup>2</sup>Adapted from SHEA Position Paper: Requirements for Infrastructure and Essential Activities of Infection Control and Epidemiology in Hospitals: A Consensus Panel Report, Checker, Brimball, Buck, et al. Infection Control & Hospital Epidemiology, Feb. 1998; 19; 114-124.

<sup>3</sup> Haley RW, Culver DH, White JW, Morgan WM, Emori TG, Munn VP, et al. The Efficacy of Infection Surveillance and Control Programs in Preventing Nosocomial Infections in US Hospitals Am J Epidemiol. 1985 Feb; 121(2):182-205.

<sup>4</sup> Lindsey E. Nicole MD FRCPC, Editor in Chief, University of Manitoba, Winnipeg Manitoba Infection Control In Acute Care Facilities: Evidence-Based Patient Safety. The Canadian Journal Of Infectious Disease And Medical Microbiology, May/June 2001 Volume 12 Number 3.

<sup>5</sup> Checker, Brimball, Buck, et al. SHEA Position Paper: Requirements for Infrastructure and Essential Activities of Infection Control and Epidemiology in Hospitals: A Consensus Panel Report. Infection Control & Hospital Epidemiology, Feb. 1998; 19; 114-124.

*Both PICNet's Assessment of Infection Control Activities across the Province of British Columbia; and the Auditor General's Report on Infection Control 2006 found that the health authorities do not have integrated or effective systems in place for surveillance.*

(Refer to PICNet's *Surgical Site Infection Surveillance Working Group's Strategic Plan and Options Paper*, November 2006 for the proposed plan to remedy this situation.)

## **II. Setting and Recommending Policies and Procedures to Prevent Adverse Events.** These policies and procedures must be:

- i. based on scientifically valid infection prevention and control measures
- ii. practical to implement
- iii. regularly reviewed to maintain accuracy and validity
- iv. monitored for compliance
- v. adequate to ensure compliance with regulations, guidelines, and accreditation requirements
- vi. developed collaboratively with occupational health personnel policies to ensure that procedures are in place to protect both staff and patients from exposure to infectious illness.

## **III. Intervening Directly To Prevent The Transmission Of Infectious Disease:**

Outbreak investigation and control including staff education and training. *Refer to Section Two*

## **IV. Receiving and Maintaining Adequate Resources To Support Effectiveness of The Program:**

**Adequate resources include:**

### **A. A Multi-Disciplinary Infection Control Program**

1. Infection Control Practitioner(s)/Manager
2. Infection Control Physician(s)/Officer
3. MHO
4. Communicable Disease Nurse(s)
5. Epidemiology Assistant(s)
6. Medical Microbiologist/Virologist(s)
7. Occupational Health Professional(s)
8. Senior Administrative Director
9. Administrative/Secretarial Assistance.

A trained hospital epidemiologist or dedicated infection control physician is an essential component of an effective infection control program. Yet with the exception of Vancouver Coastal Health, PICNet's *Assessment of Infection Control*

*Activities across the Province of British Columbia found that the health authorities lack dedicated infection control physicians to lead their programs<sup>6</sup>*

**B. Computer Support Personnel and Equipment**

**C. Medical Microbiology Laboratory Support:**

Lab support for identifying and reporting isolates from clinical specimens, including a budget sufficient for typing during investigation of outbreaks.

**D. Reference Laboratory Testing Available On Request from Provincial Lab.**

**E. Office Space**

**F. Commitment from Administrative/Senior Management and Clinical Leaders.**

*The commitment should include membership and involvement in the Infection Control Committee.*

1. The Infection Control Committee in an acute care hospital should include representatives from the major departments, i.e., Medicine, Surgery, Operating Room, Patient Care Services, Pharmacy, Rehabilitation Therapy, Laboratory Medicine, Sterilization and Reprocessing, Central Stores, Maintenance, Quality Improvement, Risk Management, Administration, Occupational Health, in addition to the Infection Control Program Staff.
2. In a residential or community care program it will include other representatives as needed and on a consultative basis in addition to administration and infection control staff.

*The Committee, through its chairperson or physician members, needs to have the authority to institute any appropriate control measures or studies when there is reason to believe that **a danger exists to patients or personnel**<sup>7</sup>.*

**Cost Effectiveness of an Effective Infection Control Program**

- A 2003 US study showed that the costs of maintaining one hospital bed for a year would support a full hospital infection control program in a 250-bedded hospital.<sup>8</sup>

---

<sup>6</sup> Preliminary Results of the 2006 Resources for Infection Control in Healthcare (RICH) Survey. D. Zoutman, B.D. Ford, Department of Pathology and Molecular Medicine. Queen's University, Infection Control Service, Kingston General Hospital.,

<sup>7</sup> Adapted from Harborview Medical Center, Seattle, WA Infection Control Manual



- PICNet's *Surgical Site Infection Surveillance Working Group's Strategic Plan and Options Paper*, November 2006 demonstrated that, even a 15% reduction in the surgical site infection rate will save the healthcare system \$2,775,000 per year – far more than the costs of establishing a province-wide surgical site infection surveillance program.
- In Ontario the provincial commission investigating the SARS outbreak in 2003 found that poor hospital infection-control procedures led to the epidemic in the Toronto area. This outbreak crippled tourism and Ontario is still feeling the economic effects in 2007. It is estimated that the SARS outbreak cost Toronto US\$1 billion in lost tourism <sup>9</sup>

*Even the possibility or rumour of an infectious disease outbreak in BC could have potentially devastating effects on the success of the 2010 Winter Olympics.*

---

8 Nettleman MD. Cost and Cost Benefit Of Infection Control. In: Wenzel RP, ED. Prevention and Control of Nosocomial Infections, 4th edition. Philadelphia: Lippincott, Williams, and Wilkins, 2003:p.33-41.

9 SARS Commission Final Report, The Honorable Mr. Justice Archie Campbell, Commissioner, Ontario January 2007

## SECTION TWO

### Staffing Ratios for Infection Control <sup>10</sup>

A general guideline for staffing infection control programs has been in place in many health care facilities in the United States and Canada since 1985. This ratio was one infection control professional (ICP) for every 250 occupied acute care beds.

However it is clearly evident to all that in 2007 the health care system, patient population, and expectations regarding the work of infection prevention and control programs have substantially changed from 1985. <sup>11</sup>

### Current Staffing

*PICNet's Assessment of Infection Control Activities across the Province of BC (March 2006)* inventoried infection control activities across the continuum of health care in BC. Most areas reported they had insufficient staff to provide effective infection control services while at the same time facing new and expanded responsibilities.

### Staffing Recommendations

Infection control responsibilities have expanded beyond the traditional acute care setting. Therefore several factors besides the number of occupied beds (average daily census) must be considered when determining staffing requirements and making recommendations.

#### These factors include:

- Scope of the program
- Complexity of the health care facility or system
- Characteristics of the patient population - patient acuity
- Unique or urgent needs of the facility and community
- Economic realities of the health care system
- Demographics of the Workforce
- Geography

In BC, because ICPs are often responsible for several facilities, travel time must be factored in when determining ICP staffing needs.

---

<sup>10</sup> *Staffing Requirements for Infection Control Programs in US Health Care Facilities: Delphi project*, AJIC, Volume 30, Issue 6, Pages 321-333 (October 2002)

<sup>11</sup> Nettleman MD. *Cost and Cost Benefit Of Infection Control*. In: Wenzel RP, ED. *Prevention and Control of Nosocomial Infections*, 4<sup>th</sup> edition. Philadelphia: Lippincott, Williams, and Wilkins, 2003:p.33-41.

Adequate staffing for infection control also depends on adequate staffing in other areas. The major obstacles to adequately completing infection control functions are competing responsibilities and access to resources.<sup>12</sup>

Within the Province of BC, the workplace has been divided into four areas:

1. Acute care
2. Rehabilitation/transitional care
3. Residential facility
4. Home & community care

(See Appendix One for full definitions of these four areas.)

- This table provides an outline of suggested staffing ratios for ICPs in acute and residential care based on current literature.
- Adequate staffing requirements for the other areas will need to be individualized for and by each health authority.
- It may be realistic for one ICP to cover several non-residential programs and be able to adequately perform the essential and specific infection control responsibilities, if staff in these areas have access to up-to-date infection control training and are considered and treated as part of the infection control team.

***The most important requirement is that ICPs in all settings require formal infection control training***

Setting	Ratio of ICP's and IC Physicians	Responsibilities
Acute Care	<ul style="list-style-type: none"> <li>• 0.8 to 1.0 ICP per 100 to 175 occupied acute care beds<sup>13</sup></li> <li>• 1 Full Time Equivalent (FTE) infection control physician for every 1000 occupied acute care beds.<sup>14</sup></li> </ul>	<ol style="list-style-type: none"> <li>1. Staff Education</li> <li>2. Surveillance</li> <li>3. Professional Development</li> <li>4. Outbreak management</li> <li>5. Antimicrobial resistance management</li> <li>6. Committee work</li> <li>7. Administration of IPC program</li> <li>8. New products evaluations/consultation on renovation and construction projects</li> <li>9. Policy and Procedure development/implementation</li> <li>10. Communicable disease management</li> </ol>

<sup>12</sup> Ibid. *Staffing Requirements for Infection Control Programs in US Health Care Facilities: Delphi Project* AJIC, 2002; 30:321-33, p. 329.

<sup>13</sup> Learning from SARS - Renewal of Public Health in Canada A report of the National Advisory Committee on SARS and Public Health October 2003, p. 131. Dr. David Naylor, Dean of Medicine at the University of Toronto (Chair)

<sup>14</sup> The Management and Control of Hospital Acquired Infection in Acute NHS Trusts in England, Report by the Comptroller and Auditor General, John Bourn National Audit Office, Comptroller and Auditor General February 2000 P. 47, 2.29

<b>Residential Facility – This includes long term (complex) care facilities.</b>	One FTE ICP per 150 - 200 occupied beds in long term care <sup>15</sup>	<ol style="list-style-type: none"> <li>1. Staff Education</li> <li>2. Surveillance</li> <li>3. Professional Development</li> <li>4. Outbreak management</li> <li>5. Antimicrobial resistance management</li> <li>6. Committee work</li> <li>7. Administration of IPC program</li> <li>8. New products evaluations/consultation on renovation and construction projects</li> <li>9. Policy and Procedure development/implementation</li> <li>10. Communicable disease management</li> </ol>
<b>Rehabilitation / Transitional Care</b>	<ul style="list-style-type: none"> <li>• At least one ICP per program with access to external infection control “experts”<sup>10</sup> (Infectious disease MD)</li> </ul>	<ol style="list-style-type: none"> <li>1. Surveillance</li> <li>2. Outbreak Management</li> <li>3. Education</li> <li>4. Policies and procedures including dietary laundry, housekeeping</li> <li>5. Occupational health</li> <li>6. Resident health program</li> <li>7. Laboratory resources</li> </ol>

<b>Home &amp; Community Care</b>	<ul style="list-style-type: none"> <li>• At least one ICP/Communicable Disease Nurse per HSDA with access to external infection control “experts”<sup>10</sup> (Infectious disease MD)</li> </ul>	<ol style="list-style-type: none"> <li>1. Coordination of care as patients move from institutional to other health care sectors</li> <li>2. Surveillance of infectious diseases</li> <li>3. Community consultation</li> <li>4. Outbreak management</li> <li>5. Infection prevention and control education for formal and informal caregivers</li> <li>6. Orientation and continuing education of staff</li> <li>7. Marketing of basic infection and control measures (hand washing, vaccinations)</li> </ol>
----------------------------------	---	--

Home & Community Care refers to programs that provide assessment and/or care to clients in their home environment. (Individual homes, Assisted Living Facilities or Supportive Housing or Group Homes.) It includes: Home Care Nursing, Home Support, Adult Day Programs, Meal Programs, Respite Programs, Community Long Term Care Services, Respiratory, Home Rehab and others. It includes doctors’ and dentists’ offices, immunization clinics, walk-in-clinics, safe injection sites, street care workers, needle exchanges, alternative therapy settings, mental health facilities, forensic clinics, and public private partnership institutions.

## Occupational Health

<b>Ratio</b>	<b>Responsibilities</b>
<p><b>OH Nurses</b> Appropriate Occupational Health Nurse to number of worker ratios have not been established in the field of occupational health nursing. A lack of research in this area means there are no evidence-based guidelines or a consensus as to what the right numbers should be. At present there is a wide variability in job functions and industry specific</p>	<ol style="list-style-type: none"> <li>1. Documentation of new employee’s health status including immunization status</li> <li>2. Outbreak investigation including documentation of staff exposures and follow-up of staff prophylaxis and /or treatment and/or removal from work setting during incubation/infectious period following occupational exposures to communicable disease.</li> <li>3. Collaboration with ICP’s in educational and training for staff</li> </ol>

<sup>15</sup> Development of a Resource Model for Infection Prevention and Control Programs in Acute, Long Term, And Home Care Settings: Conference Proceedings of the Infection Prevention and Control Alliance. Am J Infect Control. 2004 Feb; 32(1):2-6. Morrison J; Health Canada, Nosocomial and Occupational Infections Section Health Canada, Building 6, PL 0601E2, Tunney’s Pasture, Ottawa, Ontario, Canada K1A 0L2  
[Judy.Morrison@hc-sc.gc.ca](mailto:Judy.Morrison@hc-sc.gc.ca)

demands. A consensus opinion for our <u>recommended ratio for BC healthcare is: one Occupational Health Nurse for every 6,000 to 7,000 employees, dedicated exclusively to infection control and prevention.</u> <sup>16</sup>	regarding use of PPE, exposure control plan
<b>Occupational Health Physicians</b> There are no official guidelines as to Occupational Health Physician (OHP) staffing in Canadian Health Care. A ratio of one OHP for every 8 to 12,000 FTE employees is reasonable in BC to allow ample time to direct and consult in a comprehensive manner to an Occupational Health Infection Control program. . <sup>17</sup>	The OHP will function as a director and/or consultant to a comprehensive Occupational Health Program: <ol style="list-style-type: none"> <li>1. Policy and Procedure Development</li> <li>2. Communicable Disease Management</li> <li>3. Outbreak Investigation</li> <li>4. Surveillance</li> <li>5. Assessment of Employee Health and Immunization Status</li> <li>6. Committee Work (ICC/Joint Occupational Health And Safety Committees)</li> <li>7. Consultation in Program Development (i.e. fit testing, safe needle assessment, etc.)</li> <li>8. Staff Education</li> <li>9. Professional Development</li> </ol>
<b>Occupational Hygienists</b> At least one occupational hygienist per health authority dedicated solely to preventing the occupational spread of infectious agents in the workplace.	<ol style="list-style-type: none"> <li>1. Provide advice and recommendations on control measures for the workplace (engineering controls, administrative controls, and personal protective equipment) in conjunction with the infection control team.</li> <li>2. Ensure application and assist with coordination and maintenance of required activities related to controls (e.g. education and fit-testing of N95 filtering face piece respirators).</li> </ol>
<b>Occupational Health and Safety Professionals</b> At least one health and safety professional for every 5000 staff that requires a fit-test.	Provide N95 filtering face piece respirator fit-testing and education / training services to staff based on assessments conducted in conjunction with the Occupational Hygienist(s) and the Infection Control team.

**Non-Directly Funded Facilities** The requirements for infection control staffing and training do not differentiate between directly and non-directly funded facilities. At present there is no oversight regarding infection control standards for non-directly funded facilities. PICNet proposes that infection control training for all staff and infection control personnel become a condition of licensure for these facilities. If this is enacted, then Public Health will be responsible for ensuring consistency in the various non-directly funded facilities.

---

<sup>16</sup> Consensus Opinion, Occupational Health Experts on PICNet Needs Assessment Working Group, 2007

<sup>17</sup> Consensus Opinion, Occupational Health Experts on PICNet Needs Assessment Working Group, 2007

## SECTION THREE

### Training and Orientation

#### Introduction

During the SARS outbreak in Ontario it became apparent that many healthcare workers had limited up-to-date training and background knowledge in the principles of infection control, including the proper use of personal protective equipment (PPE).

The spread of SARS demonstrated that such training must be made accessible to *all frontline workers* through a variety of vehicles and on a variety of levels.<sup>18</sup>

#### This includes:

1. infection control training as part of a mandated workplace orientation
2. regular continuing education
3. formalized training programs for infection control practitioners offered at educational institutions.

Given the potential for infectious disease outbreaks in the future in BC, education and support for healthcare workers in managing infection risks must become a **top priority**.

#### Recommendations

##### Universal Training:

Infection control training must become a part of work place orientation for all healthcare workers.

##### Essentials of Training include:

##### Orientation

Mandatory infection control education including specific techniques such as hand hygiene, gloving, gowning and masking procedures as part of orientation for all new staff (including physicians) to healthcare facilities.

Training in basic principles of infection control in the workplace orientation as outlined in the core competencies table.

##### Training across all groups and health care areas

Infection control training should reach not just nurses and physicians, but all other groups and other areas.

##### Groups

1. Rehabilitation therapists
2. Social Workers

---

<sup>18</sup> For The Public's Health, Initial Report of The Ontario Expert Panel on SARS and Infectious Disease Control  
p. 91 Chapter 2, Dec 2003

3. Administrators
4. Risk Managers
5. Nursing Assistants
6. Ward Aides
7. Housekeeping staff and management
8. Volunteers
9. Students
10. Public health personnel
11. First responders

### **Health Care Areas**

1. Acute Care
2. Rehabilitation/Transitional Care
3. Residential Facility
4. Home & Community Care

### **Continuing Education/ in services**

- All infection control education needs to be universally available to and accessible by **all personnel**.
- New and critical information should be available and transmitted to healthcare providers as part of a continuing education process.
- The information is modified and customized to different healthcare providers' and auxiliary workers' roles within the facility or organization.

### **Need for accountability:**

An accountability mechanism is part of any education process. Options on ways to implement accountability:

1. Infection control should be a mandatory component of workplace training, with documentation that employees have received the training, similar to that in place for the Workplace Hazardous Materials Information Service (WHMIS).
2. A functional infection control program, including training for all staff, should be a condition of licensure for all non-directly funded health care organizations.
3. Annual testing or incorporation of infection control compliance into performance reviews.

Infection control training could be tied to professional regulatory colleges and associations, perhaps as part of the licensing process, or as a condition of appointment or reappointment for hospital privileges. Linking training to the licensing process could facilitate more consistent infection control education for

professionals, such as family physicians and community pharmacists, who are not associated with an institution or facility.<sup>19</sup>

### **University and College Curricula**

Our review noted the lack of standardized infection control training in the curricula of BC universities and colleges that offer healthcare programs, including post-graduate residency programs and clinical placements. (Appendix 2) As a result, many students and new graduates are entering the healthcare sector unaware of proper infection control practices. Instilling infection control principles early on in the education of healthcare workers is the key to ensuring that these principles become part of the healthcare culture.

### **Recommendations**

1. Integrating infection control training modules into all relevant curricula in academic and clinical programs.
2. Making the successful completion of appropriate examinations necessary for graduation.<sup>20</sup>

---

<sup>19</sup> *This method has been the law in New York State since 1992: Mandated Training Related To Infection Control, New York State Education Department, Office of the Professions. The State of New York has a requirement that certain healthcare professionals licensed in New York State receive training on infection control and barrier precautions. The initial training includes the six core elements developed by the New York State Education Department. This law affects every dental hygienist, dentist, licensed practical nurse, optometrist, physician, physician assistant, podiatrist, registered professional nurse and specialist assistant practicing in New York State. In March, 1992, the New York State Board of Regents expanded the definition of unprofessional conduct to include failure to follow appropriate infection prevention techniques in healthcare practice.*

<sup>20</sup> *“Training programs (nursing, medical school) must include infection control in their curricula, and should make it a requirement of graduation to demonstrate that trainees understand and can follow these practices.” P. 96 Chapter 2, **For the Public’s Health**, Initial Report of The Ontario Expert Panel On SARS and Infectious Disease Control, Dec 2003*



## SECTION FOUR

### Core Competencies for Infection Control

In order to establish education and training needs there must be an agreed upon set of core competencies for infection control.

This section addresses the establishment of:

1. Basic skills (core competencies) for all **health care staff** across the continuum of health care in BC

And

2. Professional standards of practice for **staff working in specific infection control and prevention programs.**

Core competencies will establish the minimum knowledge and abilities we expect staff to have in order to adequately perform in their roles.

*We recommend adapting a set of common core competencies that apply to all health care workers.*

The basic core competencies will then serve as a platform for adding occupation and facility specific competencies.  
We acknowledge that different competencies are needed for specialists in IC, front line workers, and auxiliary staff.

The objective of establishing core competencies is to identify the specific skill sets and knowledge that health care workers need to be able to protect themselves, their patients, and visitors. These core competencies and standards of practice will provide the basis for subsequent planning of infection control educational programs.

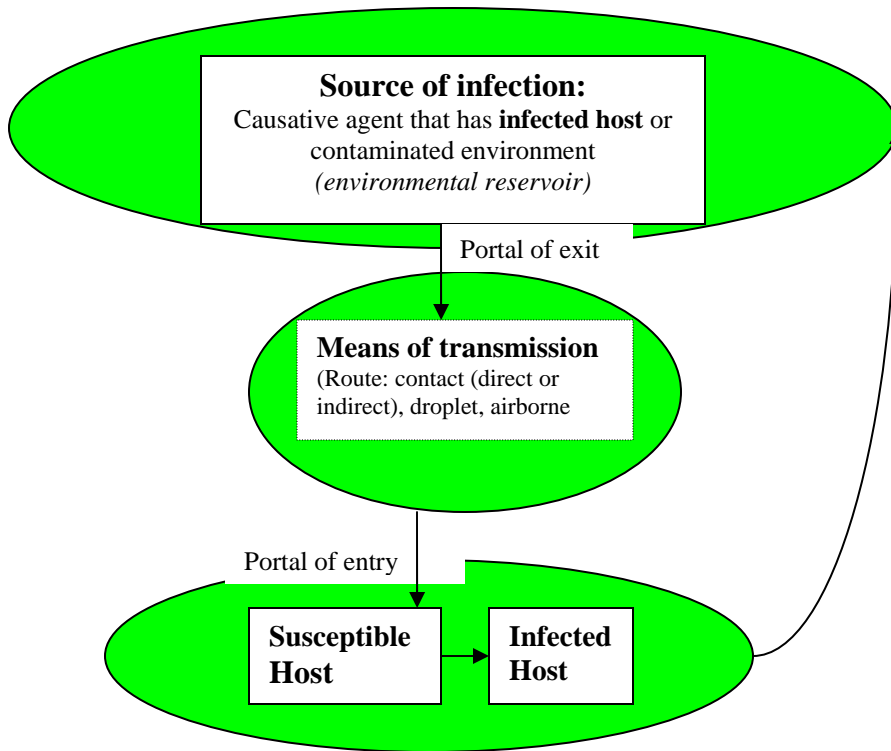
We have divided this section into *core* competencies for:

1. All HCWs.
2. *Additional competencies* for registered nurses, physicians, rehab and respiratory therapists.
3. *Professional* competencies for those individuals working in Infection Prevention and Control (IPC) programs.

The core of effective infection control practice and central to the seven core competencies is understanding:

**The chain of transmission and knowing which infection control measures are needed to break this chain:**

1. Source of infection ( infected host or environmental reservoir)
2. Route or means of transmission
3. Susceptible host



**All healthcare workers must know:**  
*How to break the chain of transmission in any one place in order to stop infections from spreading.*

**Seven Core Competencies**

1. Basic epidemiology and medical microbiology – what causes infectious disease and how infections are spread – *infected host or environmental reservoir and route of transmission*
2. **Critical assessment skills – how to assess infectious risk and put control measures into place appropriately-- where and how to break the chain of transmission**
3. Hand hygiene – *reducing reservoir*
4. Routine practices and transmission-based precautions – *preventing transmission by putting barriers between the source of infection and the susceptible host*
5. Personal protective equipment - *preventing transmission preventing transmission by putting barriers between the source of infection and the susceptible host*
6. Sterilization and disinfection – *reducing environmental reservoir*
7. Personal safety – protecting themselves from exposure--familiarity and comfort with the exposure control plan - *preventing transmission and reducing host susceptibility*

*Once the HCW understands this basic concept of how to break the chain of transmission, then the HCW will be able to use critical assessment skills related to exposure to and management of infectious agents in order to understand how to break the chain of transmission no matter who the patient or what the situation.*

Health care workers who have the tools to assess their situation and are confident in choosing which infection control measures they can use to break the chain of transmission and thus protect themselves and the patients are much less likely to experience stress related to fear of exposure to infectious agents.

## Competency Table for Health Care Workers

(Adapted From CHICA Canada Infection Prevention and Control Core Competencies for Health Care Workers: A Consensus Document Compiled By: E. Henderson)

Area of Competency	Detailed Core Competency
<p><b>1. Basic Microbiology and Epidemiology</b></p> <p><b>Core Competency Category</b>  <b>Understands basic microbiology and epidemiology and how infections can be transmitted in health care settings.</b></p>	<p><b>A health care worker competent in Infection Control can:</b></p> <ul style="list-style-type: none"> <li>a) Understand and identify the three components in the chain of infection transmission <ul style="list-style-type: none"> <li><b>I. presence of an infectious organism</b></li> <li><b>II. route of transmission of the organism</b></li> <li><b>III. susceptible host</b></li> </ul> </li> <li>b) Recognize that microorganisms can be bacteria, viruses, fungi, etc and that they cause different illnesses and vary in terms of virulence</li> <li>c) Describe the routes of transmission of infectious organisms (how they move from one person to another) i.e. Direct and indirect contact, droplet, airborne routes</li> <li>d) Recognize a susceptible person.</li> <li>e) Identify reportable/notifiable diseases</li> <li>f) Define Antibiotic Resistant Organisms including local protocols</li> <li>g) Describe Respiratory Etiquette and its importance</li> <li>h) Recognize clinical syndromes for application of infection control algorithms for management of potentially communicable disease.</li> </ul>
Area of Competency	Detailed Core Competency
<p><b>2. Hand Hygiene</b></p> <p><b>Core Competency Category</b>  <b>Understands the importance and reason for Hand Hygiene/Hand washing</b></p>	<p><b>A health care worker competent in Infection Control can:</b></p> <ul style="list-style-type: none"> <li>a) Recognize that hand hygiene is the best method of preventing transmission of potentially infectious organisms by reducing the environmental reservoir and thus preventing indirect and direct contact.</li> <li>b) Identify when it is necessary to perform hand hygiene.</li> <li>c) Identify the steps to proper hand hygiene and hand hygiene product use.</li> <li>d) Demonstrate appropriate hand hygiene with waterless hand rub product as primary method of decontaminating hands and hand washing when hands are visibly soiled.</li> </ul>

8/30/2007

Area of Competency	Detailed Core Competency A health care worker competent in Infection Control can:
<p><b>3. Routine Practices and Transmission-based Precautions</b></p> <p>Core Competency Category</p> <p>Understands the activities of Routine Practices/Standard Precautions.</p>	<p>a) Assess the need for Routine Practices based on what activities are to be done with a patient.</p> <p>b) Appreciate that Routine Practices are the minimum practice standards/activities.</p> <p>c) Understand that routine/standard precautions are the key to preventing transmission of organisms among health care workers, physicians, patients and visitors</p>
<p>Core Competency category</p> <p>Understands Transmission Based Precautions (Additional Precautions): why and when they are used</p>	<p>d) Identify and apply Additional Precautions, as well as Routine Practices, for clinical presentations of certain potential pathogenic organisms.</p> <p>e) Identify that the route of transmission of the organism determines which type of precaution category is needed (i.e. Contact Precautions for organisms spread by the contact route of transmission)</p> <p>f) Knows how and when to operate a negative/positive pressure room</p>
Area of Competency	Detailed Core Competency A health care worker competent in Infection Control can:
<p><b>4. Personal Protective Equipment</b></p> <p>Core Competency category</p> <p>Knows and selects appropriate Personal Protective Equipment (PPE) for their jobs</p> <p>Demonstrates appropriate use of PPE.</p>	<p>a) List the appropriate and required PPE items for specific activities, clinical presentations and specific diseases.</p> <p>b) Demonstrate how to put on and take off non-sterile, disposable gloves, protective eyeglasses, face shields, protective gowns, and regular and N95 or equivalent filtering face piece respirator masks (as per job activity requirement).</p> <p>c) Demonstrate the use of a NIOSH equivalent N95 filtering face piece respirator mask.</p> <p>d) Has been fit tested <i>in the past year</i> where risk assessment requires the use of a N95 or equivalent respirator mask and can apply the fit check each time the item is worn.</p>
Area of Competency	Detailed Core Competency A health care worker competent in Infection Control can:

<p><b>5. Sterilization and Disinfection</b></p> <p><b>Core Competency category</b></p> <p>Recognizes that reusable equipment that has been in direct contact with a patient should be cleaned and reprocessed before use in the care of another patient.</p> <p>Appreciates the differences between clean, disinfected (low, medium, and high-level) and sterile items.</p>	<p>a) Understand the rationale for cleaning, disinfecting, or sterilizing patient-care equipment by distinguishing among the three general categories (critical items, semi critical items, and non critical items) based on the potential risk of infection involved in their use.</p> <p>I. Non critical items are those that either do not ordinarily touch the patient or touch only intact skin. Such items include crutches, bed boards, and blood pressure cuffs. These items rarely, if ever, transmit disease. These items require cleaning with soap and water or a hospital-grade detergent disinfectant between patients. This will physically remove organic material or soil from the objects.</p> <p>II. Semi critical items come in contact with intact mucous membranes; they do not ordinarily penetrate body surfaces. Examples are endoscopes, endotracheal tubes. These items require thorough cleaning to remove organic material followed by treatment with an appropriate chemical disinfectant or steam sterilization to remove or destroy harmful microorganisms.</p> <p>III. Critical items are instruments or objects that are introduced directly into the bloodstream or into other normally sterile areas of the body. Critical items must be thoroughly cleaned to remove organic material and then sterilized to destroy all forms of microbial life.</p> <p>(Disinfection and Sterilization of Patient-Care Equipment, CDC, Infection Control Guidelines, US Department of Health and Human Services)</p> <p>b) Recognize that not all cleaning products or disinfectants are the same.</p>
<p>Knows the difference between regular and biohazard wastes.</p>	<p>c) Identify where items are disposed of (regular garbage in a landfill and biohazard items are incinerated).</p> <p>d) Identify selected items as regular garbage or items for biohazard disposal.</p> <p>e) Identify which containers are used for regular and biohazard wastes.</p>
<p><b>Area of Competency</b></p>	<p><b>Detailed Core Competency</b></p> <p><b>A health care worker competent in Infection Control can:</b></p>
<p><b>6. Personal Safety</b></p> <p><b>Core Competency category</b></p> <p><b>I. Knows how to appropriately manage sharps and blood and body fluids and is familiar with the Exposure Control Plan.</b></p>	<p>a. Explain how to safely manage blood and body fluids</p> <p>b. Describe how to safely manage and dispose of sharps</p> <p>c. Describe the exposure control plan including first aid for puncture exposures and/or splashes to the eyes, nose or mouth.</p> <p>d. Recognize that prompt assessment is required for any work-acquired blood or body fluid exposure.</p> <p>e. Appreciate that vaccines can prevent certain infections in vulnerable persons.</p>

<sup>21</sup> Blood and Body Fluids Best Practices Program / Exposure Control Plan For Victoria General Hospital, Vancouver Island Health Authority, October 11, 2002  
Developed in part by the Occupational Health and Safety Agency for Healthcare in BC

<p><b>II. Understands the role of vaccines in preventing certain infections including annual influenza immunizations for health care workers.</b></p> <p><b>III. Knows the infectious conditions that require absence from work or work restrictions <sup>21</sup></b></p>	<p>f. Explain why annual influenza immunization is recommended and important.</p> <p>g. Recognize that a staff member with an infectious condition can pose a risk to other health care workers, patients, and visitors</p>
<p><b>Area of Competency</b></p>	<p><b>Detailed Core Competency</b></p> <p><b>A health care worker competent in Infection Control can:</b></p>
<p><b>7. Critical Assessment Skills</b> <b>Core Competency category</b></p> <p><b>Critical assessment skills related to exposure to infectious agents, awareness to local outbreaks and use of infectious disease specific protocols</b></p>	<p>a) Demonstrate how to access infection control resources including an IPC manual.</p> <p>b) Identify locally used descriptors for high risk patients and how to manage them.</p> <p>c) Demonstrate problem solving and critical thinking ability when presented with infection control case studies and situations</p> <p>d) Identify unusual clusters of illnesses (aware of person, time, place epidemiology principles)</p> <p>e) Demonstrate the ability to implement disease protocols, algorithms and alerts as directed by IPC</p> <p>f) Provide leadership and act as role model to other health care workers, physicians, patients and visitors by adhering to Infection Prevention and Control principles</p> <p>g) Demonstrate work practices that reduce risk of infection (for example, immunizations, not coming to work sick)</p>

## **A. Additional Competencies for All Healthcare Professionals** <sup>22,23</sup>

All Healthcare Professionals should have the ability to apply scientifically accepted infection control principles to reduce transmission of pathogens.

1. Recognize the benefits of adhering to standards of infection control and describe the professional's responsibility to adhere to these practices and the consequences of failing to comply.
2. Recognize the professional's responsibility to monitor infection control practices of those for whom he or she is responsible and intervene as necessary.
3. Describe how pathogenic organisms may be spread in healthcare settings, identify those factors influencing the outcome of exposure, list strategies for preventing transmission of pathogenic organisms, and describe their application in practice.
4. Define engineering controls and work practice controls and identify a hierarchy of exposure prevention strategies.
5. Describe specific practices and settings that raise exposure potential to healthcare workers and patients, and identify work practice controls that prevent exposure.
6. Identify a professional's responsibility for maintaining a safe patient care environment and recognize nonspecific syndromic disease findings that prompt evaluation of healthcare providers.
7. Recognize the role of occupational health strategies in protecting healthcare providers and patients and recognize the importance of the correct application of reprocessing methods.
8. List specific occupational health strategies in preventing HIV, hepatitis B and C virus, and tuberculosis (TB) in healthcare providers and identify resources for evaluation of healthcare workers infected with these conditions.

## **B. Professional Competencies for Infection Control Practitioners** <sup>24</sup>

Standards define the profession's accountability to the public, including the consumer, community, health care worker, and the health care industry, in terms of desired outcomes for which infection control professionals (ICP's) are responsible.

These standards can be used to identify areas for professional growth, develop job descriptions, and provide criteria for performance evaluations.

---

<sup>22</sup> NYS Mandated Infection Control for Healthcare Professionals course curriculum objectives

<sup>23</sup> CRNBC Practice Standard for Registered Nurses and Nurse Practitioners:  
Communicable Diseases: Preventing Nurse-To-Client Transmission April 2006

<sup>24</sup> APIC/CHICA-Canada Professional and Practice Standards Task Force, Copyright © 1999 by the Association for Professionals in Infection Control and Epidemiology, Inc. Volume 27, Number 1 Professional and Practice Standards



- **The purpose of these standards is:** to define conditions that, if satisfied, will increase the likelihood that high-quality infection control practice will be provided.
- The standards may be applied to a broad spectrum of practice settings across the continuum of care.
- The purpose of this document is to provide a framework and standards for each health authority to adapt and use according to their individual needs.
- The standards will provide the basis for planning educational programs designed to facilitate the ICP's ability to achieve the standards, as well as to address career advancement objectives.

**These standards include key criteria that can be used to evaluate both the competency of practice and the individual.**

In general, these standards should be reviewed periodically to ensure that they incorporate and address current scientific knowledge, clinical practice, and technology.

The key criteria represent multiple skills considered necessary to meet the demands of the evolving health care environment. It is expected that the ICP will meet or exceed the criteria associated with the Professional *Competency* Standards (PCS) and be *capable* of meeting those associated with the Infection Control Practice Standards (ICPS) regardless of applicability to their specific practice setting.

Infection Control professional organizations have traditionally considered a baccalaureate degree to be the minimum educational preparation for entry into the professional role. Presently, ICP's in BC come from different professional disciplines and with varying levels of educational preparation and experience. Taking into account the current demographics of the field, PICNet's position is that ICP's without a baccalaureate degree are considered compliant with entry-level educational standards as long as agreed upon qualifications are maintained.

**These qualifications are:**

- ICP's must have a current license or registration certification as a medical technologist or clinical laboratory scientist, physician or registered nurse
- Or**
- ICP's must have other appropriate post-secondary education and have demonstrated competency in the infection control field by successfully completing a CHICA endorsed infection control course.

**This information addresses comprehensive practice competency standards for infection prevention, and control (IPC) programs across the continuum of care and includes professional standards for the ICP.**

## Professional Competency Standards

Professional **Competency** Standards describe a level of individual competence in the professional role. Professionals strive to maintain integrity and a high degree of competency through education and training. Professionals are expected to engage in activities appropriate to their education, role, and practice setting.

**Key criteria for each standard can be used for professional performance evaluation.**

**Infection Prevention and Control Program (IPC Program)**

### I. Professional Competency Standards for the ICP:

<b>Competency 1</b>	<b>Key criteria</b>
<p><b>Professional accountability</b> The ICP is responsible for the development, evaluation, and improvement of his/her own practice in relation to the practice standards for infection control.</p>	<ol style="list-style-type: none"> <li>1. Establishes and works toward professional goals and objectives</li> <li>2. Participates in professional organizations</li> </ol>
<b>Competency 2</b>	<b>Key criteria</b>
<p>Agreed upon qualifications in infection control to enter the profession:</p> <ul style="list-style-type: none"> <li>• ICP's must have a current license or registration certification as a medical technologist or clinical laboratory scientist, physician or registered nurse</li> </ul> <p style="text-align: center;"><b>or</b></p> <ul style="list-style-type: none"> <li>• ICP's must have other appropriate post-secondary education and have demonstrated competency in the infection control field by successfully completing a CHICA endorsed infection control course.</li> </ul>	<ol style="list-style-type: none"> <li>1. Has knowledge and experience in areas of patient care practices, microbiology, asepsis, disinfection/ sterilization, adult education, infectious diseases,</li> <li>2. Communication, program administration, and epidemiology</li> <li>3. Attends a basic infection control training course within the first year of entering the profession</li> </ol>
<b>Competency 3</b>	<b>Key criteria</b>
<p><b>Professional development</b> The ICP acquires and maintains current knowledge and skills in the area of infection prevention and control and epidemiology.</p>	<ol style="list-style-type: none"> <li>1. Becomes certified in infection control within 5 years of entry into the profession and maintains certification: (CIC or course endorsed by CHICA.)</li> <li>2. Advances his/her knowledge and skills through continuing education</li> <li>3. Pursues formal education in health care epidemiology</li> <li>4. Maintains a knowledge base of current infection prevention and control information through peer networking, Internet access, published literature, and/or professional meetings</li> <li>5. Advances the field of infection prevention and control and epidemiology through support of related research.</li> </ol>

8/30/2007

<b>Competency 4</b>	<b>Key criteria</b>
<b>Leadership</b> The ICP serves as a leader, mentor, and role model for the profession.	<ol style="list-style-type: none"> <li>1. Shares knowledge and skills with others.</li> <li>2. Recognizes and supports the importance of research in shaping the practice of infection control</li> <li>3. Promotes the value of the scientific basis of infection control and epidemiology</li> <li>4. Brings creativity and innovation to practice</li> <li>5. Seeks opportunities to influence policymaking bodies.</li> </ol>
<b>Competency 5</b>	<b>Key criteria</b>
<b>Ethics</b> The ICP makes decisions and performs activities in an ethical manner.	<ol style="list-style-type: none"> <li>1. Maintains confidentiality</li> <li>2. Practices in a nonjudgmental, nondiscriminatory manner and is sensitive to diversity</li> <li>3. Recognizes and resolves conflict of interest situations</li> <li>4. Supports the profession's code of ethics</li> </ol>

## II. Practice Competency Standards

This information addresses comprehensive practice competency standards for infection prevention, and control (IPC) *programs* across the continuum of care

<b>Practice Competency 1</b>	<b>Key criteria</b>
<b>Infection prevention and control practice</b> The IPC program consists of effective prevention and control activities that are specific to the practice setting, the population served, and the continuum of care.	<ol style="list-style-type: none"> <li>1. Integrates surveillance findings into the organization's plan for improvement of practice and patient outcomes</li> <li>2. Reviews, analyzes, and applies existing regulations, standards and/or guidelines of applicable professional organizations and provincial and federal governmental agencies</li> <li>3. Recommends new or revised practices or procedures based on currently accepted, evidence based infection prevention and control strategies</li> <li>4. Reviews, analyzes, and applies pertinent information from current scientific literature and publications</li> <li>5. Integrates relevant public health issues into practice</li> </ol>
<b>Practice Competency 2</b>	<b>Key criteria</b>
<b>Epidemiology</b> The IPC program applies 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.	<ol style="list-style-type: none"> <li>1. Conducts surveillance and investigations by using epidemiologic principles.</li> <li>2. Uses appropriate statistical techniques to describe the data, calculate rates, and critically evaluate significance of findings.</li> </ol>
<b>Practice Competency 3</b>	<b>Key criteria</b>
<b>Surveillance</b> The IPC program uses a systematic approach to surveillance to monitor the effectiveness of prevention and control strategies that are consistent with their	<ol style="list-style-type: none"> <li>1. Develops a surveillance plan based on the population(s) served, services provided, and previous surveillance data, if available</li> <li>2. Ensures surveillance design is consistent with selected internal or external comparative database(s)</li> </ol>

8/30/2007

<p>organization's goals and objectives.</p> <p><i>*Typically defined by the populations (internal and external) served by the health care organization and specified within the infection control Plan</i></p>	<ol style="list-style-type: none"> <li>3. Selects indicators based on the projected use of the data (i.e., external benchmarking and/or internal trending)</li> <li>4. Uses standardized definitions for the identification and classification of events, indicators, or outcomes</li> <li>5. Analyzes surveillance data, including the calculation of risk-adjusted rates appropriate to the indicator( s) when sufficient data are available</li> <li>6. Reports epidemiologically significant findings to appropriate customers*</li> <li>7. Periodically evaluates the effectiveness of the surveillance plan and modifies as necessary.</li> </ol>
<p><b>Practice Competency 4</b></p> <p>The IPC program serves as an educational resource for infection prevention and control and health care epidemiology after completing a basic course in effective teaching skills.</p>	<p><b>Education</b></p> <p><b>Key criteria</b></p> <ol style="list-style-type: none"> <li>1. Routinely assesses the educational needs of customers and develops educational objectives and strategies to meet those needs</li> <li>2. Collaborates in the development, delivery, and evaluation of educational programs or tools that relate to infection prevention, control, and epidemiology</li> <li>3. Continuously evaluates the effectiveness of educational programs and learner outcomes</li> </ol>
<p><b>Practice Competency 5</b></p> <p><b>Consultation</b></p> <p>The IPC program provides expert knowledge and guidance in epidemiology and infection prevention and control-related issues.</p>	<p><b>Education</b></p> <ol style="list-style-type: none"> <li>1. Maintains access to current information on infection prevention and control and epidemiology</li> <li>2. Provides knowledge on the function, role, and value of the program to customers</li> <li>3. Collaborates in the integration of pertinent regulatory requirements, accreditation standards, guidelines, and current IPC practice into policies and procedures</li> <li>4. Ensures that findings, recommendations, and policies of the IPC program are disseminated to appropriate groups or individuals</li> <li>5. Provides consultation to administration, committees, staff, and managers on issues regarding infection prevention and control and epidemiology</li> </ol>
<p><b>Practice Competency 6</b></p> <p><b>Performance improvement</b></p> <p>The IPC program is an integral component of the plan for improvement of practice and patient outcomes.</p>	<p><b>Key criteria</b></p> <ol style="list-style-type: none"> <li>1. Identifies opportunities for improvement based on indicators, process and outcome measures, other findings, and/or observations</li> <li>2. Coordinates the organization's infection prevention and control improvement activities</li> <li>3. Participates in the organization's multidisciplinary improvement strategies</li> <li>4. Contributes epidemiologic skills to improvement processes.</li> </ol>
<p><b>Practice Competency 7</b></p> <p><b>Program management and evaluation</b></p> <p>The IPC program systematically evaluates the quality and effectiveness of the</p>	<p><b>Key criteria</b></p> <ol style="list-style-type: none"> <li>1. Develops and annually reviews a program plan with measurable objectives</li> <li>2. Determines appropriate resources needed to accomplish the proposed plan</li> </ol>

8/30/2007

IPC plan appropriate to the practice setting and prepares an annual report.	<ol style="list-style-type: none"> <li>3. Communicates any resource variance to administration and modifies program plan if needed</li> <li>4. Periodically evaluates the effectiveness of the IPC program</li> <li>5. Assesses customer needs and satisfaction and integrates findings into the IPC program.</li> </ol>
<b>Practice Competency 8</b>	<b>Key criteria</b>
<b>Fiscal responsibility</b> The IPC program incorporates the principles of fiscal responsibility.	<ol style="list-style-type: none"> <li>1. Considers both clinical outcomes and financial implications when making recommendations for changes in practice</li> <li>2. Evaluates use of newly developed IPC technology or products for cost-effectiveness</li> <li>3. Integrates cost accounting data into the analysis of nosocomial infection reports</li> <li>4. Documents cost reduction in the organization through IPC program activities</li> </ol>
<b>Practice Competency 9</b>	<b>Key criteria</b>
<b>Research</b> The IPC program applies relevant research† findings to infection prevention and control practice <sup>25</sup>	<ol style="list-style-type: none"> <li>1. Critically evaluates research and incorporates findings</li> <li>2. Disseminates relevant published research findings through practice, education, or consultation</li> <li>3. Organizes and shares findings from surveillance activities or outbreak investigations</li> </ol> <p>†May include informal epidemiologic studies such as outbreak/cluster investigations or surveillance findings</p> <p><b>Optional</b></p> <ol style="list-style-type: none"> <li>4. Participates in infection prevention and control related research independently or collaboratively</li> <li>5. Publishes or presents research findings to assist in advancing the field of infection prevention and control and epidemiology</li> </ol>

<sup>25</sup> Scheckler WE, Brimhall D, Buck AS, Farr BM, Friedman C, Garibaldi RA, et al. Requirements For Infrastructure and Essential Activities of Infection Control and Epidemiology in Hospitals: A Consensus Panel Report. AJIC Am J Infect Control 1998; 26:47-60.

## C. Professional Competencies for Occupational Health and Public Health as relates to Infection Control

<b>Nurses</b>	
The Professional Competencies One through Five under Professional Competencies for Infection Control Practitioners also apply to OHNs and PHNs.	
<b>Competency</b>	<b>Criteria</b>
<b>Qualifications OHN</b>	Diploma in Occupational Health Nursing from a recognized program, Baccalaureate degree in Nursing or Health Sciences and three years recent, related experience. Certification in Occupational Health Nursing and specific education in infection control desirable. An equivalent combination of education, training and experience is acceptable.
<b>Qualifications PHN</b>	Baccalaureate degree in Nursing
<b>Practice Competencies for Occupational Health Nurses and Public Health Nurses</b>	
These competencies were developed by a provincial group of Public Health Nurses and one Occupational Health Nurse. They have been submitted to CRNBC with the intention of developing a provincial certification course based on the competencies.	
<b>Knowledge Areas</b>	<ol style="list-style-type: none"> <li>1. Etiology, pathophysiology, epidemiology, communicability, risk factors, clinical manifestations, complications, diagnostic tests and interpretation of findings, and management of cases and contacts of communicable diseases</li> <li>2. Relevant legislation (e.g. Health act, infants' act)</li> <li>3. Uses of biological and chemoprophylactic agents for primary and secondary prevention of communicable diseases</li> <li>4. The vaccine cold chain</li> <li>5. Acute and potential long-term complications of communicable diseases</li> <li>6. Adverse events and their management, following administration of chemoprophylactic and biological agents</li> <li>7. Communicable disease and adverse event reporting requirements</li> </ol>
<b>Skills</b>	<ol style="list-style-type: none"> <li>1. Performing a health assessment in the context of immunization and communicable disease follow-up</li> <li>2. Maintaining the vaccine cold chain</li> <li>3. Assessing client immunization history and selecting appropriate vaccines consistent with provincial schedules and client eligibility requirements</li> <li>4. <b>Safe and correct administration of vaccines</b></li> <li>5. <b>Collecting specimens; interpreting laboratory data</b></li> <li>6. Dispensing and/or administering biological and/or chemoprophylactic agents for secondary prevention of communicable diseases</li> <li>7. Recognizing immunization schedule variances and preparing individualized immunization plans</li> <li>8. Managing adverse events, including anaphylaxis, following immunization(s) and administration of chemoprophylactic agents</li> <li>9. Notifying contacts of communicable disease</li> <li>10. Collecting and documenting client data for surveillance and reporting</li> </ol>
<b>Assessment Abilities</b>	<ol style="list-style-type: none"> <li>1. Recognizing and responding to vaccine cold chain breaches</li> <li>2. Interpreting laboratory reports and/or client presentation to determine a need for action</li> <li>3. Selecting appropriate chemoprophylactic and biological agents to use for secondary prevention of communicable diseases</li> <li>4. Assessing adverse events following immunization and chemoprophylaxis to determine their management and reportability</li> <li>5. Identifying contacts and new cases of communicable disease</li> </ol>

8/30/2007

<b>Attitude</b>	Promoting and recommending immunization and the use of vaccines
<b>Occupational Health Physician</b>	
<b>Competency</b>	<b>Criteria</b>
<b>Education and Certification</b>	Preferably an FRCP in Occupational Medicine. Alternatively, certification by the Canadian Board of Occupational Medicine with a CCBOM or FCBOM designation.
<b>Knowledge Areas</b>	Experience in the occupational management of infectious diseases and in epidemiology.
<b>Occupational Hygienist</b>	
<b>Competency</b>	<b>Criteria</b>
<b>Education and Certification</b>	<ol style="list-style-type: none"> <li>1. Masters degree in occupational hygiene</li> <li>2. Certification (i.e. Certified Industrial Hygienist (CIH) or Registered Occupational Hygienist (ROH)) are beneficial but not essential</li> <li>3. Specific education in infection control (e.g. UBC Health Care and Epidemiology 520: Control of Communicable Disease) is an asset</li> </ol>
<b>Ethics</b>	<ol style="list-style-type: none"> <li>1. Knowledge and adherence to the joint AAIH, ABIH, AIHA, ACGIH Industrial Hygiene Code of Ethics: “Standards of ethical conduct for industrial hygienists as they practice their profession and exercise their primary mission, to protect the health and well-being of working people and the public from chemical, microbiological and physical health hazards present at, or emanating from, the workplace.”</li> </ol>
<b>Health And Safety Professionals</b>	
<b>Education and Certification</b>	<ol style="list-style-type: none"> <li>1. Certificate or Diploma in occupational health and safety</li> <li>2. Certifications (i.e. Canadian Registered Safety Professional (CRSP)) are beneficial but not essential</li> <li>3. Specific education or experience in healthcare is an asset but not required.</li> </ol>

## SECTION FIVE

### Training Modules Currently In Use In BC

1. VCH, PHSA, and Occupational Health and Safety Agency for HealthCare in BC (OHSAH) have developed an online module that teaches basic infection control procedures and practices. The interactive and graphic animated module takes about 30-40 minutes to complete and it covers:
    - the importance of infection control
    - routine and standard infection control practices
    - the use of personal protective equipment
    - proper hand hygiene techniques
    - the various types of isolation and when they should be applied
    - waste management
    - BBF management
- The collaborators, (VCH, PHSA, OHSAH), are assessing this module with a grant from CIHR. They have entered into data sharing agreements with another Health Authority, and intend to expand these agreements to other Health Authorities so the Health Authorities can load the program onto their facilities' servers. This is intended to ensure consistency of approach in teaching infection control principles.

### Other Infection Control/Occupational Health Related Educational Videos and Brochures

**Source: OHSAH** (Occupational Health and Safety Agency for Healthcare in BC)

#### 1. **Be Barrier Wise**

Produced in collaboration with Vancouver Coastal Health and The British Columbia Centre for Disease Control, this 10-minute video outlines the routes of transmission of infectious diseases and demonstrates the proper use of protective barriers to be worn by healthcare workers. This video is available on VHS cassette or CD Rom

#### 2. **Blood and Body Fluid: What you need to know!**

Information on blood and body fluid exposure and potential control strategies. An accompanying poster is also available.

#### 3. **Stay poke- and splash-free**

This poster serves as a reminder to remain aware of possible exposures to blood and body fluids in the workplace, and measures workers can take to protect themselves (an accompanying brochure is also available).



#### **4. General Hand Washing Procedures**

Hand washing is one of the easiest methods to break the cycle of infection. This poster is a useful tool to remind people of the proper method of hand washing.

Download: [general-handwashing.pdf](#)

#### **5. PPE Donning Procedure**

This handout describes donning PPE for SARS High Risk Exposure situations, as described in the British Columbia SARS Science Committee Guidelines for Acute Management of the Patient with SARS in the Hospital Setting. These requirements are subject to change pending further scientific evidence on SARS transmission.

Download: [PPE-Donning Procedure.pdf](#)

#### **6. Protecting Healthcare Workers from Airborne and Droplet-Spread Transmission of Infectious Diseases**

In collaboration with the WCB, the BC SARS Science Committee, and other provincial healthcare stakeholders, OHSAH has developed a training module: Protecting Healthcare Workers from Airborne and Droplet-Spread Transmission of Infectious Diseases.

**Source: WorkSafe BC**

##### **1. Washing Hands Saves Lives**

Corrina Hellens, Occupational Health Nurse, demonstrates how to wash your hands properly to prevent the spread of infection in this slideshow

\* [Slideshow](#) (2 min 29 s)

##### **2. SARS: General Guide on Applying the OHS Regulation**

This document provides general information on SARS, and also describes the application of WorkSafeBC's regulatory requirements to SARS. (Dated March 2003)

\* [PDF \(195 KB\)](#)

##### **3. HIV/AIDS, and Hepatitis B and C: Preventing Exposure at Work**

"For employers and workers who are not expected to come in contact with blood and body fluids at their workplaces but who could have contact with these fluids in rare, isolated incidents that can't be foreseen. It explains how HIV and the hepatitis B and C viruses are - and are not - spread, describes their health effects, and provides information on the basic precautions that should be taken if harmful contact with infected blood and body fluids occurs. It also answers other common questions about HIV and the hepatitis B and C viruses and provides examples of safe work practices."\* [PDF \(636 KB\)](#)

Updated: March 2006 \* Available in print from [Publications, Videos and Forms Distribution](#).

**Source: B.C. Centre for Disease Control**

---

8/30/2007

## **1. Guidelines for Infection Prevention and Control in the Physician's Office**

"\* [PDF \(339 KB\)](#)

**Source: Health Canada, Population and Public Health Branch**

### **1. An Integrated Protocol to Manage Health Care Workers Exposed to Bloodborne Pathogens**

"The current document presents integrated recommendations for the management and follow-up of the health care worker with a potential occupational exposure to HBV, HCV, [hepatitis B and C] or HIV." \* [HTML](#)

### **2. Infected Health Care Worker: Risk of Transmission of Bloodborne Pathogens**

"The 1996 Consensus Conference on Infected Health Care Workers: Risk For Transmission of Bloodborne Pathogens was held to gain current understanding of how bloodborne pathogens are transmitted from infected health care workers (HCWs) to patients, and then to revise, where necessary, the 1992 Recommendations to reduce the likelihood of transmission."

**Source: Health Canada, Population and Public Health Branch** \* [HTML](#)

---

## **Training Models Developed In Other Jurisdictions That Can Be Adapted For Use In BC:**

### **Ontario**

- 1. The Ontario Ministry of Health and Long-Term has developed a standardized "Infection Prevention and Control Core Competency Education" (IPCCCE) program which is being delivered to health care providers across the health care continuum starting in 2007.**

#### **Core Competencies**

The Infection Prevention and Control Core Competencies were developed to assist the health care providers understand:

- a. How organisms/infections are transmitted;
- b. What routine practices and additional precautions are to be followed to prevent spread of organisms;
- c. Their responsibility in reporting unusual clusters/occurrences to the appropriate people;
- d. The role of the environment and patient care equipment in the transmission of agents/organisms; and
- e. The principles and practices of asepsis and sterile technique.

The program is designed as an interactive learning experience that uses practical examples for each health care setting.

---

8/30/2007

***Program Content includes eight core competency modules:***

1. Microbiology and asepsis
2. Chain of transmission
3. Hand hygiene
4. Routine practices (including environmental issues)
5. Additional precautions
6. Surveillance
7. Healthy workplace policy, including immunization
8. Role of infection prevention, control and communication

Each module will be adapted for the three learning styles/levels that have been identified

**Level 1-Non-professional, support staff**

**Level 2-Professional staff**

**Level 3-Physicians**

Infection prevention control modules are being developed and tailored to the public health and non-acute care settings (in BC called Residential, Transitional, Home and Community Care.)

**Health Care Management for tracking employee usage**

The web-based program has a tracking system for facilities to either download from or connect to the facility tracking system.

*Ministry Delivers Infection Prevention and Control Education Project*

A Newsletter of the Patient Safety Support Service Ontario Hospital Association's (OHA) Safety First! Newsletter, Volume 2, Issue 3 Fall 2006. P. 10

**2. Health Care Health & Safety Association of Ontario (HCHSA)**

**Protecting Health Care Workers from Infectious Diseases: A Self-Assessment Tool**

This assessment tool was developed to assist HCOs identify strengths and to provide opportunities for the enhancement of their occupational health program with respect to infection control. The goal of this tool is the protection of health care workers from the transmission of infectious diseases in the workplace. This tool does not address infection control issues related to patient safety. October 2004

**NIOSH (National Institute for Occupational Safety and Health) US**

**1. Protect Yourself Against Tuberculosis: A Respiratory Protection Guide for Health Care Workers**

"The use of respirators in health care is a relatively new but important step in the efforts to prevent the transmission of TB. This booklet is designed to serve as a quick reference for health care workers employed in a variety of settings and with varied educational backgrounds. It should be regarded as a complement to, not a substitute for, the required respiratory protection program."

**Source:** NIOSH (National Institute for Occupational Safety and Health)\* [HTML](#)

## 2. TB Respiratory Protection Program in Health Care Facilities: Administrator's Guide

"This manual is designed to serve as a practical guide for those individuals responsible for initiating and running a TB respiratory protection program in health care facilities." Sample operating procedures are provided, as well as a step-by-step approach to developing a respiratory protection program. (Dated September 1999)\*  
HTML

### Australia

<http://toolboxes.flexiblelearning.net.au/series7/702.htm>

1. The Australian National Training Authority (ANTA) offers learning toolboxes. These are a collection of online training materials comprising learning activities, resources and user guides in many areas, including infection control. The content is based on the Infection Control Guidelines for the Prevention of Transmission of Infectious Disease in the Health Care Setting, Australian Government, Department of Health and Ageing, January, 2004 and various publications of the Rural Infection Control Practice Group (VIC), Victoria, and from the Infection Control Policy, NSW Health, NSW Health Department, 2002.

The resources in the Toolbox are based on three competency standards:

- Infection control policy and procedures
- Maintaining infection control standards in office practice settings
- Implementing and monitor infection control policy and procedures

### **Description**

This Toolbox comprises tasks, activities, scenarios and content which covers the underpinning knowledge and skills of various competencies. Specific content areas include: Infection risks, personal hygiene, personal protective clothing and equipment used by health care workers, standard and additional procedures, cleaning and disinfecting equipment, cleaning the environment, dealing with blood and other body fluids, food handling, linen management, managing waste, safe handling of sharps, storage and handling of sterile stock, the regulatory framework governing infection control and sterilizing.

The Infection Control (Health) Toolbox contains a range of resources designed to assist in the flexible delivery of the competency standards covered. Flexible delivery may incorporate a variety of methods, including web-based learning, distance education, face to face classes or group work.

This Toolbox can be purchased from Australian Training Products.

Competency standards are available from the National Training Information Service website:  
<http://www.ntis.gov.au>.

## APPENDIX 1

### Definitions of Agreed Upon Roles and Responsibilities across the Continuum of Healthcare in BC for Staff Working in Infection Prevention and Control (IPC).

1. Within the Province of BC, the workplace<sup>2627</sup> has been divided into the following four areas:
  - i. Acute care
  - ii. Rehabilitation/Transitional care
  - iii. Residential facility
  - iv. Home & community care

**Acute Care Facility:** A hospital where lengths of stay are usually an average of less than 30 days, and where a variety of services are provided, including surgery and intensive care<sup>28</sup>. Usually the staff to patient ratio is lower than in other facilities based on the increased intensity of service.

**Rehabilitation:** Services used to restore a person to a former condition, or as close to that previous state as possible. For purposes of this document, transitional and “detox” services are included in this workplace grouping.

**Transitional care:** This refers to a level of care that serves those who have been discharged from the acute care hospital but still require short term rehabilitation and special care in order to make the move from hospital to home. For purposes of this document transitional care is included with the rehabilitation services workplace environment.

**Residential:** The term ‘residential services’ is used to describe a long term care or continuing care facility. Delivery of care to residents includes a variety of levels of care. A residential facility is a licensed facility in which 24 hour nursing care is provided to four or more residents who can no longer live safely at home.<sup>29</sup> Both the staff and the living environment are communal (shared) and the number of patients per room may be variable.

---

<sup>26</sup> NOTE: The Needs Assessment Working Group considers that there is no difference between directly and non-directly funded facilities  
<sup>27</sup> mental health to be considered across these areas

28

• Health Canada. Infection Control Guidelines: Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care: Revision of Isolation and Precaution Techniques. CADRE 1999;25S4:1-142. Retrieved October 12, 2005, from <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/index.html>

<sup>29</sup> Health Canada. Infection Control Guidelines: Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care: Revision of Isolation and Precaution Techniques. CADRE 1999;25S4:1-142. Retrieved October 12, 2005, from <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/index.html>

**Home & Community care:** refers to home and community based programs that provide assessment and/or care to clients in their home environment which could be individual homes or Assisted Living facilities or Supportive Housing or Group Homes. This encompasses many programs such as Home Care Nursing, Home Support, Adult Day Programs, Meal Programs, Respite Programs, Community Long Term Care Services (may be called Case Management), Home Respiratory, Home Rehab and others. Community-based Health Services are broadly defined as encompassing organizations or programs that are delivered closer to home, in non-institutional settings, and providing a spectrum of services<sup>30</sup> The term “home and community care” also encompasses doctors’ and dentists’ offices, immunization clinics, walk-in-clinics, safe injection sites, street care workers, needle exchanges, alternative therapy settings, mental health facilities, forensic clinics, and public private partnership institutions.

**2. The FUNCTIONS within infection control have been confirmed as:**

- i. Administration
- ii. Surveillance/Epidemiology
- iii. Consultation<sup>31</sup>
- iv. Education/Training
- v. Policy/Procedure Development/Review
- vi. Outbreak Management
- vii. Workplace and Environmental Hygiene
- viii. Research
- ix. Product Evaluation
- x. Health Protection
- xi. Quality Improvement/Product Safety
- xii. Quality Assurance

- i. **Administration:** Involves coordination, management or direction of the infection control program; this role includes (but is not limited to) liaising with upper management, setting program direction, hiring and evaluating staff functionality.
- ii. **Surveillance:** Systematic ongoing collection, collation, and analysis of data and the timely dissemination of information to those who need to know so that action can be taken.<sup>32</sup> The ongoing systematic collection, analysis, and interpretation of health data, essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of the data to those who need to know. The final link in the surveillance chain is the application of these data to

---

30 W. John B. Church, Ph.D., L. Duncan Saunders, Bach., Ph.D., Margaret I. Wake, M.H.S.A., Raymond W. Pong, PhD's Organizational Models in Community-Based Health Care: A Review of the Literature. Prepared for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health through the Advisory Committee on Health Human Resources 1995.

31 Includes construction

32 Last, John M. (ed). A Dictionary of Epidemiology 4th ed. International Epidemiological Association Inc., Oxford University Press, 2001.

prevention and control. A surveillance system includes a functional capacity for data collection, analysis, and dissemination linked to public health programs.<sup>33</sup>

**Epidemiology:** Applies 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<sup>34</sup>.

- iii. **Consultation:** provides expert knowledge and guidance in epidemiology and infection prevention and control-related issues<sup>7</sup>.
- iv. **Education:** Health education comprises consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health. Health education is not only concerned with the communication of information, but also with fostering the motivation, skills and confidence (self-efficacy) necessary to take action to improve health.<sup>35</sup>  
Serves as an educational resource for infection prevention and control and health care epidemiology<sup>7</sup>  
**Training:** Training is the teaching of vocational or practical and relates to specific useful skills. It forms the core of apprenticeships and provides the backbone of content at technical colleges or polytechnics. Today it is often referred to as professional development<sup>36</sup>
- v. **Policy development:** creation of a high level overall plan embracing the general goals and acceptable procedures especially of a government body.  
**Policy review:** analysis of existing policy  
**Procedure development:** the traditional or established way of doing things; a series of steps that follow a regular, defined order.  
**Procedure review:** analysis of existing procedure
- vi. **Outbreak Management:** the management of an outbreak. An outbreak is defined as an epidemic limited to localized increase in the incidence of a disease<sup>5</sup>
- vii. **Workplace and Environmental Hygiene:** Focuses on the practice of occupational and environmental hygiene and safety. Involves a number of areas including: occupational, industrial, and environmental hygiene; exposure assessment; engineering controls; occupational and environmental epidemiology, medicine, and toxicology; ergonomics; and other related disciplines.
- viii. **Research:** A class of activities designed to develop or contribute to generalizable knowledge; generalizable knowledge consists of theories, principles, or relationships,

---

33 Centers for Disease Control: *Comprehensive Plan for Epidemiologic Surveillance*. Atlanta, GA, 1996.)

34 AJIC Am J Infect Control 1999;27:47-51

35 WHO Health Promotion Glossary, 1998; [http://www.who.int/hpr/NPH/docs/hp\\_glossary\\_en.pdf](http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf)

36 [en.wikipedia.org/wiki/Training](http://en.wikipedia.org/wiki/Training)

or the accumulation of information on which these are based, that can be corroborated by acceptable scientific methods of observation, inference, and/or experiment<sup>5</sup>

- ix. **Product Evaluation:** A process that attempts to determine as systematically and objectively as possible the relevance, effectiveness, and impact of activities in the light of their objectives<sup>5</sup>
- x. **Health Protection:** Health Protection aims to protect the health and well-being of the population by protecting people from infectious diseases and in preventing harm when hazards involving chemicals, poisons or radiation occur. Also includes, preparing for and managing new and emerging threats, such as a bio-terrorist attack or virulent new strain of disease.
- xi. **Quality Improvement:** a process for the systematic monitoring and evaluation of the various aspects of a project, service or facility to seek areas where standards of quality can be enhanced.
- xii. **Product Safety:** The application of engineering and management principles, criteria, and techniques to achieve acceptable hazard risk, within the constraints of operational effectiveness, time, and cost, throughout all phases of the system life cycle.
- xiii. **Quality Assurance:** a process for the systematic monitoring and evaluation of the various aspects of a project, service or facility to ensure that standards of quality are being met.



**3. The members of the infection control team have been identified as:**

<b>Professional Group</b>	<b>Abbreviation</b>	<b>Team Member</b>	<b>Definition</b>
Practitioners	<b>ICP</b>	Infection Control Professionals	This role includes personnel ( nurses or respiratory and laboratory technicians) specially trained and responsible to facilities, or the community who are responsible for surveillance of infections, education & consultation of staff, patients and the general public, to manage infection control issues. ICP's who have completed study and worked for two years in this role and who pass the North American certification exam can apply the abbreviation "CIC" to their signature.
	<b>OH</b>	Occupational Hygienist	Provide advice and recommendations on control measures for the workplace (engineering controls, administrative controls, and personal protective equipment) in conjunction with the OHP, OHNs and infection control team. Ensure application and assist with coordination and maintenance of required activities related to controls (e.g. education and fit-testing of N95 filtering face piece respirators).
		Health and Safety Professionals	Provide N95 filtering face piece respirator fit-testing and education / training services to staff based on assessments conducted in conjunction with the Occupational Hygienist(s) and the Infection Control team.
Physicians	<b>ICO</b>	Infection Control Officer (e.g. Med Micro/ID)	The Infection Control Officer is a physician (e.g. ID physician, medical microbiologist) who is responsible for directing infection prevention and control related policy and procedures. The ICO traditionally advises Infection Control Professionals and other team members (i.e. Lab Technologists, etc.) regarding the management and/or treatment of community or healthcare associated infections or clusters of infections and infection control issue resolution as

			they relate to patient care. They provide expertise with regard to surveillance, sterilization and disinfection, medical microbiology, risk communication for construction in health care facilities, facility design and construction (as it pertains to infection control) and program evaluation.
	<b>OHP</b>	Occupational Health Physician (Occupational Medicine)	<p>The Occupational Health Physician has the benefit of understanding the workplace, and the medical expertise to understand the necessity for and impact of workplace exclusions and restrictions necessitated by exposure to/or illness from infectious diseases. The OH physician is primarily responsible for protecting the health of the workforce and thus the overall functioning and program development of the Occupational Health Program.</p> <p><u>Responsibilities include direction, advice and consultation with the OHNs on:</u></p> <ul style="list-style-type: none"> <li>• OH program and policy development</li> <li>• interpretation of baseline health assessments and immunization status</li> <li>• outbreak investigations and surveillance</li> <li>• interpretation of laboratory and health reports</li> <li>• work exclusions and restrictions</li> <li>• communicating with treating physicians as required regarding employee assessment, treatment and response to treatment</li> </ul> <p>The OHP generally does not act as a treating physician to employees; rather he/she assesses laboratory and medical information and provides direction regarding the ongoing management of the occupational process with the primary goal of minimizing the risk from infectious diseases to the individual worker, as well as other employees and patients</p>
	<b>MHO</b>	Medical Health Officer (e.g. Community)	The MHO works closely with their CEO(s) and regional health planning team(s), as well as with public health

		Medicine)	inspectors and other stakeholders in their region in strategic planning and designing programs to protect, promote and preserve the health of individuals in their region. They provide expertise with regard to health information, health status assessments, health risk assessments, surveillance, risk communication, health promotion, health protection interventions and program evaluation. Under the Health Act, the Provincial Health Officer is the senior medical health officer for British Columbia and provides independent advice to the Minister of Health, the ministry and the public on public health issues and population health.
	<b>GP</b>	General Practitioner	A physician whose practice is based on a broad understanding of all illnesses and who does not restrict his/her practice to any particular field of medicine.
	<b>PHI</b>	Public Health Inspector/Environmental Health Officer	Aim to protect people from environmental health risks in their living and working surroundings. They sometimes take legal action to enforce legislation like the Food Safety Act or the Environmental Protection Act.
Nurses	<b>LN</b>	Link Nurse	Most frequently a nurse (but not always) who represents a unit or department and performs delegated functions from members of a team such as the infection control or occupational health team
	<b>OHN</b>	Occupational Health Nurse	The primary role of the occupational health nurse is to coordinate the delivery of comprehensive, equitable, quality occupational health services for workers and worker groups, in conjunction with the OHP and other members of the occupational health team. The scope of practice includes managing and administering an occupational health service within legal and professional parameters; conducting health examinations; assessing the work environment; providing primary, secondary, and tertiary prevention strategies;

			<p>providing health education programs; providing health promotion programs; providing counseling interventions and programs; managing the information system; conducting health surveillance programs; monitoring injury/illness trends; as well as program planning, policy development, and cost-containment strategies. infection control related Occupational health responsibilities include:</p> <p>documentation of new employee's health status including immunization and immune status to certain communicable diseases</p> <p>Outbreak investigation including documentation of staff exposures and follow-up of staff prophylaxis and /or treatment and/or removal or re-assignment from work setting during incubation/infectious period following exposure to communicable disease.</p> <p>Collaboration with ICP's in educational and training for staff regarding use of PPE</p> <p>Application of post exposure protocol for blood/body fluid exposures including counseling, documentation and investigation of incidents.</p> <p>Development of relevant polices and procedures.</p>
	<b>Clin. Spec</b>	Clinical Nurse Specialist/Educator	<p>A Clinical Nurse Specialist (CNS) is a masters prepared, advanced practice nurse whose care focuses on a specific patient population A CNS divides their time into five general areas - clinical practice, teaching, research, consulting, and management. Their assessment skills tend to be more focused than Nurse Practitioners, since they focus on a particular area of specialty. But they make up for this by being able to provide more expertise than even an expert level staff nurse</p>
Epidemiology	<b>EPI</b>	Epidemiologist (Hospital or Public Health)	<p>A person who studies the frequency and distribution of disease within populations and environments; they perform research, education and public health practice. Epidemiologists are</p>

			usually educated at a Masters or Doctorate Level.
	<b>DEC</b>	Data Entry Clerks	
Administration	<b>ICM</b>	Infection Prevention & Control Manager	The individual managing infection control practitioners, public health nurses, and/or inspectors. Across all work settings. Includes Directors of Care in the residential and home & community care settings.
	<b>RMD</b>	Regional Medical Director	
	<b>DoC</b>	Director of Care	
	<b>OHM</b>	Occupational Health Manager/Director	This person is overall responsible for the functioning of the occupational health program, and the health of the workforce. In most jurisdictions the director of the Occupational Health program is a well-trained and credentialed occupational health professional, either the OHP or lead OHN.
Laboratory	<b>LAB</b>	Laboratory	Includes all individuals working within a laboratory including Laboratory technologists & Laboratory directors
Research	<b>RO</b>	Research Officer	Includes research experts
	<b>RA</b>	Research Assistant	
Support Services	<b>SU</b>	Administrative support	
	<b>IS</b>	Information services/Computer support	
Other	<b>QI</b>	Quality Improvement personnel	
	<b>SPD</b>	Sterile Processing Department	
	<b>LO</b>	Licensing Officer	
	<b>HSKPG</b>	Housekeeping	
	<b>MAT</b>	Materials Management	Includes product evaluators
	<b>RM</b>	Risk Management	

## APPENDIX 2

### Currently Available Infection Control Educational and Training Resources:

#### A. Infection Control Practitioners

Three Canadian universities offer formal infection control training courses that provide Infection Control Certificates upon completion.

**Canadian University Infection Control Certificate Programs: All are endorsed by CHICA Canada  
Primarily on-line courses: Computer and Internet access required.**

1. University of British Columbia Infection Control Certificate Program
2. University of Calgary Basic Infection Control
3. Queen's University, Kingston, Ontario Basic Infection Control

#### <sup>37</sup> *University of British Columbia*

##### *Infection Control Certificate Program Courses*

Three online and one clinical infection control clerkship. The student may attend another institution anywhere in the world for the clerkship with the permission of the instructors.

These three-credit university courses may be taken as stand-alone courses or used towards a four-course University of British Columbia Infection Control Certificate and/or towards a Masters in Science, Nursing or Epidemiology with the permission of the individual's appropriate university departments.

Curriculum	
<b><u>Basic Principles of Infection Prevention and Control</u></b> The course is presented in a problem-based learning format.	This university course introduces students to the principles of infection prevention and control, outbreak investigation and management, surveillance techniques, methods of sterilization and disinfection as well as other topics pertinent to long-term care, pediatric and community infection control.

<sup>37</sup> Website: (ctrl+click) <http://det.ubc.ca/detsite/courseofferings/PATH.html#PATH417>

<p><b>Basic Microbiology for Infection Control</b></p> <p>This course may be taken as an elective in Nursing</p>	<p>This course is designed to familiarize students with clinical infection control and/or various subspecialties of Laboratory Medicine. This course introduces students to pathogenic organisms and the diseases they produce; identification, clinical significance, and transmission of pathogenic organisms will be presented. The information from this course is intended to provide a basis for improving patient care and infection control practices.</p>
<p><b><u>Clerkship in Laboratory Medicine and Infection Control</u></b></p>	<p>This elective may involve attendance at an approved institution and/or a project assigned by the instructor(s); content of the clerkship will be preplanned with the student to meet their interests or requirements. approximately 30 - 45 hours of “contact” time and 20 - 30 hours of independent study</p>
<p><b>Basic Epidemiology for Infection Control</b></p> <p>The course may be taken as an elective course towards a Masters in Epidemiology</p>	<p>This introductory three-credit course on epidemiology explores fundamental concepts in epidemiology, study design and analysis and outbreak investigation as it applies to institutional infection control. Surveillance techniques, data collection and management and critical review of the literature will be covered.</p>

**University of Calgary**  
**On Line Basic Infection Control for Infection Control Professionals**  
**On-Line Infection Control I & II**

<b>Curriculum</b>	
<b>Module 1</b>	What is infection control, how it is done and how to teach infection control to others.
<b>Module 2</b>	Common micro-organisms that are a problem in healthcare-acquired infections and relevant communicable diseases and the type of infections they commonly cause.
<b>Module 3</b>	Basic concepts of epidemiology which is relevant to the transmission of infections and describe and to apply the basic principles of surveillance and outbreak management.
<b>Module 4.</b>	Basic Occupational Health and environmental problems issues that are relevant to Infection Control and identify potential solutions
<b>Module 5 (Practicum)</b>	To introduce the student to the realities of practicing and applying the principles infection control in a healthcare environment.
<b>Length of course</b>	These 2 half courses consist of approximately 10-15 hours per week (100 hours each half course per term) taken over two terms or 26 weeks.
<b>Credits and certification</b>	University credit and grade given for each of the courses Certificate from <i>CHICA Canada</i> upon successful completion of both courses.

8/30/2007

### Queens38 University Online Basic Infection Control Course Begins Spring 2007

This course is a comprehensive introduction to the principles and practice of infection prevention and control. It is geared to new infection control professionals in all health care settings, including communicable disease staff working in health units.

The general flow of the course is based upon one, two- or four-week modules. There are 10 modules in total:

<b>Curriculum</b>	
<ol style="list-style-type: none"> <li>1. Medical microbiology;</li> <li>2. Clinical epidemiology;</li> <li>3. Disinfection, sterilization and environmental management;</li> <li>4. Surveillance,</li> <li>5. CQI and outbreak management;</li> <li>6. Infection control program management;</li> <li>7. Community infections;</li> </ol>	<ol style="list-style-type: none"> <li>8. LTC and home care issues;</li> <li>9. Resistant and emerging pathogens;</li> <li>10. Antibiotic utilization and control;</li> <li>11. Occupational infections;</li> <li>12. Adult learning and teaching principles;</li> <li>13. Evidence-based infection control practice.</li> </ol>
<b>Curriculum endorsement</b>	The Curriculum of the Queen's University Basic Infection Control Course has been endorsed by the Community and Hospital Infection Control Association-Canada ( <a href="http://www.chica-canada.org">CHICA-Canada</a> ).
<b>Course completion</b>	Students will receive a certificate from Queen's University on successful completion of the course

### Introductory on-site course

#### Centennial College Infection Control level 1 course<sup>39</sup>: Scarborough, Ontario

Nine day course (80 hour) in Infection Control theory,

<b>Curriculum</b>	
<p>Level 1 is an 80 hour course intended to offer broad infection control training to registered nurses and physicians. who need to deal with infection control in their work</p>	<ol style="list-style-type: none"> <li>1. Microbiology,</li> <li>2. Principles of infection prevention and control (applicable to all settings- acute care, long-term care and the community)</li> <li>3. Investigation and control of infectious diseases</li> <li>4. Surveillance techniques</li> <li>5. Waste management</li> <li>6. Occupation health</li> <li>7. Critique of the literature</li> <li>8. Sterilization and disinfection</li> <li>9. Adult education and accreditation</li> </ol>
<b>Course completion</b>	Students will receive a certificate of achievement on successful completion of the course

<sup>38</sup> Website: (ctrl+click) <http://meds.queensu.ca/ce/ic/index.html>

<sup>39</sup> Website: (ctrl+ click) [http://www.centennialcollege.ca/future/schs\\_ce\\_ic.jsp](http://www.centennialcollege.ca/future/schs_ce_ic.jsp)



## **B. Hospital Epidemiologists**

### **University of Calgary MSc Program in Hospital Epidemiology**

This program was developed to draw individuals from two content areas:

1. Patient-care practices and health care systems
2. Microbiology and infectious diseases

It is a graduate level course but an undergraduate degree is not required.

#### **Purpose:**

To provide training in epidemiology, biostatistics and applications of research for these individuals. This will provide common ground on which the knowledge and skills needed by Infection Control Professionals can be further developed and enhanced.

#### **TEACHING METHODS**

A blended course that is a combination of in-class and on-line instruction.

**The focus of this course will be on hospital epidemiology with particular emphasis on infection control.**

#### **The primary aims are:**

1. to explore the characteristics of hospital epidemiology that make it different from other kinds of epidemiology
2. to critically examine the information currently available in infection control and hospital epidemiology
3. to survey the scope of epidemiologic research with special reference to hospital epidemiology which ranges from bench to bedside (i.e. ranging from patient care practice to molecular epidemiology)
4. to learn how to use microbial genetics as an epidemiologic tool.

## Curriculum

### Overview of quality of care and risks in hospitals and hospital ecology.

#### Nosocomial infections including

- Reservoirs,
- Transmission,
- Sites of infections,
- Special units and special risks within the hospital.

#### Large studies in infection control including

- SENIC Project,
- The National Nosocomial on Infection Study & Canadian National Infection Surveillance Project (CNISP)

#### Surveillance and reporting of nosocomial infections

- Strategies and techniques
- data sources
- reporting
- Investigation and control of endemic and epidemic nosocomial infections
- components of an epidemic investigation

#### Design and analysis issues in Infection Control studies

- Study designs
- Identifying appropriate control groups
- Risk factor identification and measurement
- Data collection and management

### Programs for the control and prevention of nosocomial infections.

- Characteristics
- Identification of intervention points
- Isolation
- Risks to staff and patients

#### Infection Control Programs and the Infection Control Committee.

- Integration with medical and nursing practice,
- Components of the program,
- Politics of Infection Control,
- Effects of regionalization
- Communication issues
- Cost effectiveness/benefits analyses
- Setting. Priorities

#### Nosocomial infections associated with diagnostic and therapeutic procedures/interventions

- ventilator-associated pneumonia
- line-associated bacteremias
- post-surgical infections
- anesthesia
- endoscopy

## **C. Infection Control Content in training courses designed for other allied health professionals who function as members of the infection control team**

### **1. Public Health:**

*Skills Enhancement for Public Health*, an online program offered by the **Public Health Agency of Canada**, aims to assist “public health practitioners to increase their knowledge, skills and abilities to support the core competencies for public health.”<sup>40</sup>

#### **Current courses include:**

- epidemiology (basic concepts, methods, application, and chronic disease epidemiology)
- outbreak management
- measurement of health status.

#### **Future courses being developed include:**

- Bio-stats
- information management
- evidenced based planning
- communicating data effectively.

This program is offered at no charge to personnel employed in front line public health roles. The 25-30 hour program takes eight weeks.

Students work in teams of 15-18 public health personnel that are mentored by a public health leader.

### **2. Occupational Health**

#### **i) Occupational Health Nurse**

The BC Institute of Technology (BCIT) in Vancouver training course for OH nurses does not contain any specific infection control content.<sup>41</sup>

#### **ii. Occupational Hygienists**

Occupational Hygienists are educated on the proper methods for biological hazard control.<sup>42</sup>

### **3. Provincial Ambulance Service<sup>43</sup>:**

The Justice Institute of BC<sup>44</sup> trains First Responders and Paramedics at various locations throughout the province.

The training course description includes occupational health, but not infection control.

---

<sup>40</sup> Website: (ctrl+click) <http://www.phac-aspc.gc.ca/sehs-acss/index.html>

<sup>41</sup> Also referred to as **Health and Wellness** or **Employee Health**; website: (ctrl+click) <http://www.bcit.ca/health/oh/>

<sup>42</sup> [www.soeh.ubc.ca](http://www.soeh.ubc.ca)

<sup>43</sup> PAS website:(ctrl+click) <http://www.health.gov.bc.ca/bcas/careers/#train>

<sup>44</sup> Justice Institute Paramedic Academy website: (ctrl+click): <http://www.jibc.bc.ca/paramedic/>

Isolation and communicable disease transmission and management, and use of personal protective equipment (PPE) attire are included in the **First Responders Student Training Manual Level 3.**<sup>45</sup>

## **D. Health Care Facility Staff Infection Control Orientation:**

### **Hospitals**

Most general hospital staff receive a 15 to 60 minute<sup>46</sup> orientation on employment regarding the principles of basic infection control including hand washing, the chain of infection and disease transmission, and some basic occupational health education.

### **Nursing Staff**

Newly hired facility based nurses receive on average one hour of detailed infection control orientation including routine and transmission based precautions, disease transmission prevention, isolation technique, and management of resistant organisms.

Many hospitals use a decentralized staff liaison person to assist with ongoing staff education and awareness of infection control policies and principles. These personnel are called “champion” or “link” nurses, and are usually either an interested staff person, the Clinical Nurse Specialist or the Nurse Educator.

### **Residential Care**

Most include basic staff infection control topics in their orientation. This is mandated by the Provincial **Registrar for Assisted Living** but it does not include standardized or mandated content.

### **Home and Community Care**

There is no standardized infection control orientation for homecare staff.

Some areas receive none.

Many home care programs offer periodic in-service education regarding issues such as wound care and resistant organism precautions

### **Physicians**

Medical students and new residents receive infection control orientation at teaching hospitals. Staff and visiting physicians usually do not.

### **Physician’s offices**

BCCDC has created a useful document incorporating *Infection Control in the Physician’s office*<sup>47</sup>. This comprehensive paper includes information regarding SARS and facial protection information. The document is not widely used.

## **E. Continuing Education Offerings for All Health Care Staff**

### **Webber Teleconferences**<sup>48</sup>:

---

<sup>45</sup> 211 page document prepared by the Justice Institute Dec.2004; not available on line

<sup>46</sup> Range 15-60 minutes

<sup>47</sup>(Ctrl+ click)

[http://www.bccdc.org/downloads/pdf/lab/reports/Infection\\_Control\\_In\\_Physician\\_Office\\_Final.pdf?PHPS\\_ESSID=e4c11757616518c1c6ff0c029bd8877d](http://www.bccdc.org/downloads/pdf/lab/reports/Infection_Control_In_Physician_Office_Final.pdf?PHPS_ESSID=e4c11757616518c1c6ff0c029bd8877d) BCCDC, 2004.

<sup>48</sup> Website: (ctrl+ click) <http://webbertraining.com/aboutusc5.php>

These one hour sessions which occur 2-5 times a month offer education sessions delivered by world experts in the field of infection control.<sup>49</sup> Subscription to a full year of teleconference sessions costs \$700 (plus tax). Individual telecast sessions are \$35.<sup>50</sup> Coloured slides are emailed to participants prior to each session, and these can later be accessed, along with the audio tape of the session on the internet. Once the registration fee is paid, there is no limit to the number of personnel who may attend these infection control education teleconferences. PICNet has a subscription open to anyone in BC.

Those who are interested within the BC community of practice sign up with PICNet and can access the teleconference from any computer and phone line. PICNet is purchasing recordings of all the telecasts from 2006 so that they can be accessible to the infection control community of practice on a loan basis.

## **F. Professional Schools Infection Control Education**

### **1. Nursing**

Schools of Nursing core curricula in BC include infection control principles.

The infection control training is not standardized and the actual content and method of presentation varies.

Formal exposure to Infection Control team members by student nurses is not in place.

See UBC on line course for information on elective infection control course offerings for nurses in the masters of nursing program

### **2. Medicine**

Infection control content in the four year medical school curriculum is limited to a one hour introduction prior to the third year clerkship. Infection Control training is not a standardized part of resident training or physician competency documentation.

### **3. Allied Health Professionals**

**Respiratory Therapy:** Respiratory Therapy Program: Thomson River University, Kamloops, BC.

**Physical and Occupational Therapy Programs:** UBC:

The course curricula for these three allied health professions do not include any infection control content.

---

<sup>49</sup> For recent educational topics visit : (ctrl+click):<http://webbertraining.com/schedule1.php>

<sup>50</sup> Need to add one hour of long distance to Ontario per session.

## **G. Infection Control Requirements for Registration and Licensure**

### **1. Office of the Assisted Living Registrar**

British Columbia regulates assisted living residences. Under the [Community Care and Assisted Living Act](#) an assisted living Registrar has been appointed to protect the health and safety of seniors and people with disabilities who are living in assisted living residences.

All public and private assisted living residences are required to be registered with the office

The role of the Provincial **Registrar for Assisted Living** is to administer health and safety standards for assisted living residents.

Three of the standards Operators of Assisted Living facilities must meet are:

1. to provide a safe, secure, sanitary environment
2. to guarantee hospitality services and ensure that these services do not place tenants at any health or safety risk
3. to ensure sufficient staff to meet service needs and that staff have the knowledge and ability to do their tasks.

### **Section on Infectious outbreaks**

1.6.1 Registrants must have a plan in place to prevent, contain and report infectious outbreaks.

#### **• Written policies and procedures provide guidance for:**

1. Preventing and containing infectious outbreaks
2. reporting infectious outbreaks to the local Health Authority and Medical Health Officer
3. Registrant has received advice on appropriate policies/procedures from the local health authority or the Centre for Disease Control
4. Staff are trained to respond to infectious outbreaks and the use of “universal precautions”

#### **Training includes:**

- Orientation materials
- Training modules
- Records of staff participation in orientation and training

(Office of the Assisted Living Registrar [Health and Safety Standards and Related Policies](#) July, 2004)

### **2. Professional licensure: Medicine, Dentistry, Nursing, Allied Health progressions**

Health professionals are not required to have received Infection Control training in their curricula or to have proof of infection control knowledge to qualify for licensure in BC

## **H. Training Modules Currently in Use**

### **1. Occupational Health and Safety Agency for HealthCare in BC<sup>51</sup>:**

Occupational Health and Safety Agency for HealthCare in BC (OHSAH) Healthcare Education and Learning Program offers an online course through its Knowledge Advancement Tool (KAT). KAT provides animated, interactive web-based learning. The infection control module content was developed as a joint project with VCH. It covers:

- the importance of infection control
- routine and standard infection control practices
- the use of personal protective equipment (PPE)
- proper hand hygiene techniques
- the various types of isolation and when they should be applied

## **I. Accreditation Requirements for Health Care Facilities:**

The Canadian Council on Health Services Accreditation Program<sup>52</sup> contains patient/ client safety goals and required organizational practices. This accreditation process was created in January 2005. The standards cite the Infection Control goal as “decreasing the risk of health services organization-acquired infections and their impact across the continuum of care/ service”.<sup>53</sup>

Infection control required organizational practices are organized into four main categories:

1. Adherence to guidelines
2. Education/ training of staff, others and volunteers
3. Monitor infection rates and disseminate the information
4. Examine and improve the process of sterilization/ disinfection of equipment and facility

Evaluators will be assessing if “infection prevention and control processes are coordinated across the organization, in multiple sites and including clients’ homes”.<sup>54</sup> Additionally, there are Infection Control implications within the Work life/ Workforce section. CCHSA requires that all staff have annual education on a variety of patient and client safety issues such as equipment use, sterilization, hand washing and infection control.<sup>55</sup> Each organization will be permitted to identify the patient safety focus area.

*(CCHSA Patient/Client Safety Goals and Required Organizational Practices (ROPs)  
Evaluation of Implementation and Evidence of Compliance, 2007 Standards. August 2006)*

---

<sup>51</sup> Website: (ctrl+click) <http://www.ohsah.bc.ca/>

<sup>52</sup> **CCHSA Patient/Client Safety Goals and Required Organizational Practices: Evaluation of Implementation and Evidence of Compliance for use with 2007 Standards, Version 2 August 2006.**

<sup>53</sup> IBID page 21.

<sup>54</sup> IBID page 23

<sup>55</sup> IBID page 17

## References

1. APIC/CHICA- Professional and Practice Standards, *Canada Professional and Practice Standards Task Force*, Copyright © 1999 by the Association for Professionals in Infection Control and Epidemiology, Inc. Volume 27, Number 1
2. Blood and Body Fluids Best Practices Program / Exposure Control Plan *Victoria General Hospital*, Vancouver Island Health Authority, October 11, 2002. Developed in part by the Occupational Health and Safety Agency for Healthcare in BC
3. Cost and Cost Benefit Of Infection Control. Nettleman MD. In Wenzel RP, ED. *Prevention and Control of Nosocomial Infections*, 4<sup>th</sup> edition. Philadelphia: Lippincott, Williams, and Wilkins, 2003:p.33-41.
4. CRNBC Practice Standard for Registered Nurses and Nurse Practitioners: Communicable Diseases: Preventing Nurse-To-Client Transmission. April 2006
5. Development of a Resource Model for Infection Prevention and Control Programs in Acute, Long Term, And Home Care Settings: Conference Proceedings of the Infection Prevention and Control Alliance. *Am J Infect Control*. 2004 Feb; 32(1):2-6. Morrison J; Health Canada, Nosocomial and Occupational Infections Section Health Canada, Building 6, PL 0601E2, Tunney's Pasture, Ottawa, Ontario, Canada K1A 0L2  
[Judy\\_Morrison@hc-sc.gc.ca](mailto:Judy_Morrison@hc-sc.gc.ca)
6. Dispelling the Myths: The True Cost of Healthcare-Associated Infections: An APIC Briefing, February 2007. Denise Murphy, RN, BSN, MPH, CIC Vice President, Chief Safety and Quality Officer, Barnes-Jewish Hospital at Washington University Medical Center, St. Louis, MO; Joseph Whiting, MBA, FACHE, Chief Executive Officer, JKW Consulting, South Elgin, IL
7. The Efficacy of Infection Surveillance and Control Programs in Preventing Nosocomial Infections in US Hospitals. Haley RW, Culver DH, White JW, Morgan WM, Emori TG, Munn VP, et al. *Am J Epidemiol*. 1985 Feb; 121(2):182-205.
8. For the Public's Health, Initial Report of the Ontario Expert Panel on SARS and Infectious Disease Control p. 91 Chapter 2, Dec 2003.
9. Infection Control In Acute Care Facilities: Evidence-Based Patient Safety, Lindsey E. Nicole MD FRCPC, Editor in Chief, University of Manitoba,



Winnipeg Manitoba *The Canadian Journal of Infectious Disease And Medical Microbiology*, May/June 2001 Volume 12 Number 3.

10. Infection Prevention and Control Core Competencies for Health Care Workers: A Consensus Document. CHICA Canada Compiled By: E. Henderson)
11. Learning from SARS - Renewal of Public Health in Canada. A report of the National Advisory Committee on SARS and Public Health. October 2003, p. 131. Dr. David Naylor, Dean of Medicine at the University of Toronto (Chair)
12. The Management and Control of Hospital Acquired Infection in Acute NHS Trusts in England, Report by the Comptroller and Auditor General, John Bourn National Audit Office, Comptroller and Auditor General February 2000 P. 47, 2.29
13. Mandated Training Related To Infection Control, New York State Education Department, Office of the Professions 1992
14. New York State Mandated Infection Control For Healthcare Professionals Course Curriculum Objectives New York State Education Department, Office of the Professions.
15. Occupational Medicine in Canada, Current Status, John M. Sehmer MD, MS, CCFP, CCBOM. *Canadian Family Physician*, September 2006
16. Preliminary Results of the 2006 Resources for Infection Control in Healthcare (RICH) Survey. D. Zoutman, B.D. Ford, Department of Pathology and Molecular Medicine. Queen's University, Infection Control Service, Kingston General Hospital.,
17. SHEA Position Paper: Requirements for Infrastructure and Essential Activities of Infection Control and Epidemiology in Hospitals: A Consensus Panel Report, Checker, Brimball, Buck, et al. *Infection Control & Hospital Epidemiology*, Feb. 1998; 19; 114-124.
18. Staffing Requirements for Infection Control Programs in US Health Care Facilities: Delphi project, *AJIC*, Volume 30, Issue 6, Pages 321-333 October 2002.
19. Winning Ways: Working Together To Reduce Healthcare Associated Infection In England. Report from The Chief Medical Officer, Department of Health, UK. December 2003.