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Infection Control: Essential for a Healthy British Columbia

Vancouver Island Health Authority

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Detailed Report

Background

Infection prevention, surveillance and control programs aim mainly at protecting patients, health care workers and visitors from contracting an illness while in the health care environment. Public Health programs have a similar goal: that of preventing the spread of communicable diseases in the population at large. Data on communicable diseases is available but data on the impact of hospital-acquired infections in British Columbia is very limited, although some health authorities have made attempts to examine the costs of specific organisms. However, studies highlight the enormity of the issue of hospital-acquired (nosocomial) infections (see below).

The Numbers on Health Care Acquired Infection

In New Zealand in 2003, it was estimated that about 10% of patients admitted to hospital will acquire an infection as a result of their hospital stay. A study released by the British National Health Service in the same year found that 9% of the population acquired an infection during a hospital stay and estimated that the cost per patient increased three-fold when the individual contracted a hospital-associated infection.

In the United States, it is estimated that nearly 2 million patients a year get an infection in a health care facility and, of those, about 90,000 die as a result of the infection. More than 70% of the bacteria that cause hospital-acquired infections are resistant to at least one of the drugs most commonly used to treat them. It is estimated that treating hospital-acquired infections accounts for 2% of total hospital costs.

A Canadian survey (reported in 2000) of hospitals with greater than 80 beds found that only 13% of hospitals adequately monitor hospital infections and only 1 in 5 institutions had the staff and procedures necessary to keep infections controlled. The lead author of that report also prepared data for the Romanow Commission. That information indicated that Canadians contract more than 200,000 hospital-acquired infections annually, resulting in 8,500 – 12,000 deaths per year. The direct costs of hospital-acquired infections were estimated to be around $1 billion annually.

While infection prevention, surveillance and control programs have been part of British Columbia health care facilities for a long time, the capacity of such programs has always varied from one facility to another. These differences in capacity and resources were carried into the 2001 reorganization of the British Columbia health care system. At that time, the system was organized into the Provincial Health Services Authority and five geographically defined health authorities: Interior Health, Fraser Health, Northern Health, Vancouver Coastal Health and Vancouver Island Health. Each of the latter five is responsible and accountable for care delivery across the continuum of care (residential care, acute care, mental health, public health and home and community care).

Background

The Provincial Health Services Authority is responsible for specialized provincial health services, such as cardiac surgery, which is delivered in a number of locations within the regional health authorities. As well, the provincial authority operates the following provincial agencies:

- British Columbia Centre for Disease Control
- British Columbia Cancer Agency
- British Columbia Provincial Renal Agency
- British Columbia Transplant Society
- British Columbia Children's Hospital and Sunny Hill Health Centre for Children
- British Columbia Women's Hospital and Health Centre
- Riverview Hospital
- Forensic Psychiatric Services Commission

In the first few years of this realignment, infection control in the health authorities operated as separate programs within facilities or a cluster of facilities, much as they had done before. At the same time, Public Health continued to operate within the Health Act and its regulations for communicable disease control. Not surprisingly, both these factors make it difficult to bring an integrated approach to infection control management across the continuum of care.

Audit Purpose and Scope

The purpose of our audit was to assess whether the health authorities have effective systems for the prevention, surveillance and control of infections across all service delivery responsibilities.

We focused on the Ministry of Health, the Provincial Health Services Authority and the five geographically defined health authorities. Specifically, we wanted to find out whether the Ministry of Health and the Provincial Health Services Authority provide a framework for infection, prevention, surveillance and control (for details see The Provincial Overview); and whether each of the health authorities:

- has a workable plan in place for prevention, surveillance and control of infections;
- is demonstrating best practices for infection prevention, surveillance and control;

- has information system support in place for infection prevention, surveillance and control; and
- is reporting on the status of its infection prevention, surveillance and control efforts and is making continuous improvements.

We did not examine the infection prevention, surveillance and control practices in the B.C. Ambulance Service, physicians' offices or facilities not funded by the health authorities.

We carried out our audit fieldwork from July 2005 to February 2006.

We performed the audit in accordance with assurance standards recommended by the Canadian Institute of Chartered Accountants and accordingly included such tests and other procedures as we considered necessary to obtain sufficient evidence to support our conclusions. In gathering our evidence, we reviewed documents prepared by the health authorities, the Ministry of Health and other agencies and organizations. We also interviewed board members, senior management, managers and physicians in the health authorities, as well as staff within the Ministry of Health.

Vancouver Island Health Authority

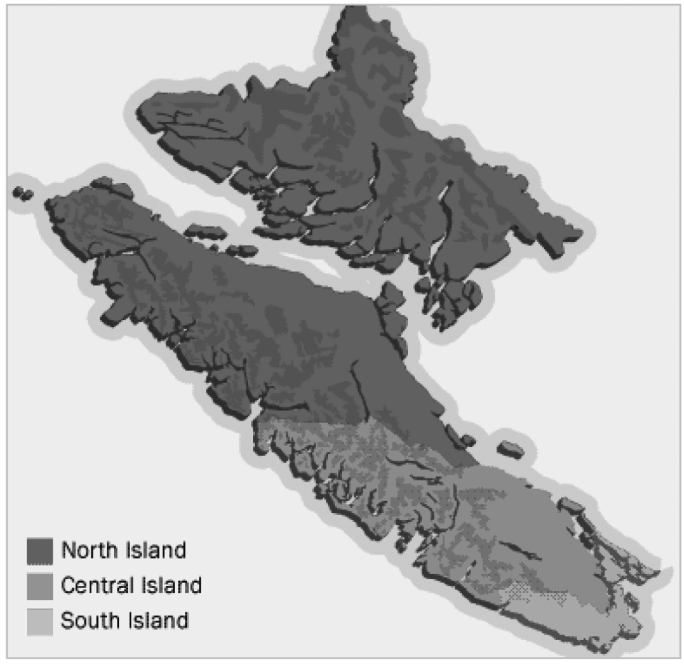
The Vancouver Island Health Authority (VIHA) is responsible for providing health care services to all of Vancouver Island, the islands in Georgia Strait, and the mainland communities north of Powell River and south of Rivers Inlet. With 16,000 staff and 1,600 physicians, VIHA serves approximately 716,000 people and has available 1,499 acute care beds and 4,530 residential long-term care beds and assisted living units (includes owned and operated, affiliated and contracted beds).

The authority is divided into three Health Service Delivery Areas (HSDAs): North Island, Central Island and South Island. The services it provides across these areas include acute care, residential long-term care and assisted living, mental health, home and community care, and public health.

Background

VIHA has a number of owned and operated facilities, along with contracted service delivery sites. The contracted sites provide services in mental health and care for the elderly. It also has affiliated agencies, such as St. Joseph's General Hospital in Comox, which provides acute care and extended care services.

Early in 2005, VIHA reorganized in an effort to become a more integrated organization providing authority-wide programs. At the time of our audit, the integration of programs was still in progress.



Overall Conclusion

VIHA has no comprehensive, integrated infection control program yet in place. While the health authority has recognized the need to determine its status in infection prevention, surveillance and control, it has much to do. The organization has established a new accountability structure, but still has no infection control plan. It also lacks outcome indicators to measure its infection control performance, other than those set out in its performance agreement with the Ministry of Health.

Planning for infection prevention, surveillance and control is in the early stages

The Vancouver Island Health Authority (VIHA) is responsible and accountable for care delivery across the continuum of care (residential care, acute care, mental health, public health and home and community care). We therefore expected to find that planning for infection prevention, surveillance and control had been integrated across the care continuum.

Conclusion

VIHA does not have an integrated plan for infection prevention, surveillance and control across its programs and services. However, the newly created Quality and Patient Safety Portfolio is tasked with developing both the infection control program and its plan which is to link to the authority's strategic plan.

Findings

VIHA recognizes that it needs to develop an infection prevention, surveillance and control plan

South Island's annual infection control program report for 2002/03 had components of an infection prevention, surveillance and control plan. The goals and objectives set out in the report reflect national infection control practice standards and key program evaluation criteria, but they are not aligned with VIHA's strategic plan. We did not see these goals and objectives mentioned again in subsequent documentation.

VIHA's Five-Year Strategic Plan was in draft in October 2005, but initiatives such as changes to structure were underway even before its completion in 2006. The plan addresses infection management in one of its goals, "Quality, Patient Safety and Client-Centred Care and Service." To improve the quality of services and keep its patients safe, VIHA has established an Office of Quality and Patient Safety. Its responsibility is to lead and support quality improvement and safety collaborations across the authority, including infection prevention, surveillance and control efforts. Two of the initiatives for the integrated health services portfolio are to develop a plan for coordinated activity with Public Health and to develop an infection prevention and control plan for VIHA. Again, however, we saw neither plan during our audit.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

The Public Health Agency of Canada (formerly Health Canada) has issued a number of guidelines for infection control, pertaining to such matters as staffing levels and facility design. These are considered to be "best practice." Guidelines from other agencies such as the British Columbia Centre for Disease Control and the United States' Center for Disease Prevention and Control also support best practices.

We expected to see regional standardized, accessible infection control manuals, appropriate structures with accountabilities, educated staff with access to ongoing timely education, workspace conducive to infection management, regular practice monitoring, and active research.

Conclusion

VIHA is aware that it is does not consistently demonstrate infection prevention, surveillance and control best practices across the continuum of care and is determining what initial steps to take to address the deficiencies.

Findings

VIHA has made efforts to standardize infection control manuals

The Office of Quality and Safety has set out its actions and timelines. One action is to "roll out the infection prevention and control manual" by February 2006. We found that different programs are using not one manual, but a variety of them:

- For *Acute Care*, South Island has done the most advanced work to produce an infection control manual. The B.C. Centre for Disease Control has used what has been developed in South Island as a template for other health authorities throughout the province. Before the most recent regionalization in 2001, South Island created the original manual and Central Island and North Island purchased it and adapted it to their needs. It has subsequently been updated and is available on every acute care unit throughout VIHA as a print copy. We heard that it is easy to use. The Infection Control Practitioner is responsible for keeping the manual up-to-date and sending updates to the sites.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

- *Residential Care* throughout VIHA uses the South Island continuing care (residential care) manual. It is available in print form and is in all residential care facilities. Updates come from the Infection Control Practitioner in South Island who is responsible for continuing care.
- *Public Health* uses the *Communicable Disease Control Manual* available online from the B.C. Centre for Disease Control. Print copies of this are also available in its Public Health offices. The centre sends out updates or changes to the policies through its distribution list, and then each Public Health office ensures that the changes are communicated to staff.

  In February 2003, the Chief Medical Health Officer requested a review of the communicable disease control program and its activities in the authority. The resulting consultant's report included a number of recommendations. One was that a customized communicable disease manual be written for VIHA using existing policies, because policies of the B.C. Centre for Disease Control do not cover all communicable diseases or issues. This recommendation had not been acted on at the time of our fieldwork.

  A memorandum of understanding between VIHA, the Intertribal Health Authority (which includes 51 bands) and the federal government formalizes the role of the Medical Health Officer in communicable diseases on reserves. The agreement states that First Nations communities will provide immunization services, including surveillance and communicable disease reporting. It also says that the Health Canada First Nations and Inuit Health Branch will provide communicable disease policy information to the bands. Thus, the manual used by Public Health Nurses on reserves is the federal branch manual. We heard that it is available to the nurses in print copy and that the nurses use it.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

- Awareness by *Mental Health* staff of the Acute Care's infection control manual seemed to vary by the location of the mental health facility. Staff in South Island seemed to be the most aware of it. We found that few people access an infection control manual for information, turning instead to Public Health licensing expertise. Public Health licensing determines what facilities will care for mental health patients based on standards. For example, the Facilities Licensing Act states: "the licensee must operate the community care facility in a manner that will promote the health, safety and dignity of the persons in care." When there is a reportable incident, including outbreaks and communicable diseases, it is reported to Public Health licensing which, with the Chief Medical Health Officer or the Medical Health Officer of the appropriate HSDA, has the authority to do follow-up.
- *Home and Community Care* staff know about, and may or may not use, either Acute Care's or Continuing Care's infection control manual. However, neither manual addresses infection control issues that occur in a person's home.

St. Joseph's General Hospital has its own manual. The Infection Control Practitioner is responsible for keeping it up-to-date and informing staff of changes.

Physicians we interviewed said that they are unaware of where infection control manuals are located. Should they need information, they consult with medical colleagues such as the Medical Director, Infection Control, or ask the Infection Control Practitioners or nursing staff.

VIHA is in the process of clearly defining, focusing and resourcing an infection control program

VIHA has recognized that ensuring patient safety through infection prevention, surveillance and control across all programs is important, which is one of the reasons it created the Quality and Patient Safety Portfolio in 2005. The infection control program includes: two Executive Program Directors who co-manage the portfolio (one is a Medical Director and one an Administrative Director); a Medical Director of Infection Control (a 0.6 full-time

equivalent [FTE] located in South Island); and, an Associate Medical Director of Infection Control, located in Central Island; 6.25 FTE Infection Control Practitioners; a 0.5 FTE administrative person; and a 0.5 FTE analyst/planner. St. Joseph's General Hospital also has one Infection Control Practitioner.

An additional $500,000 was allocated to further develop the infection control program. It was used to create new positions including the Manager for Infection Control and additional Infection Control Practitioners.

VIHA is in the process of analyzing its ratio of Infection Control Practitioners to beds to determine what will work best for a region that has both urban and rural communities. We heard concerns that the standard ratios may be linked more to urban facilities and not take into account rural needs.

There are two main methods by which the program can receive additional funding to meet infection control needs. One is by prioritizing issues using the Operating Budget and Health Services Plan Instructions. Then, when funding becomes available, the authority reviews the priority list to determine where the resource will be spent. The other method for gaining additional funding occurs if senior management recognizes the need for more funding for a program that, without additional resource, could potentially harm patients and therefore the authority. The issue is brought forward and evaluated using a risk tool. If there is the need to invest dollars to meet best practice standards, resources are made available from within the authority budget. We were told that if something must be resourced, it is resourced.

Committee structures and staffing for VIHA's infection control program are now being created and staff recruited. A summary of the status of these committees and positions is provided below.

Infection Control Committees

Medical staff have a key role to play in infection control and do so through the organization and committee structure in the health authority. The Medical Staff Bylaws for the Health Authority Medical Advisory Committee (HAMAC) give this committee the responsibility and accountability for the quality of medical care across VIHA. Reports from quality review bodies and committees about the quality of care provided by staff physicians are expected

to come to the committee. The reports must be reviewed and recommendations made. HAMAC is a standing committee of the Board of Directors.

A standing committee of HAMAC, the Pharmacy and Therapeutics Committee, establishes policies and procedures for the selection, procurement and distribution of medications, including antibiotics. It is also responsible for the safe use of pharmaceuticals.

There are also local Medical Advisory Committees (MACs) whose roles and responsibilities are delegated to them by HAMAC. Their purpose is to monitor the quality of medical care within a geographic area or designated facility (or facilities). Collaborating with HAMAC, they are to deal with site and facility issues pertaining to pharmaceuticals, the management of infections and the quality of medical care. Each MAC is represented on HAMAC according to the Medical Staff Rules in accordance with the Medical Staff Bylaws.

South Island has an active Infection Control Committee; the Central Island committee dissolved because there was an understanding that an authority-wide Infection Control Committee was being created; and North Island does not have such a committee. We learned that approval has been given for the formation of a Central/North Island Infection Control Committee, but it was not in place at the time of our fieldwork.

An authority-wide Infection Control Committee is also being created. Recently, an infection control working group was formed to determine how the new Infection Control Committee should be structured. The working group has met once and made several decisions. Key among those are that:

- The new Regional Infection Control Committee will report to the Executive Directors (Medical and Administration), Quality and Patient Safety and also to the Regional Quality Council (which was not in place during our audit).
- The Executive Directors, Quality and Patient Safety will be accountable for the management of infections in VIHA and will report to the Vice-Presidents/Chief Operating Officers.
- The proposed membership of the Regional Infection Control Committee should include medical leaders, Infection Control Practitioners and Public Health staff.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

The terms of reference for the committee were being written using South Island's Infection Control Committee terms of reference as a basis.

Although St. Joseph's General Hospital has its own Infection Control Committee, we heard that the facility would like representation on the Regional Infection Control Committee.

The communicable disease program also has a fledgling VIHA-wide committee whose job it is to make recommendations to the program regarding policies and procedures for managing communicable disease. Membership on the committee includes representation from Public Health and also the Intertribal Health Authority. How this committee will be related to the newly forming Regional Infection Control Committee is not known at this time. However, there may be representation from one committee on the other. For example, the Communicable Disease Control Medical Health Officer and the Medical Director of Infection Control may be members of both.

Infection Control Practitioners

The number of certified Infection Control Practitioners required for a comprehensive program has not been firmly established, but the general guideline is 1 for every 150–175 acute care beds and 1 for every 150–250 residential care beds. The complement of Infection Control Practitioners in VIHA during our audit included actual and posted positions of 5.0 FTE practitioners for Acute Care and 1.25 FTE practitioners dedicated to Residential Care. The program does not currently have a manager, although recruitment for one was occurring at the time of our audit.

VIHA has a total of 1,499 acute care beds. Thus, in keeping with the guideline's highest ratio (1:175), the health authority should have 8.6 FTEs. As well, VIHA has 1,760 owned and operated residential care beds and therefore should have 7.0 FTE Infection Control Practitioners.

Clearly, relative to the general guidelines, the current 6.25 FTE Infection Control Practitioners fall far short of the recommended 15.6 FTEs.

It must be noted, however, that even at this level of staffing, there would be very little support offered to staff providing home care services or other facility and community based programs such as mental health and addictions.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

The health authority was conducting a gap analysis during our fieldwork to determine what Infection Control Practitioner complement it needs to meet urban and rural needs. Should a need for more practitioners be determined, we were told that the additional practitioners would allow the program to: take additional steps to prevent outbreaks; carry out more ongoing consultation and education for staff, physicians and the public; add capacity to increase service to manage outbreaks; perform practice audits; study surveillance trends and benchmarks; and provide full-time on-call coverage.

St. Joseph's General Hospital, with its own infection prevention and control program, has 1.0 FTE Infection Control Practitioner who covers the hospital's 125 acute care beds and one complex care facility of 101 beds. The guideline's highest ratio puts St. Joseph's need at a 1.1 FTE practitioner—close to the guideline.

An Infection Control Practitioner in VIHA (according to Acute Care's infection control manual) requires the following education, training and experience:

- a Bachelor of Science in Nursing with course work in microbiology;
- infection control certification or a willingness to attain certification within two years of starting the position;
- six years' recent experience in a clinical teaching and/or in an administrative role in a health care environment; and
- current registration with Registered Nurses' Association of British Columbia and other appropriate professional associations as required (e.g., Community and Hospital Infection Control Association).

The Infection Control Practitioners in VIHA are certified and must be re-certified every five years in infection control.

South Island's Public Health program has Communicable Disease Nurses (who manage communicable disease control) and Public Health Nurses. In Central and North Island, such specializations do not exist: Public Health Nurses there take on both roles. In interviews, we were told that roles are sometimes confused, and clarification for managing infections and communicable diseases would be helpful. We were also told that all VIHA Public Health Nurses have the needed education to manage communicable disease.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

Infection Control Officers

VIHA has medical management in place for the infection control program. The Medical Director, Infection Control is also the Infection Control Officer and a medical microbiologist located in South Island. The position is accountable to the Chief, Laboratory Medicine and to the Medical Executive Director, Quality and Patient Safety. There is no job description for the Medical Director of Infection Control, but there is a job description for the Medical Infection Control Officer.

An Associate Medical Director, Infection Prevention and Control manages the program in Central and North Island. A physician located in Central Island, with occupational health expertise, also provides support for the infection control program.

Public Health is led by the Chief Medical Health Officer and three Medical Health Officers—one each for South Island, Central Island and North Island. Each Medical Health Officer also has added responsibility for a particular aspect of Public Health across the whole region. For example, one officer has designated responsibility for aboriginal health, another for clean water supply and another for communicable diseases (the latter position was recently established, as recommended by the 2003 external review).

The Chief Medical Health Officer is responsible for leading the development of the Pandemic Influenza Plan. VIHA's initial plan was written in October 2005. It is consistent with national and provincial frameworks. The document is still being completed and is expected to keep changing as needs change.

Workplace Wellness and Safety Staff

The Workplace Wellness and Safety Department, responsible for staff health in the workplace, is not directly part of the infection control program, but works closely with it. The employee health and influenza prevention initiatives of the program ensure that: staff are up-to-date with their immunizations; precautions are in place to protect staff from contracting illnesses; staff are monitored for reportable infections; and follow-up occurs with infected persons. Department staff have also taken part in influenza pandemic planning and are responsible for delivering the Sharps Care Program (also known as the "needleless system") to all staff in VIHA.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

When the Sharps Care program was initiated, monitoring the number of staff with needle stick injuries showed an increase during the implementation of the new system. The department therefore had more follow-up to do.

During our audit, the department was going through a management change. Recruiting for a Director of Wellness and Safety and two manager positions was underway.

Physical Environment

There is evidence that the built environment may influence the incidence of infections in facilities. The built environment refers to the type of rooms, such as: single versus multi-patient (the ability to isolate patients); the location and number of sinks; types of surfaces; ability to separate clean and soiled equipment; and availability of waterless hand-washing stations. Facility design and age affect how staff are able to carry out their practice to mitigate the chance of infections.

Across VIHA, we heard that the differences in facility age and design affected the availability and location of sinks for hand washing. Because many of the facilities in the health authority are older, there are not adequate hand washing sinks in appropriate places. Where renovations or new construction occurred, the situation was improved. We were also informed that initiatives were underway to try to mitigate risks created by the age and design of facilities. For example, waterless hand wash is available on all sites. Staff working in the field carry the product with them.

The ability to isolate patients overall occurs with single rooms and is better on newer acute care sites than older ones. Private rooms are used in all programs to separate patients with potential or actual diagnosis of an infection. We heard that often there are no ante rooms to designated isolation rooms (outside rooms for hand washing and donning gowns and masks).

Negative pressure rooms are used to protect the staff from acquiring an airborne infection from a patient, and positive pressure rooms (found in the burn unit, South Island) are used to protect an immune-compromised patient from acquiring an infection from staff. There are few negative pressure rooms throughout VIHA, and some sites have none. This was recognized during the SARS (Severe Acute Respiratory Syndrome) outbreak that occurred

in British Columbia and Canada in 2003. The authority is doing retrofits, incorporating these specialized rooms when they can.

On most sites it is possible to separate clean and dirty equipment, but not at all sites. For example, when new hoppers for bedpan cleaning were needed to replace the old hoppers that did not seal during cleaning (thus spraying soiled water droplets and increasing the chance of infections), there was not enough room to install them. Some sites have been accommodated and some have not.

Facility design and infection control practices differ for residential care from those practices for acute care. In acute care, for instance, a patient with an infection is placed in a single room, which may be specifically for isolation, with reverse airflow and a sink for hand washing. In residential care, residents with an infection are put in a room with others who have the same infection. There are not enough single rooms to separate people in an outbreak.

The Standards Council of Canada has a standard called "Infection Control During Construction or Renovation for Health Care Facilities," which includes risk stratification of facility areas and populations, descriptions and stratification of construction activity and a summary of the roles and responsibilities of those involved with such activities (see Appendix B for more details). We heard that Infection Control Practitioner involvement in the stages of renovation or building planning, and implementation of construction was inconsistent. In many programs, there was no involvement at all. However, we were informed that when there is construction, the Workplace Wellness and Safety staff does the containment of the area so that other areas are not contaminated.

Laboratories

The Medical Director, Infection Control reports to the Chief, Laboratory Medicine. There is also an Administrative Director for the laboratory.

The largest laboratory in VIHA is located at the Victoria General Hospital in South Island. In addition to the main laboratory and laboratories in other acute care facilities, there are 13 collection facilities on South Island and 8 more in Central and North Island. Together these have about 500 staff, including community phlebotomists.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

The provincial laboratory coordinating office did a review of VIHA's laboratories and determined that 98% of the laboratory assessments are done on the Island. As a result, the laboratory is considered a node of the B.C. Centre for Disease Control, where diagnosis of communicable diseases occurs.

Supplies

Adequate supplies are needed to protect staff from infections and to protect fragile patients from staff.

The budget for supplies is the responsibility of each program, not of infection control per se. Throughout VIHA there are adequate gowns, gloves, eye shields and regular and specialty masks. However, fit-testing for N95 masks (found to be the standard for use when a patient has SARS) was considered onerous, but recognized as being important. Mask fit-testing for physicians was offered, yet many had not had it done. The cost of the N95 masks is greater than regular masks.

Because of high expense, some supplies deemed for single use (supplies that are to be used only once and then discarded) are reviewed to see if they can be re-sterilized. VIHA has no policy for single use devices and re-sterilization. The South Island acute care infection control manual identifies processes that are outdated. One example is "the Capital Health Region Reuse Committee must be notified and approve the reprocessing procedures." Capital Health Region is the name of the region that occurred during the first regionalization in British Columbia in the 1990s, and it covered the region known now as the South Island HSDA. We found no mention of a current VIHA Re-use Committee. To see if the reprocessing is adequate, equipment is tested in the Central Supply to be sure it is sterile. We saw no test reports.

Infection control education on orientation is inconsistent

VIHA has no standardized orientation program for new employees that includes infection control.

In 2004–2005, 4% of the Infection Control Practitioner education hours in South Island were dedicated to orientation for nursing. We heard no mention of orientation for other professions that included an infection control component.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

Central Island has a 75-minute orientation program for newly hired Registered Nurses and Licensed Practical Nurses for Cowichan District Hospital, Nanaimo Regional General Hospital and West Coast General Hospital. The number of employees receiving this education was over 200 for 2004/05. Topics include: role of the Infection Control Practitioner; location of the infection control manual and how to use it; routine practices, including hand washing; and tools to manage infections, such as masks, gloves and gowns. Non-nursing staff also receive education on infection control in a five-minute PowerPoint presentation on hand washing.

In the general orientation for all new staff in North Island, there is a segment in acute care that addresses infection control.

Orientation for new staff, student nurses and volunteers at St. Joseph's General Hospital includes infection control. There is also further nursing orientation that includes the infection control manual and how to use it.

Public Health takes part in the provincially standardized orientation for immunization competency. New staff are observed and they work with a mentor for 8–10 clinics and write an open-book exam. Three to six months later they do the next level exam, and there is an update every three years. At the time of our fieldwork, a new self-learning orientation package for Public Health staff in Central and North Island was soon to be implemented.

We saw no evidence of orientation education sessions on infection control for residential care, home and community care, mental health and addictions or for physicians.

Ongoing infection control education in VIHA is usually ad hoc

Ongoing education for staff about infection control varies from site to site and from program to program. Responsibility for this education also varies.

South Island and Central Island Acute Care have had ongoing education, as noted in VIHA's Infection Control Annual Report 2003–2004, but it is difficult to discern from the report if the education is for all staff or just some, targeted to issues and sites, or one-on-one with a staff member. Topics include: antibiotic resistant organisms (AROs), isolation, hand washing, SARS, wound infections, meningitis, and emerging infectious diseases. In Central

Island, with the outbreak of Clostridium difficile (C. difficile), a self-learning module was developed for all staff.

In North Island, education is ongoing on the use of the infection control manual, AROs and other topics. We heard that when the ongoing education is not scheduled, it can be done by request. The Infection Control Practitioner may also offer it one-on-one.

In residential care, education sessions seem to be held only in South Island. Topics covered include: standard precautions of practice, including hand washing; SARS; urinary tract infections; laboratory reports; and AROs.

St. Joseph's General Hospital does not offer group education because staff are unable to get away from work. One-on-one education occurs with staff when the Infection Control Practitioner visits. We heard that the Infection Control Practitioner was planning to increase awareness of hand washing, using an online program for all staff. A video and the use of ultraviolet lights to test for cleanliness will also be used, and physicians will be included.

Recently, there was education for all staff for the new Sharps Care program. The program, with four learning modules, was presented by Workplace Wellness and Safety beginning in North Island then fanning out to all of VIHA.

Ongoing education among medical staff for infection management is ad hoc. The Medical Director of Infection Control, the Associate Medical Director of Infection Control and the Medical Health Officers are available to conduct medical education on request. They also conduct education for physicians in an outbreak. The Medical Health Officers also send out a physician newsletter regularly to all physicians who are credentialed and working in VIHA with hospital privileges.

Education for Infection Control Practitioners is available

Because it is expected on hiring that Infection Control Practitioners are certified—or will become so within two years—and that they will maintain their certification, all in VIHA are either already enrolled and actively participating in certification courses or are preparing to re-certify. To maintain certification, they must write and pass a re-certification examination every five years.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

Ongoing education for Infection Control Practitioners involves bi-weekly Webber teleclasses, available throughout VIHA. Some of the topics in 2005 included urinary tract infections, community issues concerning antibiotic practices, surgical site infections, surveillance and management, and root cause analysis for the infection control professional. Experienced practitioners also pursue self-directed education, attend conferences and meetings, and keep up-to-date with journals.

Public Health staff receive focused communicable disease education through VIHA workshops. The B.C. Centre for Disease Control offers courses and updates, and staff can access the centre's website to obtain updated information on communicable diseases.

Monitoring of infection control practices is not consistent across VIHA, except in the public health program

In this audit, we looked at monitoring from two perspectives: surveillance – the ongoing, systematic collection, analysis and interpretation of data for use to improve health outcomes; and the direct observation or audit of practice (such as hand washing or gowning). In addition, we looked at the mechanisms the authority has in place for monitoring any third-party contracts that have implications for infection control.

Surveillance

Surveillance within VIHA is inconsistent, with greater surveillance occurring in South Island, less in Central Island and very little in North Island. St. Joseph's General Hospital does do some surveillance.

Surveillance is dependent on the availability, skill and knowledge of the Infection Control Practitioner, the Communicable Disease Nurse and the Public Health Nurse, and on the technology available to gather the data. We expected to see surveillance of infections according to the provincial communicable disease regulations, for some specialty surgeries and for hospital-acquired infections.

- *Public Health* — Standardized provincial tracking is done by Public Health staff, including Communicable Disease Nurses and Public Health Nurses, for all of VIHA. It is a regulatory requirement for health care professionals and others to alert Public Health to any client who has been

assessed with a disease designated as reportable. In turn, Public Health staff provide surveillance reports to the B.C. Centre for Disease Control which receives the reports on behalf of the Provincial Health Officer (the centre then reports these diseases to the Public Health Agency of Canada). Public Health staff also monitor immunization rates and any adverse events that may occur as a result of the vaccines. This data is also reported to the centre. The laboratory in South Island, as a node of the centre, does testing for such communicable diseases as STD, hepatitis, HIV and tuberculosis (TB).

- *Acute Care* — Surveillance in Acute Care in VIHA includes daily monitoring of admissions and review of all positive microbiology cultures. Necessary, clustering of any organisms is done, as is the early identification and containment of AROs such as methicillin-resistant staph aureus (MRSA), extended-spectrum beta lactamase (ESBL), and vancomycin-resistant enterococci (VRE), TB and Norwalk-like illness. In South, Central, and North Island, C. difficile is measured by whether it was acquired while the person was in hospital or living in the community.

  All hospitals performing caesarean sections also measure the infection rates as a result of a provincial requirement to do so.

  Surgical wound surveillance is monitored for VIHA, but the collection of information is not standardized across the HSDAs. For patients receiving early discharge, not all infections can be captured unless a prospective study is planned. In South Island, surgical wound infections are recorded in several categories: as clean or contaminated; by specialty (general surgery, orthopaedics, cardiothoracic, vascular, open heart, ophthalmology, ear nose and throat, plastics, obstetrics and urology); and by hospital.

  Central Island has monitored wound infections by total hip and total knee prosthesis implants. When the rates were found to be higher than the set benchmark, practices for infection control were recommended.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

North Island does not currently capture surgical wound infection rates. It is determining first what it needs to study and measure.

St. Joseph's General Hospital has a medical surgical outreach nurse who follows patients after surgery to track any surgical wound infections. This type of monitoring, we heard, is difficult.

- *Residential Care* — Residential Care's Infection Control Practitioner who was responsible for South Island monitored infections for each of the residential care facilities there. This monitoring showed that:
  - — C. difficile was seen primarily in residents who were returning from acute care;
  - — people who were diagnosed with MRSA, ESBL or E. coli, and VRE-infected and colonized residents, were admitted to extended care facilities; and
  - — outbreaks of gastro-intestinal illness were seen in residences.

  We saw no reports of similar monitoring of residential care infections in Central Island or North Island.

VIHA is a Canadian Nosocomial Infection Surveillance Program (CNISP) site that is participating in the monitoring of central venous catheter blood stream infections (CVC-BSI) and antibiotic resistant organism infections such as VRE, MRSA and ESBL. These hospital-acquired infections are not reportable in the province, so this program provides a way to collect data and outcomes in the authority for national comparisons. Surveillance under the program has occurred mainly in South Island, but we heard that the plan is to increase it to all of VIHA.

VIHA is also participating in a national patient safety initiative called "Safer Healthcare Now!" which is focused on six targeted interventions. (Each of these has an evidence base indicating that appropriate implementation and practice can lead to reduced mortality and morbidity.) This initiative is patterned on the Institute of Health Improvement's "100,000 Lives" campaign in the United States.

Of the six targeted interventions, three are connected to infection control: Prevention of Central Line-Associated Bloodstream

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

Infection, Prevention of Surgical Site Infection (selected surgeries), and Prevention of Ventilator-Associated Pneumonia. For each of the interventions, a kit explains the key components, or bundles, of care; the changes that might be made to implement the care requirements; the standardized data to be collected; and the calculations to be completed, analyzed and reported. Involvement in the initiative also requires that baseline data be collected on current infection rates in these areas so that the health authority has some sense of where it is starting.

With three of these targeted interventions directly connected to practices to reduce infections, we were surprised to hear that medical infection control staff are not involved in implementation discussions or the ongoing process.

Exhibit 1 is an excerpt of the information provided for one of the components of care related to preventing surgical site infections.

Exhibit 1

Use of Prophylactic Antibiotics for Surgery

Components of Care

1. **Appropriate Use of Prophylactic Antibiotics**
   For the purposes of the 100,000 Lives Campaign, the antibiotic process measures are these:
   - Antibiotics within 1 hour before surgical incision*
   - Prophylactic antibiotic consistent with national guidelines (e.g., CDC)
   - Discontinuation of prophylactic antibiotics within 24 hours after surgery

*Due to the longer infusion time required for vancomycin, it is acceptable to start this antibiotic (e.g., when indicated because of the beta-lactam allergy or high prevalence of MRSA) within 2 hours prior to incision

2. **What changes can we make that will result in improvement?**
   Hundreds of hospital teams across the United States have developed and tested process and systems changes that allowed them to improve performance on the antibiotic use measures. Some of these changes are:
   - Use preprinted or computerized standing orders specifying antibiotic, timing, dose and discontinuation
   - Change operating room drug stocks to include only standard doses and standard drugs, reflecting national guidelines
   - Reassign dosing responsibilities to anesthesia or holding area nurse so that timeliness is improved
   - Use visible reminders/checklists/stickers

Involve pharmacy, infection control and infectious disease staff to ensure that appropriate timing, selection, and duration are maintained

Source: Safer Healthcare Now! Campaign How-to-guide, Prevent Surgical Site Infections (February 2006)

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

Practice Monitoring

Across VIHA, we found no formal ongoing monitoring of practices such as hand washing or the use of gloves. There is informal monitoring on some sites. The Infection Control Practitioners, for example, observe hand washing. Such informal monitoring is beneficial, but we strongly believe there should be a formal mechanism in place to monitor hand washing which is known to be the best line of defence against the spread of infections. On some sites, we were informed that there has been hand washing education and there is promotion material for it. Still, no monitoring of practice has occurred.

In compliance with the provincial standard, Public Health must monitor its nurses and ensure that they update their immunization competency practice every three years.

There is no auditing of physician practice.

Practice audits are conducted by request or to investigate an increase in infections or concerns recognized by the Infection Control Practitioner or raised by the staff. An example of an audit with practice recommendations is the review of the equipment cleaning process in South Island. It recognized infection control issues related to practice such as who is responsible for the cleaning of equipment, the storage of equipment on the units, and the inadequate bedpan hoppers. Some recommendations included: clear signage differentiating clean from dirty if the utility room is shared; reinstating the isolation cart system and having it managed by central supply; purchasing and installing new bedpan hoppers; and cleaning shower stalls between each patient use.

Antibiotic Use

We expected to see monitoring of antibiotic use across VIHA, but instead found this to be inconsistent. However, most acute care programs have stop orders and automatic substitutions for antibiotics.

Monitoring is done variously by Pharmacy staff or the Infection Control Practitioner, but often it is not done at all. We heard that the practice had slipped throughout VIHA over the past 18 months, a period during which the previous South Island Antibiotic Use Subcommittee of the Medical Advisory Committee had not been active. VIHA is looking at a new robotic system,

with implementation planned within the next 18 months. The new system will link antibiotic use to patient and allow a more timely review of diagnosis, prescriptions and doses given.

An Antibiotic Use Subcommittee of the Medical Advisory Committee in Central Island looks at consumption patterns and writes guidelines. Because overuse of some antibiotics increases the chances of contracting C. difficile, a review of an outbreak was undertaken. The subsequent report found that the use of one particular antibiotic was high. Recommendations for the use of more appropriate antibiotics were made.

A 2004 report reviewing infection control practices in the Fraser Health Authority (known as the Cochrane Report) was released provincially. It made recommendations on clinical protocols, including the timing of antibiotic use in caesarean sections. We were surprised to hear that VIHA did not provide the report to its Obstetricians or the Labour and Delivery staff, who had to request a copy directly from the Fraser Health Authority.

As a result of this report, each health authority in the province was requested to report on its caesarean section rate and caesarean section infection rate. When VIHA did this and noticed an increase in the latter rate, an investigation into practice was launched. We were told that a recommendation for clinical timing of the use of antibiotics is forthcoming.

The Infection Control Practitioner for Residential Care monitors the use of antibiotics in South Island through chart review. There is also reporting by staff to the Infection Control Practitioner on infections and antibiotics used in the South Island facilities.

Public Health Nurses are participating in the "Do Bugs Need Drugs?®" program, an initiative that started in Alberta and is directed at educating the public about antibiotic resistance and the appropriate use of antibiotics. The program promotes three key messages:

- Hand washing is the best way to stop the spread of infections.
- Not all bugs are created equal. Both bacteria and viruses cause respiratory tract infections. Antibiotics work against bacterial infections and not against viral infections such as colds and flu.

- Antibiotic resistance is a problem. Use antibiotics wisely to prevent bacteria from becoming resistant to antibiotics.

VIHA expects that the consumption of antibiotics will decrease and is aware that monitoring will need to occur to determine the outcome.

Contract Monitoring

VIHA contracts with one acute care facility—its St. Joseph's General Hospital affiliate. The hospital is operated under two agreements: the affiliate agreement and the denominational agreement. This can be a challenge, as St. Joseph's is seen as separate from VIHA, being faith-based, while at the same time being funded by VIHA and operating under the provincial Hospital Act. The agreement does not stipulate that the affiliate must report any infection data to VIHA. However, we heard that St. Joseph's wants to conduct the same surveillance as VIHA.

Other contracted agencies include the 35 residential care facilities. We were not provided the contract as requested and therefore could not determine if VIHA is monitoring infection control in these facilities.

VIHA also contracts with a company to provide environmental support services at Royal Jubilee Hospital, Victoria General Hospital, Saanich Peninsula Hospital, Queen Alexandra Centre for Children's Health, Juan de Fuca Hospital, Cowichan District Hospital and Nanaimo Regional General Hospital. The contract template includes an infection control component for ensuring that the employees are fully trained and comply with and enforce all policies, guidelines, quality standards, rules and regulations relating to infection control at VIHA. As well, the contract requires the company to carry out, participate in and cooperate with any infection control audits required by VIHA; and to provide documentation of immunization of staff on request.

There are Joint Review Committees at each of the above facilities. The committee members are made up of both VIHA and the contractor's staff member. Minutes of meetings indicate that joint audits occur quarterly, using the same methodology as the external audits. Housekeeping issues that need resolution, such as the wait times for beds to be cleaned and cleaning during outbreaks also come to the committee.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

Managers informed us that they are able to reach the contractor to resolve cleaning issues, but the resolution may not always be satisfactory or ongoing.

The contractor, in keeping with its contract obligations, does its own staff education, including training on infection control.

Some surgeries, such as hip and knee replacements, are contracted to a private surgical clinic by VIHA. We were not provided the service contract as requested, thus do not know what VIHA's expectations are for infection control.

External Monitoring

VIHA participates in a three-year sequential accreditation process through the Canadian Council on Health Services Accreditation (CCHSA), a national non-profit, non-government body that offers health organizations a voluntary, external review process to assess quality. The council develops national standards, helps health organizations assess compliance with those standards, and shares the information from the reviews and decisions. The accreditation review process highlights both strengths and areas for improvement and includes recommendations. The accreditation standards used by the VIHA environment team are specific to infection control. Each year for three years, VIHA determines which services will go through the accreditation process.

In 2004, CCHSA recommended to VIHA that it "develop and implement an organization-wide risk management model that promotes identification, aggregate data collection, analysis, required action, and monitoring activities to prevent and/or mitigate the results of risks."

In 2005, the VIHA environment team identified several major risk areas. It noted that overall fire and safety, disaster response capability, and infection control issues "need to be urgently addressed." Following the team work, CCHSA accreditors surveyed the authority.

During the time of our fieldwork, the final 2005 accreditation report from CCHSA had not been received by VIHA.

Best practice standards for infection prevention, surveillance and control in VIHA are not consistently demonstrated

VIHA participates in the provincial audits of housekeeping services conducted by WesTech Systems FM, Inc. At the time of our fieldwork, VIHA had completed its first external housekeeping audit. The audit is based on 19 components and risk categories determined by definition and weighting. Specialized technology and education are employed. Reports are generated and corrective action is expected.

The results of the June 2005 audit showed VIHA being the only authority to score below the benchmark of 85%. Across 24 sites and 1,957 rooms, its score was 84.46%.

VIHA takes part in research for infection prevention, surveillance and control

Research provides an organization with the opportunity to learn more about the risk of infections and communicable diseases and about the practices needed to mitigate the risk. It also provides an opportunity to determine new best practices. VIHA is taking part in pilots and research in infection control. For example:

- In Central Island, a pilot study is being done on a care measure that determines where a patient with an infection should be placed when admitted to hospital.
- North Island is reviewing services for people with hepatitis C in a rural area.
- South Island, with federal funding, is tracking disease rates and behaviours of downtown injection drug users.
- Medical microbiology staff have researched and produced seven posters on AROs to the American Association of Medical Microbiologists, and the VIHA author has been asked to write a chapter for a medical text.

Information system support for infection prevention, surveillance and control is weak

A key requirement of a comprehensive infection control program is that of having access to good data with which to understand infection rates and occurrences. Good information supports decision-making and action. We expected VIHA to have information systems in place to support infection control.

Conclusion

VIHA does not have an integrated information system for infection prevention, surveillance and control. Only Public Health has such a system to support its programs.

Findings

VIHA has a number of stand-alone information systems that are not connected

In the 2001 regionalization that resulted in VIHA's formation, the health authority inherited 380 systems, with 130 major applications, including overall systems such as Cerner for South Island and Meditech for Central Island and North Island. Software in the laboratory also varies. For example, South Island uses Psyche, Central Island uses Bulldog and North Island uses Meditech. Because the systems and applications related to infection control are not fully integrated and do not interface with one another, the full infection control picture in VIHA is unknown.

There is no one system that supports infection control monitoring and surveillance. Only Public Health has an information system in place: the Integrated Public Health Information System (iPHIS). Hosted and operated by the Provincial Health Services Authority and the B.C. Centre for Disease Control, iPHIS supports a number of Public Health programs, including immunization records and communicable disease management and reporting. VIHA inputs occurrence data on the regulated communicable diseases to this system. The centre links with the recently formed Public Health Agency of Canada through electronic system for reporting of communicable diseases nationally. Currently, iPHIS is being reviewed nationally to determine its future within the context of the federal health agency.

For acute care in South Island, a customized program developed and implemented (similar to EPINet, Exposure Prevention Information Network) is used to input and analyze data to

determine outbreaks and trends. This program generates reports such as needle stick injuries and gastrointestinal outbreaks.

Meditech, used by Central and North Island, has a medical microbiology module, which users told us has several shortcomings (e.g., it is difficult to summarize data and view trends for a collated report; data analysis is site-specific; and the system does not interface with South Island's Cerner system).

Because of these differences in acute care, creating trend reports means that decision support staff must access various systems to bring together the data from throughout VIHA. We heard that this is cumbersome, and that management staff would like to be able to manage their own reports through a system that is easy to use.

We were informed that the Cerner product was to start into stage one implementation in South Island medical microbiology shortly after we were on site for fieldwork. We heard that it will not have the ability to trend data initially.

We understand that about 400 of the 1,600 physicians in VIHA currently have access from their offices to VIHA systems. These physicians were given access when they were registered with the Primary Care Demonstration Projects. The projects created rosters of patients with chronic diseases such as diabetes and monitored physician practice. This access now also allows the physicians to access their patients' microbiology reports, thus providing timely diagnoses of infections. Early diagnosis is important to stop the spread of the infection, and to protect the staff and patients. Access for physicians will increase and change as the new Cerner systems are implemented.

South Island physicians also have access to their patients' laboratory results when they are in the hospital, through a product called Power Chart.

VIHA has a plan for improving its information system

VIHA has recognized its information system shortcomings and has developed an implementation plan for a new integrated information system, to be in place by 2010.

Exhibit 2 outlines the vision and stakeholder perspective for the new system.

Information system support for infection prevention, surveillance and control is weak

Exhibit 2

Vision and Key Stakeholder Perspectives of a VIHA Information System

Vision for 2010

By 2010, VIHA will have established the key building blocks for a regional information infrastructure that supports the delivery of integrated, quality patient care. The organization will have a reliable and sustainable technology and systems support infrastructure in place. VIHA's application infrastructure will be rationalized and development efforts will be focused on primary clinical and business systems. VIHA's primary system will be regionalized, and provide access to a core set of complete, quality data. Decision-support tools will guide clinical and business decision-making, improving the safety and efficiency of key processes.

Key Stakeholder Perspectives

VIHA clinicians will use an integrated, patient centric electronic health record as their primary source of clinical information. They will have secure, seamless access to the electronic health record wherever clinical decisions are made. Core clinical content from other jurisdictions will be presented seamlessly to clinicians, providing a more complete longitudinal view of patients' and clients' health. patient specific alerts and guidelines will guide decision-making and support delivery of safe, evidence-based care. Technology will be used to streamline and support interdisciplinary care delivery and clinical workflow, creating capacity and efficiency that can be reinvested in patient care.

VIHA Management and the Board will have access to accurate, timely information on clinical quality, outcomes, and operational performance to inform decision-making. The people of BC will have access to information about VIHA, available services and accountability measures.

Source: Information Management/Information Technology (IM/IT) Strategy, 2006/07–2009/10

Information system support for infection prevention, surveillance and control is weak

The plan links with VIHA's strategic plan and its two goals related to the management of infections: quality client-centred care and improved health and wellness (see Exhibit 3).

Exhibit 3

VIHA Strategic Plan and Information Management/Information Technology (IM/IT) Strategic Plan relationship

VIHA Goals	IM/IT Goals	IM/IT Enabling Strategies
Quality client-centred care	Inform decision-making at point of care	• Provide access to a complete, integrated set of core clinical content across the continuum. • Provide access to new, high value clinical content that supports Electronic Health Record (EHR) adoption. • Capture clinical content in discrete, structure formats. • Provide seamless, secure access whenever clinical information is required.
Improved health and wellness	Enable prevention, promotion and protection activities	• Provide tools that support health and wellness management – such as environmental, vaccine and, immunization tracking tools.

Source: Information Management/Information Technology (IM/IT) Strategy, 2006/07–2009/10

The plan shows that, by 2010, Cerner will be the clinical information system for all of VIHA, and PeopleSoft will manage core business functions. The system will integrate and interface internally and with provincial and national initiatives.

We saw no module for infection management in the plan, and Cerner does not offer an infection control module in its package of programs. However, we heard that there is potential in the system to build such a module.

Information system support for infection prevention, surveillance and control is weak

Data collection and tracking for infection prevention, surveillance and control does not provide an overall picture of infections in VIHA

All acute care sites track MRSA. Other data is tracked by site or HSDA. For example, South Island tracks infection rates for all surgeries, Central Island tracks infection rates for hip and knee surgeries, and North Island does not track any surgical infection rates. Although the infection control annual report addresses South Island, Central Island and North Island separately, the reporting is not linked and therefore a full picture of infections in acute settings is unknown.

South Island has the most robust reporting. The Infection Control Practitioners can access laboratory information (if it has not already been sent) through Power Chart, and the program has its own ACCESS database. The Infection Control Practitioners put the information into the database and generate tracked and trended reports. We heard that the input process is very time consuming, taking the Infection Control Practitioners away from other duties. As one interviewee put it, "There must be an easier way to know what is happening."

Data is also generated by lab reports in South Island. For example, Excel spreadsheet case summaries by period are generated from the Operating Room system and go to surgeons. Trends are developed for each surgeon.

In Central Island, Meditech has a medical microbiology module that flags patients with organisms. However, this flagged information is generated by individual and does not roll up to include all patients with infections. To determine that, the Infection Control Practitioner takes the laboratory results of a patient who has an infection and enters the information into an Excel spreadsheet. However, the spreadsheet does not link to anything else. The laboratory at Nanaimo Regional General Hospital is also the laboratory for other hospitals in Central Island. Not all results go to the Infection Control Practitioner who is on other sites, except those for MRSA and C. difficile. The results are then entered by hand into a spreadsheet.

North Island receives results from its laboratory that are entered manually into an Excel spreadsheet.

Information system support for infection prevention, surveillance and control is weak

Other programs (except Public Health) are using various types of software for generating data, but none has an infection control module. For example, the home care program uses MDS-RAI, and mental health uses CPIM, which has Island-wide alerts. They do not link and there is no tracking or trending infections in the community.

Thus, other than iPHIS (discussed earlier), there is not a system that supports infection control monitoring and surveillance. Public Health collects the data sometimes at source of practice (e.g., immunization and child development follow-up) and sometimes at a later time (e.g., communicable disease follow-up). The data from iPHIS is rolled up by South Island, Central Island and North Island or across all of VIHA to give a picture of communicable diseases.

However, for Aboriginal health, Public Health Nurses on reserves do not have access to iPHIS. They immunize children, keep paper files, and may or may not be able to call the nurse within VIHA to have the data put into iPHIS. Thus, when children treated under this program move, there is no way of knowing whether they have been immunized or not. Some children may be immunized twice for the same vaccine, or not at all.

VIHA has identified data quality assurance as an issue and is taking steps to address it

For VIHA to have an overall picture of infection issues across the authority it needs to be certain that the data being collected and used is defined the same way and interpreted consistently. The many stand-alone programs in the health authority mean there are many data definitions, which are not standardized.

- Standardized national data definitions for the Canadian Nosocomial Infection Surveillance system are used in South Island, and will be used throughout VIHA in the future.
- The MDS-RAI minimum data set used by all of Home and Community Care has standard data definitions. There are no definitions for infections (other than wound types). Interpretation of data is done by support in the home and community care program.

- Definitions for iPHIS are standardized across the province. Standardized data input also occurs as there is a designated person teaching those who input the data in each of South Island, Central Island and North Island. Interpretation of data is done by Public Health staff and the B.C. Centre for Disease Control.
- In the performance agreement between the Ministry of Health and VIHA, the measure "immunization levels for two-year-old children" is collected using two provincial standardized data definitions. One definition covers completed immunization, including the last booster; the other excludes a late last booster. Using the first definition, VIHA exceeded the performance target of 73.3%.
- Residential care immunization rates are measured according to the performance agreement and data definition. The Workplace Wellness and Safety Department do interpretation of the data.

We were unable to tell if the definitions in one program are the same across all programs and therefore across all of VIHA.

Implementation of the new Cerner system will involve the development of data definitions. This will be done with the help of VIHA clinical working groups, with representation from all programs. An effort will be made to ensure these data definitions are comparable across the authority and link provincially and nationally for benchmarking.

Reporting on prevention, surveillance and control of infections across VIHA is weak

We expected to see regular reporting by the infection control program to the VIHA Health Authority Medical Advisory Committee, the regional executive group and the Board of Directors, with these groups discussing reports and initiating action or follow-up as appropriate.

We also expected to see that reports were being distributed internally across the authority and across all programs based on the committee and health authority structures for quality improvement opportunities.

Conclusion

Reporting on the infection control program to the Health Authority Medical Advisory Committee, regional executive group and the Board of Directors is very limited.

Findings

Infection control reports are used to support and improve infection control practices within each HSDA, but not across VIHA

When surveillance and incidents reports are produced and improvements or changes in the management of infections are needed, VIHA does this. However, what is learned at one site is not necessarily shared with another.

From 2003 to 2004, Nanaimo General Hospital measured the rates of C. difficile as cases per thousand patient-days and found that the rate of infection was increasing. A practice review determined eight actions to be taken: education, cleaning, disinfection, purchase of additional commode chairs of a special design, purchase of washer disinfectors for bedpans, purchase of a commode/wheelchair washer, reduction of broad-spectrum antibiotic use, and the implementation of an electronic indicator in the laboratory to track positive reports. As each strategy was implemented, the number of nosocomial C. difficile cases was monitored. As practice changed, the rate dropped dramatically.

Reporting on prevention, surveillance and control of infections across VIHA is weak

The findings were used to create tools, including education self-learning modules, an information brochure for patients and families, and an infection control checklist for a patient's Kardex (distributed to management within Central Island). We think that the lessons from this review would be beneficial to all of VIHA.

Reporting to the Board of Directors through the Health Quality Committee is mainly by performance agreement indicators and for South Island

The Health Quality Committee (HQC) is a standing committee of the Board of Directors. Its mandate is to:

> "Assure the Board that processes are in place to continuously improve quality and safety of health and health care for public, patients, clients and families, including the care process and outcomes. This will include assuring optimization and equity in all aspects of the health system and establishing specific areas for improvement with targets. The system will embrace the organization's values."

Two of the committee's sets of duties are to:

- monitor VIHA-wide network and program-specific indicators, identify priorities for improvement and track progress towards achievement; and
- identify areas for more in-depth review, receive reports of such reviews, and recommend courses of action.

The HQC has a yearly planning calendar that outlines when and from what programs it expects to receive reports. Quarterly reports and an annual report due each September are expected from the Quality and Patient Safety Portfolio. Because the portfolio was so new, we did not see any reports to HQC during our fieldwork.

In addition, VIHA has a balanced scorecard tool that measures what the Board of Directors needs to know to govern the organization. According to the planning calendar, the HQC performance scorecard is reported twice a year. It has four indicators that relate to infection control and communicable disease management:

Reporting on prevention, surveillance and control of infections across VIHA is weak

- immunization rate for children at 24 months of age;
- residential care influenza immunization rate;
- hospital-acquired infections; and
- housekeeping quality audits.

The first two indicators are included in VIHA's performance agreement with the Ministry of Health. Hospital-acquired infection is an indicator chosen by the Quality and Safety Portfolio because of that office's participation in the national initiative. And, housekeeping is a provincial initiative.

The resulting twice-a-year performance report defines each measure, gives the data source, and offers an interpretation based on the performance past and present. In the November 2005 report, all indicators except hospital-acquired infections showed ratings within the acceptable range. For hospital-acquired infections, the performance was outside the acceptable benchmark, showing an increase in infections for pneumonia, urinary tract and C. difficile. The program is expected to monitor and take action as appropriate. To reverse the increasing trend, VIHA will take part in the "Safer Healthcare Now!" initiative, with expected improvements in hospital-acquired pneumonia. The resulting infection rates will be measured and benchmarked within VIHA and across Canada.

The annual report of the infection control program consists of data collected for the fiscal year from April 1 to March 31 and reported the following year. Concern was expressed that the November 2005 report did not go to the committee. However, we received the infection control annual report with the executive summary from the HQC.

Concerns were expressed that when reviewing the annual infection control report, the committee looks at specific surgeries. We found the reporting to be more robust for all surgeries in South Island, less for Central Island and even less for North Island. The result is that the picture of surgical site infections in VIHA is not complete.

Minutes of the HQC show that information on VIHA provincial and national issues related to infections and communicable diseases are on the agenda. Examples include: pandemic planning in VIHA; the status of the patient Quality and Safety Portfolio; antibiotic

overuse at a VIHA acute care site; and the provincial status of West Nile virus.

The HQC reports to the Board of Directors monthly on such topics as the quality initiative to improve immunization rates for two-year-olds, the quality reporting framework, the need to replace a building, and an update on the housekeeping audit.

The CEO also reports to the Board of Directors monthly. Included in that report are items related to the management of infections, such as the Board's role in a disaster plan, the feasibility of replacing aging and deteriorating buildings, success in the influenza campaign, and the sharps care program roll out

When issues arise from the reports, the Board of Directors has a draft decision-making guide it uses to assist members with making difficult decisions. One criterion in the guide is "Quality and Safety."

Reporting to the regional executive group on infections is mainly for South Island

The regional executive group advises the CEO and facilitates collaborative decision-making related to overall organizational performance, strategic priorities and operations, consistent with achieving the board directions and goals. One of its guiding principles is "Continuous Improvement—actively pursuing quality improvement through a continuous cycle that focuses on planning, implementing and verifying improvements in key processes." Meetings are weekly (or more frequently if needed, at the call of the CEO chair).

The regional executive group's terms of reference state that it is linked to the Regional Quality Committee and the Program Planning and Priority Committee (South, Central and North). However, the Regional Quality Committee was not in place during our fieldwork. Membership of the regional executive group includes the CEO, Chief Medical Health Officer, Executive Vice-Presidents, Chair of HAMAC, Chief Nursing Officer, Vice-President of Finance Planning and Performance, Vice-President of Human Resources, and Executive Directors from Central and North Island.

Reporting on prevention, surveillance and control of infections across VIHA is weak

Senior management informed us that to manage infections and communicable diseases in VIHA, they would like to know:

- the types of organisms occurring in the authority to ensure the pharmaceutical formulary is standardized for treatment;
- whether the prevalence of organisms is increasing;
- the results of tracking outbreaks;
- what proactive steps might be taken to mitigate the chance of infections or their spread; and
- infection control indicators for each service and how each service manages infections in relation to benchmarking.

We were not able to find this particular information in the committee minutes.

We were told that all reports going to HQC go through the regional executive group. However, the minutes of the group did not indicate that the reports on infection surveillance that we saw at HQC went there. The regional executive group did, nevertheless, receive the annual infection control report, a focused analysis of MRSA, housekeeping indicator audits, communicable disease reports generated by iPHIS for South Island, and an ARO report from Residential Care for South Island.

Administrative information was also in the minutes, including such topics as the status of Medical Staff Bylaws, food and housekeeping contracts, indicators in the performance agreement, pandemic influenza planning in VIHA, and influenza immunization of health care workers.

VIHA-generated reports related to the infection control program were focused on a program or geographical area. For example, a report on surgical site infections is only available for South Island. We expected to see integrated reports by programs and geographical area for all of VIHA. However, only the independent housekeeping audit was available for all of VIHA.

Future reports that have the potential to include all of VIHA are related to the "Safer Healthcare Now!" initiative.

Reporting on prevention, surveillance and control of infections across VIHA is weak

The Health Authority Medical Advisory Committee is not receiving any surveillance reports on the infection control program

In 2004, the Health Authority Medical Advisory Committee (HAMAC) Medical Staff Bylaws were developed. This committee is appointed by the Board of Directors and provides advice to it and the CEO on the quality of its medical practice. Committees accountable to HAMAC include the Pharmacy and Therapeutics Committee and the Medical Advisory Committees (MACs).

The purpose of the Pharmacy and Therapeutics Committee is to establish policies and procedures regarding the selection, procurement, distribution, safe practice and other matters pertaining to the use of pharmaceuticals in VIHA.

The MACs are created to monitor the quality of medical care within a geographic area or designated facility, and to make recommendations to HAMAC on the availability of resources and the development of programs and services at local sites and facilities. Subcommittees of a MAC relating to the management of infections include Pharmacy and Therapeutics, Infection Control and Quality of Medical Care.

The 2004–2006 minutes of HAMAC show that issues about the management of infections have come to the attention of the committee. Some of these include: the creation of the new structure in VIHA—the dissolution of the Centre and North Island MACs, the establishment of site MACs, and the creation and recruitment for the positions of Executive Director and Executive Medical Director Quality and Safety.

Other information in the minutes includes notation of issues related to the possible cross contamination of patients due to physician practice; infectious disease outbreaks in acute care and medical staff continuing education especially in more remote communities.

Minutes of the Nanaimo Regional Hospital MAC, included issues related to infection control such as: the air exchange system in the operating room; the unavailability of negative pressure rooms in the emergency room and endoscopy suite; the MRSA status, and the C. difficile reduced incidence. The subsequent report by the Central Island MAC at HAMAC did not mention these issues.

Reporting on prevention, surveillance and control of infections across VIHA is weak

We were told that presently, there are no official channels for infection control or communicable disease reports to come to MAC or HAMAC because committee structures, with accountabilities and reporting were being determined. Thus surveillance reports do not come there.

VIHA's external reporting on its infection control program is limited

The Health Act requires communicable diseases to be reported to Public Health and subsequently to the B.C. Centre for Disease Control, which receives the reports on behalf of the Provincial Health Officer (the centre then reports these diseases to the Public Health Agency of Canada). As well, the health authority must, as part of its Performance Agreement with the Ministry of Health, report on three measures related to immunizations: the rate of up-to-date immunizations for two-year-olds; the rate of influenza immunization for residents of care facilities; and the influenza immunization rates for healthcare workers.

We found that VIHA meets both of those reporting requirements, but there is no reporting on nosocomial infection rates

VIHA publishes an annual report on its infection control program. However, we did not see it reported publicly or on the website. It was in printed copy for use within the authority.

Vancouver Island Health Authority Response

Office of the Auditor General of British Columbia Report Infection Control: Essential for a Healthy British Columbia

VANCOUVER ISLAND HEALTH AUTHORITY RESPONSE

Prepared for the Office of the Auditor General of British Columbia
Prepared by the Vancouver Island Health Authority
February 23, 2007

The Vancouver Island Health Authority (VIHA) is pleased to respond to this report as it provides us an opportunity to report on the progress that we have made since the audit was undertaken. VIHA is committed to infection prevention, surveillance and control, and supports the principle that shared responsibility between Programs and Infection Prevention and Control (IPC) is foundational to this goal. Prior to the Office of the Auditor General of British Columbia's report, there were Infection Control practitioners located in the acute care hospitals in Campbell River, Comox, Nanaimo, Duncan, and Victoria. In addition, there was an Infection Prevention and Control (IPC) practitioner for continuing care in the Victoria area. Infection Control practices, including surveillance, intervention, and educational activities were present. Physician support was also provided to these IPC practitioners.

The intent to integrate programs across the Island was initiated in 2003; however, the formal structures to support integration were finalized with the responsibility of the program being aligned with the Quality and Patient Safety portfolio in September 2005. VIHA acknowledged the importance of an integrated IPC program that crossed the continuum of services (acute, residential and community), and allocated resources/ funding to begin to address the needs across the Health Authority. To ensure that the program could meet these requirements, programs beyond IPC needed to be involved. To this end, a more formal relationship with Public Health and Wellness and Safety was established with the creation of the IPC Quality Committee.

The Office of the Auditor General's Report covers the period from July 2005 to February 2006, and shows the status of the VIHA's Infection Prevention and Control Program at that time, and some of the challenges that still continue. However, significant progress has been made. Although both the Provincial Summary and VIHA specific reports were reviewed by VIHA staff, this response is specific to the overall Provincial Summary

Recommendations and will identify and illustrate the development of the VIHA program for the period of time prior to the fieldwork to the release of the report, and the VIHA plans for the future. We are confident that our plans and progress are on track and that we have set out realistic timelines given that resource allocations within VIHA may change as priorities change.

Section 1: Need for Comprehensive Framework for Infection Control

Recommendation 1:

Establish and implement a provincial framework for infection prevention, surveillance and control, which at a minimum contains: comprehensive legislation, defined roles and responsibilities, surveillance, standards and reporting.

Recommendation 3:

Develop an integrated plan for infection prevention, surveillance and control across the continuum of care.

Response

The Provincial Infection Control Network (PICNet), was created by the Ministry of Health (MOH), (formerly Ministry of Health Services) in January 2005. Its mission was to provide a province-wide infection control system by ensuring the coordination and integration of activities relating to health care associated infection prevention, surveillance and control. Vancouver Island Health Authority was involved in the initial committee tasked with establishing the provincial structure. VIHA continues and will continue to have active representation on PICNet committees and working groups, to provide input on policies, procedures, and guidelines developed; and work towards timely implementation of these guidelines. (Recommendation 1)

The VIHA Health Quality Committee of the Board of Directors has approved the Infection Prevention and Control (IPC) Program 2006–2010 Plan which identifies goals, activities, and timeframes. The Plan is aligned with the VIHA Strategic Plan and identifies the integration of the IPC Program across the Health Authority and across the continuum of care. (Recommendation 3)

The following identifies the focus for each of the fiscal years:

2006/07 *Integrate the IPC program through establishing the reporting structure, hiring staff, establishing required committees and working groups, and developing regional guidelines and processes.*

2007/08 *Initiate collection of data that is comparable regionally, and initiate the development of systems to compare data with other areas. Provide reports to programs relating to infection surveillance on a regular and consistent basis.*

2008/09 *Work will continue and expand.*

2009/10 *Implement Provincial infection prevention, surveillance and control solution (Panorama), aligned with VIHA's Information Management / Information Technology infrastructure.*

Section 2: Surveillance, Reporting, and Data Quality

Recommendation 2:

Establish provincial surveillance for hospital-acquired infections and work with key stakeholders to determine what should be reported.

Recommendation 11:

Establish a formal surveillance program appropriate to the programs and services offered.

Recommendation 13:

Provide information management support to the infection control program for data collection, analysis and reporting.

Recommendation 14:

Ensure there is staff with appropriate training to support data quality.

Recommendation 15:

Work with the Ministry of Health and other stakeholders to ensure data quality.

Vancouver Island Health Authority Response

Recommendation 18:

Ensure that infection control surveillance and audit reports are available and used by all programs to improve practice across the health authority as appropriate.

Response

PICNet has finalized a strategic plan to establish the Surveillance of Health Care Associated Infection Program for British Columbia. It has developed a guideline for Clostridium Difficile-Associated Diarrhea (CDAD) surveillance and has identified surgical site infections as the next priority. A Surgical Site Infection Working Group has been established to develop standard definitions and collection processes. VIHA has representation on this Working Group. (Recommendation 2)

Surveillance in VIHA has been performed at acute care hospitals and in long term care facilities where there is an IPC practitioner responsible for the site(s). All IPC practitioners have collected data on Antibiotic Resistant Organisms (ARO) and CDAD, and whether the infection is community or hospital acquired. Other elements of surveillance data have been collected across the HA but lack of consistent data definitions and collection methods prevents geographic comparisons. With the integration of the infection control program across the region, work has been initiated on consistent definitions for collection of data VIHA-wide, including St. Joseph's General Hospital, an affiliated acute care facility.

In Long Term Care, the same infection reporting process is being implemented across VIHA in the owned/operated facilities. Preliminary discussions have been initiated with Residential Services to introduce consistent data collection in our affiliated Long Term Care facilities.

In order to meet clinical program needs, VIHA priorities, and mandatory provincial reporting requirements, the approach to surveillance strategies will be a shared responsibility between Programs and IPC. A staggered strategy is being considered for the implementation of the CDAD surveillance guideline developed by PICNet, as well as participation with programs that have implemented the Safer Healthcare Now! initiatives (e.g., surgical site infections, ventilator-acquired pneumonias). Work will continue over the next four years to increase the surveillance of different types of infections throughout the Health Authority, consistent with guidelines developed by PICNet. (Recommendations 11 and 14)

Vancouver Island Health Authority Response

Currently, IPC surveillance reporting and trending is primarily supported through stand-alone information technology tools. The existing IPC database is used by practitioners in South Island and NRGH, and is currently being developed to improve ease of use and meet PICNet guidelines for CDAD.

A manual has been developed to provide direction on the use of the tool and to ensure consistency with respect to data definitions. Expert users provide orientation and support for the IPC technology tools. (Recommendation 14)

Real-time infection monitoring and control in the acute care setting will be supported through VIHA's primary clinical information system, Cerner. Cerner is currently used in South Island acute care facilities, and will be implemented across all acute care facilities in the Region by mid fiscal year 2008. The integrated clinical information system will provide access to all patient demographic information, laboratory results, diagnostic reports, transcribed reports and the complete medication profile. This core set of clinical content will be available to all authorized users across care settings. Training on the use of Cerner-based tools is provided through various mechanisms, including in-house training sessions provided by VIHA IM/IT training staff, user guides, computer-based training, and expert user support. The implementation of alerts and tracking tools to support infection prevention and control are planned as part of the Clinical Documentation project approved in VIHA's IM/IT Strategy. (Recommendations 13 and 14)

The Office of the Auditor General's report gives recognition to i-PHIS, an information system used by Public Health in most Health Authorities, including VIHA. This system was developed provincially with input from representatives from the health units/districts (precursor to the formation of the Health Authorities). The BC Government is working with the Health Authorities to complete a gap analysis between the Infoway sponsored Surveillance system and BC i-PHIS system, and to jointly plan an i-PHIS transition strategy.

VIHA recognizes its responsibility to ensure data quality that allows comparability within VIHA, provincially, and nationally. VIHA has representation on the PICNet Surgical Site Infection Working Group, which is developing surveillance guidelines, and will continue to participate in the provincial processes. VIHA also uses definitions developed by other recognized Infection Control related bodies, such as the Canadian Nosocomial Infections Surveillance Program and Safer Healthcare Now! Initiatives.

Work will continue in this area to ensure consistent data definitions so that future reports can provide comparability across the Health Authority. (Recommendation 15)

Reporting to programs will occur initially on an annual basis. Work will continue with program areas to determine their information needs. Reporting frequency will increase as infrastructure is developed to support this capacity.

To assist teams in the CCHSA self-assessment process, IPC practitioners will continue to provide available surveillance data and audit IPC practice as requested.

Examples of IPC practitioners' work with programs to improve practices are:

- *Implementation of the Safety First program in Nanaimo—supports front line staff to use the appropriate precaution when caring for patients suspected of having an infection.*
- *Introduction of interventions to decrease the incidence of CDAD.*
- *Inclusion of clinical resources to review revisions of a new regional IPC form.*
- *Development of consistent outbreak management protocols.* (Recommendation 18)

Section 3: Planning and Service Delivery, Including Staffing

Recommendation 4:

Assess their current public health and infection control structure to ensure integrated planning and service delivery for infection prevention, surveillance and control.

Recommendation 6:

Undertake a formal review to estimate their overall requirements for Infection Control Practitioners and Communicable Disease Nurses, giving consideration to ratios plus the complexity of care provided, needs of other programs such as Home and Community Care, Residential Care and Mental Health and to the educational needs of staff. They should also ensure adequate medical and clerical support for the program.

Vancouver Island Health Authority Response

Recommendation 7:

Review their infection control structures to ensure there is appropriate and designated medical support in place for the program.

Response

The VIHA IPC Program Plan outlines the integration of the IPC Program across the Health Authority and coverage for acute care, residential care, and community using existing resources. Although the Plan does not explicitly recommend the integration of the Public Health, Wellness and Safety and Infection Prevention and Control Programs, it identifies the necessity of strong linkages and close working relationships. This is accomplished through representation on various key committees, as well as development of joint policies, guidelines, and protocols.

For example, the Outbreak Management Working Group with representation from Public Health, Wellness and Safety, and Infection Prevention and Control has developed a "Roles and Responsibilities" document, clarifying which program takes a lead in providing direction in an outbreak. It has also developed protocols for consistent management of outbreaks in residential facilities, and in transfer of residents during outbreaks. An Outbreak Management Toolkit for Long Term Care facilities is in development, which will be used in VIHA owned/operated and contracted facilities. The next step is the development of a similar toolkit for Assisted Living sites. This joint work will continue.

The VIHA Infection Control Committee structure varies from what is described in the Office of the Auditor General Report. The IPC Working Groups report to the IPC Quality Committee → VIHA Quality Committee → VIHA Board. The local Medical Advisory Committees → Health Authority Medical Advisory Committee → Board. Work is underway to clarify the role of the VIHA Medical Infection Control Committee structures, and to ensure representation of an IPC physician on the Health Authority Medical Advisory Committee. (Recommendation 4)

VIHA's review of needs for Infection Control resources has been initiated with an anticipated completion date of June 2007. Individual assessments have been done for IPC practitioners, Communicable Disease nurses, and Employee Wellness and Safety staff. With a further investment in the IPC program to address the rural/remote geographic and education practice support issues, the IPC Program will be positioned to build capacity within the programs. Realignment of workload within the IPC program would allow for increased mentoring of new IPC staff. (Recommendation 6)

In VIHA, there are two physicians who are part of the IPC Team. The IPC Medical Director who is also a full time Medical Microbiologist is located in Victoria, and the IPC Associate Medical Director is an Infectious Diseases Physician located in Nanaimo. Both have a geographic area that they cover, and they address issues through the Health Authority when the other is away.

The Medical Health Officers are involved in providing direction to the contracted long-term care facilities during outbreak situations. They are also involved in provision of direction for communicable diseases in the community. (Recommendation 7)

Section 4: Best Practices

Recommendation 5:

Work with the Ministry of Health and the BC Centre for Disease Control (BCCDC) to establish a basic template for a provincial manual for infection control in acute and residential care.

Recommendation 8:

Ensure that renovations and new construction designs mitigate the risks of spreading infections.

Recommendation 12:

Establish a process for regular formal and informal monitoring of practice.

Response

VIHA envisions three comprehensive Infection Control Manuals (acute, continuing care, and community). These manuals will be placed on the VIHA Intranet for easy access by VIHA staff and to allow printing of manuals as required. Use and access to these manuals by contracted Long Term Care facilities and others will be determined through a consultative process.

Although the Office of the Auditor General recommends that the Ministry of Health and the BC Centre for Disease Control establish a basic template for a provincial manual for infection control, it is preferred that the Ministry of Health through PICNet, and BCCDC continue to develop practice guidelines that are then integrated into the Health Authority Manual. (Recommendation 5)

Vancouver Island Health Authority Response

IPC practitioners participate on the two regional Capital Projects Committees (SI and CI/NI), and receive notification of all renovations that are planned. They provide advice on plans and barrier precautions. In the last year, the IPC staff has been involved in the planning of the maternity and renal unit in Nanaimo, the expansion of the emergency department in Victoria, and the anticipated new in-patient facility being planned for the RJH site. Involvement of the IPC program in the new Campbell River/Comox hospital is anticipated. VIHA has been very supportive of IPC principles through approval of capital projects and equipment (i.e., installation of Tornado/Deko bedpan washers, purchase of isolation carts and commodes).

VIHA recognizes that our ability to meet facility design guidelines in relation to infection control is impacted by the age of our care facilities. (Recommendation 8)

It also recognizes the need for consistent, ongoing monitoring of practices such as housekeeping services, hand washing and precaution practices and to that end is examining best practices in other jurisdictions with a view to adapting and implementing already developed and evaluated audit tools and processes.

One example of ongoing monitoring of practice is the evaluation of the effectiveness of interventions in relation to Clostridium Difficile-Associated Diarrhea at Nanaimo Regional Hospital. The program included educational sessions for nursing staff emphasizing need for contact precautions when diarrhea is observed, enhanced environmental cleaning with Hydrogen Peroxide and subsequent disinfection with bleach, introduction of stainless steel commodes and basins facilitating cleaning/disinfection, and reinforcement of infection control principles. The introduction of these interventions resulted in a significant decrease in CDAD cases over a 17 month period from 19/1000 admissions to < 5/1000 admissions. There were no cases in the last 8 weeks of monitoring.

Collaboration with programs to meet their IPC needs will include input into program self-assessments, completion of on-site audits and provision of surveillance data interpretation. The program will continue to support evidence-based practice change using a variety of strategies based on program need and capacity.

A number of mechanisms are available for contractors to report incident, activity, and infections to VIHA. Work is underway to standardize the contract language and clarify expectations.

There is a mix of contracted and in-house housekeeping services in the Health Authority and both services are audited, using external auditors. May 2006 showed improvement in audit rates. There also needs to be an increased recognition of the importance that housekeeping services and the products used, play in supporting infection prevention and control practices throughout the organization. (Recommendation 12)

Section 5: Education

Recommendation 9:

Ensure that all staff receive regular ongoing education in the area of infection control and that medical staff also have access.

Recommendation 10:

Ensure that infection control team has adequate resources to maintain current practice standards through ongoing education.

Response

The IPC practitioners are involved in the orientation of Nursing Staff within the hospitals where they are assigned. Other educational sessions are provided on an ad hoc basis when a specific need arises. Information is also provided to staff and physicians through email and memoranda. An example of an education initiative that crosses the continuum of care available for all staff is the VIHA Hand Hygiene Initiative which started February 14, 2007. Education is also provided with the introduction of new forms/processes such as the introduction of a regional ARO Screening Questionnaire. We are exploring strategies with program educators to reinforce key IC messages. Medical staff is included in the in-service/education sessions provided and are invited to tele-classes. The IPC program has also provided information on hand washing and donning/doffing gowns, gloves and masks to third year medical students, involved in the Island Medical Program. (Recommendation 9)

VIHA has paid the fees for the infection control course for new practitioners, as well as the site subscriptions to educational tele-classes. The orientation of new IPC practitioners is structured to meet the learning needs and previous experience of the new employee. VIHA also provides opportunities for undergraduate nurses (UGN) and other students to learn about infection prevention, surveillance and control. (Recommendation 10)

Vancouver Island Health Authority Response

Section 6: Reporting to Board, Senior Management, and Public

Recommendation 16:

Determine what infection control indicators they need measured and reported on.

Recommendation 17:

Hold the Medical Advisory Committees accountable for fulfilling their mandates.

Recommendation 19:

Have their senior management teams identify infection control reports and information that they need to receive on a regular basis.

Recommendation 20:

Ensure that the infection control program issues a comprehensive annual report that includes rates and types of infections. This report should be available to the public.

Response

The IPC Program Plan identifies the work anticipated to meet this recommendation. Currently the Quality and Patient Safety Portfolio provides a quarterly and an annual report to the Board on the status of the IPC Program. There is work in progress to determine the priority indicators for collection, tracking and trending, for example Safer Healthcare Now! Initiative outcomes—% decrease in infections. (Recommendation 16 and 19)

A recommendation has been made to the Health Authority Medical Advisory Committee (HAMAC) to include an IPC physician to the membership. Work needs to be done to support the HAMAC in promoting IPC principles in physician practice. (Recommendation 17)

An IPC Annual report is available. As the organization structure has changed, so has the Annual Report. The report was expanded in 2005/06 to include St. Joseph's General Hospital. The Program has developed a template for the report to ensure inclusion of similar information across the Health Authority (infection rates, surveillance activities, education provided, and consultation provided for construction/ renovation and recommendation requests). The availability of the annual report to the public is included as part of the VIHA internet project. (Recommendation 20)

Vancouver Island Health Authority Response

In summary, over the past two years, VIHA has made significant progress in formalizing structures and processes to enhance infection control and ensure an integrated approach. With the benefit of new technology, in the coming years we will build on this strong foundation. VIHA is committed to continuing to work with our staff and physicians along with our partners in the Ministry of Health, PICNet and the BCCDC to heighten awareness and ensure the tools are in place to improve infection control into the future.

Appendices

Appendix A: List of reportable communicable diseases in British Columbia

Reportable Communicable Diseases (reportable by all sources)		List of Communicable Diseases (reportable by laboratories only)
Acquired Immune Deficiency Syndrome	Leprosy	All specific Bacterial and Viral Stool Pathogens: (i) Bacterial: Campylobacter; Salmonella; Shigella; Yersinia. (ii) Viral
Anthrax	Lyme Disease	Amoebiasis
Botulism	Measles	Borrelia Burgdorferi Infection
Brucellosis	Meningitis all causes: (i) Bacterial: Hemophilus; Pneumococcal; other (ii) Viral	Cerebrospinal Fluid Micro-organisms
Cholera	Meningoccocal Disease: All Invasive; Including Primary Meningococcal Pneumonia and Primary Meningococcal	Chlamydial Diseases including Psittacosis
Congenital infections:	Conjunctivitis	Cryptococcus neoformans
Toxoplasmosis, Rubella, Cytomegalovirus, Herpes Simplex, Varicella-zoster, Hepatitis B Virus, Listeriosis, and any other Congenital Infection	Mumps	Herpes Genitalis
Cryptosporidiosis	Neonatal Group B Streptococcus Infection	Human Immunodeficiency Virus
Cyclospora Infection	Paralytic Shellfish Poisoning (PSP)	Influenza
Diffuse Lamellar Keratitis (DLK)	Pertussis (Whooping Cough)	Legionellosis
Diphtheria: cases, carriers	Plague	Leptospirosis
Encephalitis: Post-infectious, Subacute Sclerosing Panencephalitis, Vaccine-related, Viral.	Poliomyelitis	Listeriosis
Food-borne illness: All Causes	Rabies Reye's Syndrome	Malaria
Gastroenteritis epidemic: Bacterial, Parasitic, Viral	Rubella: Congenital Rubella Syndrome	Q fever
Genital Chlamydia Infection	Severe Acute Respiratory Syndrome	Rickettsial Diseases
Giardiasis	Smallpox	Severe Acute Respiratory Syndrome
Haemophilus Influenza Disease, All Invasive by Type	Tetanus	Smallpox
Hantavirus Pulmonary Syndrome	Transfusion Transmitted Infection	Tularemia
Hemolytic Uremic Syndrome	Tuberculosis	West Nile Virus Infection
Hemorrhagic Viral fevers	Tularemia	
Hemorrhagic Viral fevers	Typhoid Fever and Paratyphoid Fever	
Hepatitis Viral: Hepatitis A; Hepatitis B; Hepatitis C; Hepatitis E; other Viral Hepatitis	Venereal Disease: Chancroid; Gonorrhea – all sites; Syphilis	
Human Immunodeficiency Virus	Waterborne Illness: All causes	
Invasive Group A Streptococcal Disease	West Nile Virus Infection	
Invasive Streptococcus Pneumoniae Infection	Yellow Fever	

Source: Health Act Communicable Disease Regulation (BC Reg. 281/2004)

Appendix B: Canadian Standards Association infection control during construction or renovation of health care facilities (April 2003)

The standard describes precautionary and remedial measures for preventing exposure to agents, released or augmented, because of actions undertaken during health care facility construction, renovation, maintenance, and repair work.

Preventive measures are categorized as I, II, III and IV and are put in place for all stages of construction activity—before, during, and after. The prevention measures required are based on the analysis of population risk group and type of construction activity. Table 1 shows a preventive measures analysis and includes the use of information from Tables 2 and 3.

Table 1: Preventive Measures Analysis

Population Risk Group[1]	Construction activity type[2]			
	Type A	Type B	Type C	Type D
Group 1	I	II	II	III/IV
Group 2	I	II	III	IV
Group 3	I	III	III/IV	IV
Group 4	I – III*	III/IV	III/IV	IV

[1] See Table 2 to determine population risk group

[2] See Table 3 to determine construction activity

* When the risk group is Group 4 and construction activity is Type A, the infection prevention and control department shall be consulted to determine the appropriate preventive measure (I, II, or III).

Table 2: Population Risk Groups and Geographical Areas (Examples only)

Population Risk Group	Typical areas
Group 1 Lowest Risk	Office areas Public areas Physical plant workshops and housekeeping areas
Group 2 Medium Risk	Outpatient clinics (except oncology and surgery) Admission and discharge units Physical therapy areas remote from patient care areas

Appendix B

Population Risk Group	Typical areas
Group 3 Medium to high risk	Emergency (except trauma rooms) Nurseries for healthy newborns Geriatrics Nuclear medicine
Group 4 Highest risk	Intensive care units Oncology units and outpatient clinics for cancer patients Burn care units Trauma rooms Operating rooms Sterile supply areas

Table 3: Construction Activity Type (Examples only)

Construction Activity Type	Description
Type A	Inspection and non-invasive activities. These include but are not limited to: a) activities that require removal of no more than one ceiling tile or require wall or ceiling panels to be opened; and b) electrical trim work.
Type B	Small scale, short duration activities that create minimal dust. These include, but are not limited to: a) activities that require access to chase spaces; and b) plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for less than 30 minutes.
Type C	Activities that generate a moderate to high level of dust; require demolition; require removal of a fixed building component (e.g., sink) or assembly (e.g., countertop, cupboard); or cannot be completed in a single work shift. These include but are not limited to, a) activities that require sanding of a wall in preparation for painting or wall covering; b) removal of floor coverings, ceiling tiles, and casework; c) electrical work above ceilings.
Type D	Activities that generate high levels of dust and major demolition and construction activities requiring consecutive work shifts to complete. These include but are not limited to: a) activities that involve heavy demolition or removal of complete cabling systems; and b) plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for more than 1 hour.

Appendix C: Office of the Auditor General: Performance Auditing Objectives and Methodology

The Office has three lines of business:

- examining the reliability of the provincial public sector's financial reporting;
- assessing how well the public sector manages its key risks; and
- assessing the quality of provincial public sector performance reports.

Each of these lines of business have certain objectives that are expected to be achieved, and each employs a particular methodology to reach those objectives. The following is a brief outline of the objectives and methodology applied by the Office for assessing how well the public sector manages its key risks.

Performance Auditing

What are Performance Audits?

Performance audits (also known as value-for-money audits) examine whether money is being spent wisely by government —whether value is received for the money spent. Specifically, they look at the organizational and program elements of government performance, whether government is achieving something that needs doing at a reasonable cost, and consider whether government managers are:

- making the best use of public funds; and
- adequately accounting for the prudent and effective management of the resources entrusted to them.

The aim of these audits is to provide the Legislature with independent assessments about whether government programs are implemented and administered economically, efficiently and effectively, and whether Members of the Legislative Assembly and the public are being provided with fair, reliable accountability information with respect to organizational and program performance.

Appendix C

In completing these audits, we collect and analyze information about how resources are managed; that is, how they are acquired and how they are used. We also assess whether legislators and the public have been given an adequate explanation of what has been accomplished with the resources provided to government managers.

Focus of Our Work

A performance audit has been described as:

...the independent, objective assessment of the fairness of management's representations on organizational and program performance, or the assessment of management performance, against criteria, reported to a governing body or others with similar responsibilities.

This definition recognizes that there are two forms of reporting used in performance auditing. The first—referred to as attestation reporting—is the provision of audit opinions as to the fairness of management's publicly reported accountability information on matters of economy, efficiency and effectiveness. This approach has been used to a very limited degree in British Columbia because the organizations we audit do not yet provide comprehensive accountability reports on their organizational and program performance.

We believe that government reporting along with independent audit is the best way of meeting accountability responsibilities. Consequently, we have been encouraging the use of this model in the British Columbia public sector, and will apply it where comprehensive accountability information on performance is made available by management.

As the performance audits conducted in British Columbia use the second form of reporting—direct reporting—the description that follows explains that model.

Our "direct reporting" performance audits are not designed to question whether government policies are appropriate and effective (that is achieve their intended outcomes). Rather, as directed by the Auditor General Act, these audits assess whether the programs implemented to achieve government policies are being administered economically and efficiently. They also evaluate whether Members of the Legislative Assembly and the public are being provided

with appropriate accountability information about government programs.

When undertaking performance audits, we look for information about results to determine whether government organizations and programs actually provide value for money. If they do not, or if we are unable to assess results directly, we then examine management's processes to determine what problems exist or whether the processes are capable of ensuring that value is received for money spent.

Selecting Audits

All of government, including Crown corporations and other government organizations, are included in the universe we consider when selecting audits. We also may undertake reviews of provincial participation in organizations outside of government if they carry on significant government programs and receive substantial provincial funding.

When selecting the audit subjects we will examine, we base our decision on the significance and interest of an area or topic to our primary clients, the Members of the Legislative Assembly and the public. We consider both the significance and risk in our evaluation. We aim to provide fair, independent assessments of the quality of government administration and to identify opportunities to improve the performance of government. Therefore, we do not focus exclusively on areas of high risk or known problems.

We select for audit either programs or functions administered by a specific ministry or government organization, or cross-government programs or functions that apply to many government entities. A large number of such programs and functions exist throughout government. We examine the larger and more significant of these on a cyclical basis.

Our view is that, in the absence of comprehensive accountability information being made available by government, performance audits using the direct reporting approach should be undertaken on a five- to six- year cycle so that Members of the Legislative Assembly and the public receive assessments of all significant government operations over a reasonable time period. We strive to achieve this schedule, but it is affected by the availability of time and resources.

Appendix C

Planning and Conducting Audits

A performance audit comprises four phases—preliminary study, planning, conducting and reporting. The core values of the Office—independence, due care and public trust—are inherent in all aspects of the audit work.

Preliminary Study

Before an audit starts, we undertake a preliminary study to identify issues and gather sufficient information to decide whether an audit is warranted.

At this time, we also determine the audit team. The audit team must be made up of individuals who have the knowledge and competence necessary to carry out the particular audit. In most cases, we use our own professionals, who have training and experience in a variety of fields. As well, we often supplement the knowledge and competence of our staff by engaging one or more consultants to be part of the audit team.

In examining a particular aspect of an organization to audit, auditors can look either at results, to assess whether value for money is actually achieved, or at management's processes, to determine whether those processes should ensure that value is received for money spent. Neither approach alone can answer all the questions of legislators and the public, particularly if problems are found during the audit. We therefore try to combine both approaches wherever we can. However, because acceptable results-oriented information and criteria are often not available, our performance audits frequently concentrate on management's processes for achieving value for money.

If a preliminary study does not lead to an audit, the results of the study may still be reported to the Legislature.

Planning

In the planning phase, the key tasks are to develop audit criteria—"standards of performance"—and an audit plan outlining how the audit team will obtain the information necessary to assess the organization's performance against the criteria. In establishing the criteria, we do not expect theoretical perfection from public sector managers; rather, we reflect what we believe to be the reasonable expectations of legislators and the public.

Appendix C

Conducting

The conducting phase of the audit involves gathering, analyzing and synthesizing information to assess the organization's performance against the audit criteria. We use a variety of techniques to obtain such information, including surveys, and questionnaires, interviews and document reviews.

Reporting Audits

We discuss the draft report with the organization's representatives and consider their comments before the report is formally issued to the Legislative Assembly. In writing the audit report, we ensure that recommendations are significant, practical and specific, but not so specific as to infringe on management's responsibility for managing. The final report is tabled in the Legislative Assembly and referred to the Public Accounts Committee, where it serves as a basis for the Committee's deliberations.

Reports on performance audits are published throughout the year as they are completed, and tabled in the Legislature at the earliest opportunity. We report our audit findings in two parts: an Auditor General's Comments section and a more detailed report. The overall conclusion constitutes the Auditor General's independent assessment of how well the organization has met performance expectations. The more detailed report provides background information and a description of what we found. When appropriate, we also make recommendations as to how the issues identified may be remedied.

It takes time to implement the recommendations that arise from performance audits. Consequently, when management first responds to an audit report, it is often only able to indicate its intention to resolve the matters raised, rather than to describe exactly what it plans to do.

Without further information, however, legislators and the public would not be aware of the nature, extent, and results of management's remedial actions. Therefore, we publish updates of management's responses to the performance audits. In addition, when it is useful to do so, we will conduct follow-up audits. The results of these are also reported to the Legislature.

Appendix D: Office of the Auditor General: 2006/07 Reports Issued to Date

Report 1 – April 2006

Strengthening Public Accountability: A Journey on a Road that Never Ends

Report 2 – September 2006

The 2010 Olympic and Paralympic Winter Games: Review of Estimates Related to the Province's Commitments

Report 3 – November 2006

Audit of Treaty Negotiations in British Columbia: An Assessment of the Effectiveness of British Columbia's Management and Administrative Processes

Report 4 – December 2006

Province of British Columbia Audit Committees: Doing the Right Things

Report 5 – December 2006

Audit of Government's Corporate Accounting System: Part 2

Report 6 – December 2006

Monitoring Government's Finance Province of British Columbia

Report 7 – December 2006

Government's Post-secondary Expansion — 25,000 Seats by 2010

Report 8 – December 2006

Changing Course — A New Direction for British Columbia's Coastal Ferry System: A Review of the Transformation of BC Ferries

Appendix D

Report 9 – January 2007

Seeking Best Practices in Financial Reporting: Report on the Province's 2005/06 Public Accounts

Report 10 – February 2007

Follow-up of 2004/2005 Report 2: In Sickness and in Health: Healthy Workplaces for British Columbia's Health Care Workers

Report 11 – March 2007

Infection Control: Essential for a Healthy British Columbia
The Provincial Overview

This report and others are available on our website at:
http://www.bcauditor.com