

## *ANNUAL REPORT 2013/14*

### *Collaborating for Innovation*



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## *Executive Summary*

We are pleased to report another year of progress for the Clinical Quality and Patient Safety department. This year the Community Engagement team joined the department and we welcome their outstanding contributions to engaging patients and the public across VCH programs. Having the voice of the public and partnering with patients is key to improving the system and this key strategic alignment is a very positive one for the department as well as VCH. Our mandate continues to be to provide the best quality of care and improve the experience for all patients, clients and residents who receive services from VCH.

VCH is one of the largest Health Authorities in Canada. We deliver health services to more than one million people, or 25% of British Columbia's population. The VCH Clinical Quality and Patient Safety program is structured around six key themes for our overall strategic plan; Communication and Culture, Infection Prevention and Control, Workforce/Worklife, Medication Safety, Performance Measurement and Monitoring, and System Redesign. Although this is a regional strategy the main driver for success is fostering and building local relationships for front-line initiatives. Developing and supporting those local relationships is important for sustaining improvements within the system.

This year we achieved a number of successes from our various initiatives. The Four Cornerstones approach to our Infection Prevention and Control program has been highly successful and has resulted in a significant reduction in *C. difficile* rates. The Environmental pillar of the program has also seen significant savings as a result of re-organization of units, centralizing equipment cleaning and reduction in supplies that cause clutter on the nursing units. The Antimicrobial Stewardship program which is part of the Four Cornerstones approach continues to see improvements and savings. We are implementing the program across VCH and are pleased to report that we have received ongoing financial support to run the program indefinitely. The success of the program proves that developing a business case with clear financial and outcome deliverables with some upfront investment can result in significant improvements for patients and staff as well as financial gains. We are grateful to our Finance department for their support in making this happen. Without their guidance and trust we would



not have been able to implement the program. This report will speak to some very innovative practices that have emerged as a result of the program such as the use of ultraviolet light for cleaning of patient rooms.

The VCH National Surgical Quality Improvement Program continues to provide improvement support and data for the surgical programs. Surgeon engagement is high and there have been significant gains in some surgical outcomes. The NSQIP team is partnering with surgical operational leads to implement Enhanced Recovery After Surgery (ERAS) which is proving to be an important initiative to ensure best practices in care for our high risk surgical cases. The feedback from patients and their families has been very positive and we are participating in a provincial as well as national collaborative for ERAS.



Our ongoing work with the Emily Carr University of Art and Design has resulted in two more initiatives including

one that focuses on how we engage the public in our VCH activities and another that will assist staff to connect and build internal partnerships around their quality improvement projects.

These are just a few highlights of the work we have accomplished over the past year. We are proud of the work this team does and hope you enjoy the summary of that exciting work within this report.

**Linda Dempster, RN, MA**  
Executive Director, Clinical Quality,  
Patient Safety and Infection Control

**Elizabeth Bryce, MD, FRCPC**  
Regional Medical Director,  
Infection Prevention and Control

## *VCH Vision, Values & Strategic Directions*

In 2013, the “People First” lens continues to guide and govern all we do. The goal is to provide patients, clients and residents with more say in their care by adopting the “nothing about me without me” approach as we treat and care for them. We believe that this partnership will return us to the heart of healthcare.

Our People First lens is equally balanced on our staff and the physicians we work with as we increasingly engage them in our efforts to continually improve quality and safety by taking advantage of their skills, knowledge, experience and high level of commitment and dedication to those we serve.

In working towards a seamless system, VCH aims to:

- Provide the best quality of care;
- Promote better health for our communities;
- Optimize our current workforce and prepare for the future;
- Use our resources efficiently to sustain a viable health care system.

## *Clinical Quality and Patient Safety Strategic Plan*

The Clinical Quality and Patient Safety Strategic Plan was developed as a three year plan. Overall the plan remains the same however, in response to changes required by the Ministry of Health as well as Accreditation Canada some specific initiatives have been added to the plan.

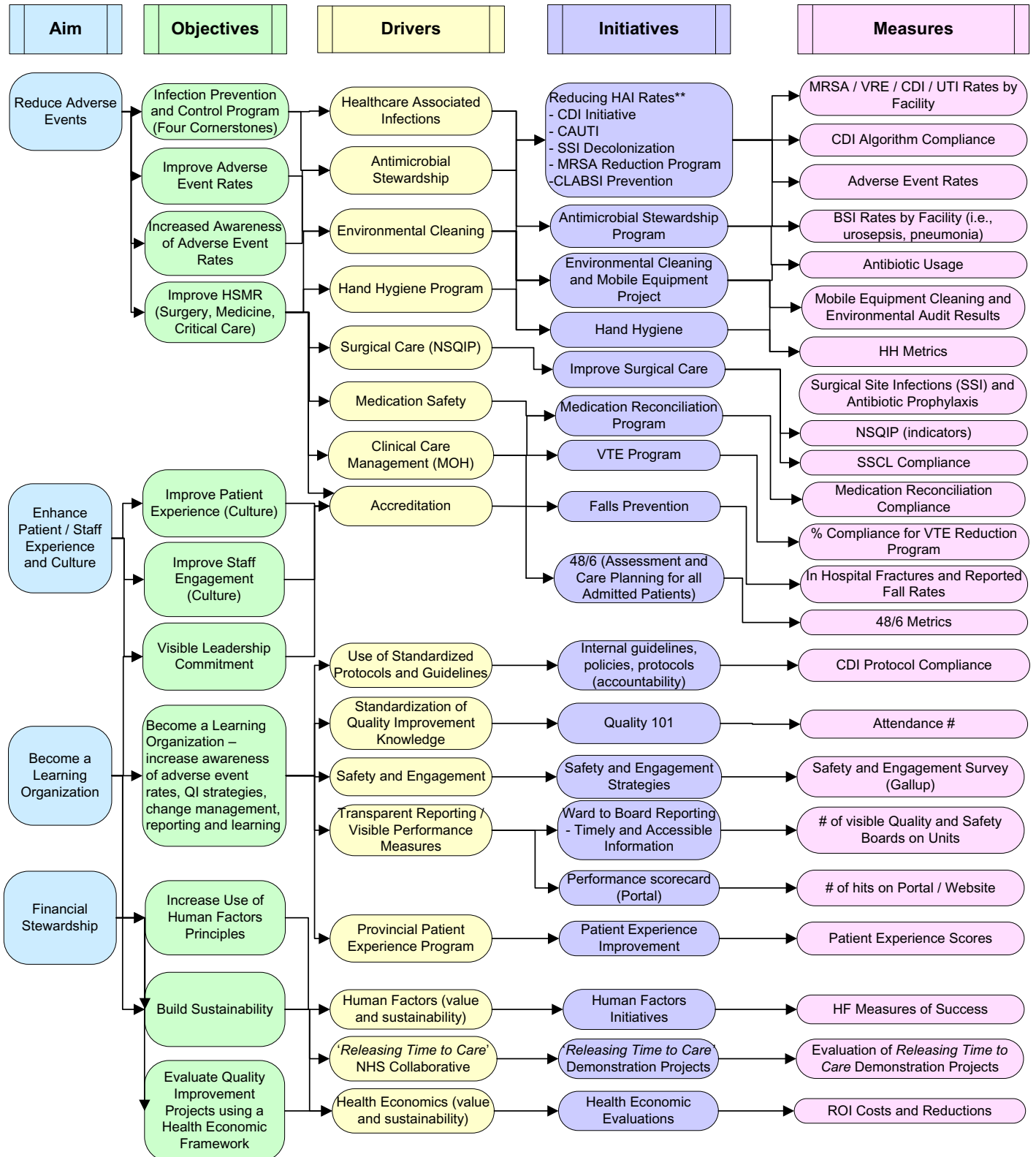
These include a further focus on healthcare-associated infections such as urinary tract infections and pneumonia. These are considered in addition to falls and pressure ulcers to be nursing-sensitive adverse events. The BC Ministry of Health has recently introduced a pay for performance strategy that may also include some of the initiatives within the strategic plan for Quality and Patient Safety. For the purposes of this report we will continue using the original plan but expand the focus for reducing healthcare associated infections.

# Quality and Patient Safety – Strategic Plan (External)

October 2012

## THEMES

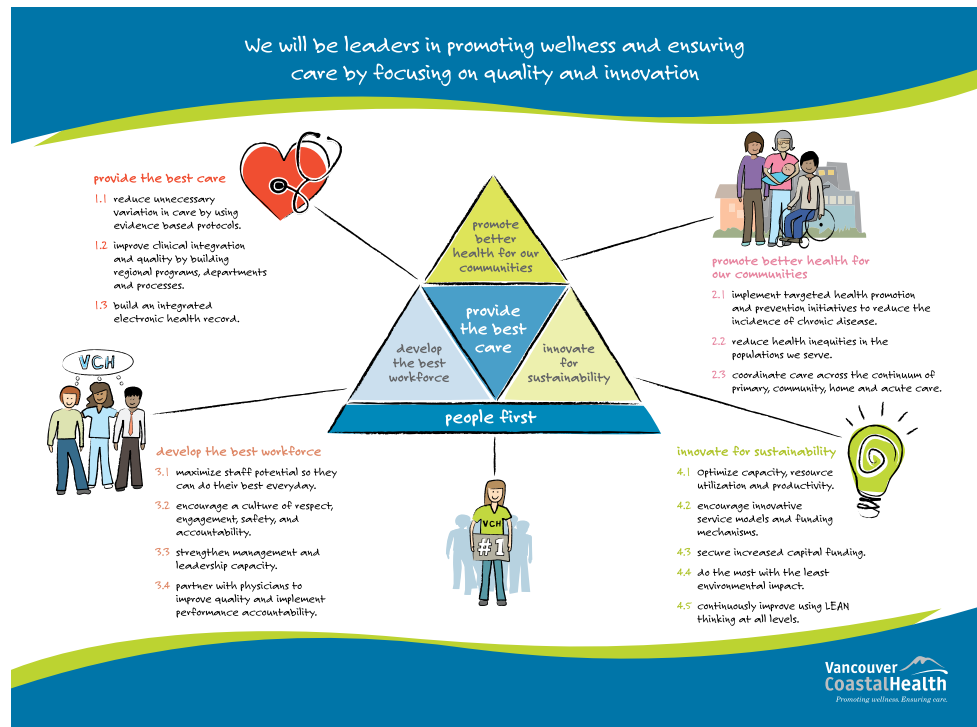
Communication and Culture	Infection Prevention and Control	Workforce / Worklife	Medication Safety	Performance, Measurement, and Monitoring	System Redesign
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## Introduction

The Clinical Quality and Patient Safety department including Infection Prevention and Control is a regional program whose priority is the implementation of programs and initiatives that support the organization to reduce the risk of adverse events and to provide the best quality of care. The program is under the supervision of Ms. Linda Dempster, Executive Director, Clinical Quality, Patient Safety, and Infection Prevention and Control and Dr. Elizabeth Bryce, Regional Medical Director, Infection Prevention and Control. Dr. Patrick O'Connor, Vice-President, Medicine, Clinical Quality and Patient Safety is our Executive Lead. The team consists of infection control practitioners, a hospital epidemiologist and data analysts and information systems experts, a regional hand hygiene coordinator, human factors specialists, tissue banking expert, accreditation specialist, surgical quality coordinators, health economist, utilization management coordinator, quality improvement and change management experts and infection control officers.

The philosophy of the department is to support quality improvement at the local level and ensure sustainability over time. Partnering with other departments such as operations, workplace health and professional practice is key to spread and sustainability.





## Quality & Patient Safety and Infection Prevention and Control Team Members

**VP, Medicine, Quality & Patient Safety**

Patrick O'Connor

**Executive Director, Quality, Patient Safety & Infection Control**

Linda Dempster

**Medical Director, Infection Prevention and Control**

Elizabeth Bryce

**Directors, Quality and Patient Safety**

Chantale Pamplin – Coastal

Jacqueline Per – Vancouver

**Director, Innovation & Evaluation**

Janet Joy

**Medical Microbiologists/Infection Control Officers**

Elizabeth Bryce

Patrick Doyle

Jennifer Grant

Diane Roscoe

Aleksandra Stefanovic

Leigh Lindsay

Titus Wong

**Clinical Quality & Patient Safety Officer Richmond**

Michael McAuley

**Epidemiologist/Manager, Performance Measures**

Leslie Forrester

**Program Manager, NSQIP**

Mary Cameron-Lane

**Leader, Accreditation & Patient/Client Satisfaction**

Serena Bertoli-Haley

**Human Factors Specialist**

Allison Muniak

**Coordinator, Hand Hygiene**

Sheila Browning

**Project Managers**

Felicia Laing

Sydney Scharf

Sue Goulding

**Quality Improvement Advisor, Innovation and Evaluation**

Carmen Dyck

**Coordinator, Tissue Banking**

Julie Frketich

**Coordinators, Quality & Patient Safety/NSQIP**

Barbara Billas

Barbara Drake

Tracey Hong

Elena Murzello

Kathy Rawling

Irene Siu

Kim Soltysik

Markus Zurberg

Catherine Parcerro

Janet Lakusta

**Reviewer, Clinical Utilization Management**

Janet Lakusta

**Systems Analyst/Designer**

Chandi Panditha

Jeffrey Reimer

Salomeh Shajari

**Regional Research Assistant**

Mitra Eshghpour

**Executive Assistants**

Joan Saunders

Kim Jamieson

Grace Carrion

## ***Infection Control Practitioners***

Linda Adam  
Gail Busto  
Allison McKee  
Eithne Connolly  
Melissa Crump  
Rita Dekleer  
Rosma Facundo  
Sandi Gabriel  
Carolyn Goss  
Lisa Harris  
Jennifer Irwin  
Sandie Jackson  
Hugo Monge  
Munira Murji  
Annie She  
Craig Pienkowski  
Michelle Varty

## ***Health Economist***

Stefanie Raschka

## ***Community Engagement Leaders***

Belinda Boyd  
Katie Hume  
Breann Specht

## ***Community Engagement Advisory Network Coordinator***

Saori Yamamoto

## ***Lead Antimicrobial Stewardship Pharmacist***

Tim Lau

## ***Sites***

### ***Sites***

Vancouver General Hospital  
UBC Hospital  
Richmond Hospital  
Lions Gate Hospital  
Powell River General Hospital  
St. Mary's Hospital

Squamish General Hospital  
Whistler Clinic  
Pemberton Clinic  
GF Strong  
RW Large Memorial Hospital  
Bella Coola General Hospital

## ***Long Term Care/Residential Care***

Banfield Pavilion  
Purdy Pavilion  
George Pearson  
Dogwood Lodge  
Evergreen House  
North Shore Kiwanis Care  
Cedarview Lodge  
Minoru Residence  
Richmond Lions Manor  
Hilltop House  
Evergreen Extended Care  
Olive Devaud Residence  
Shornecliffe  
Totem Lodge



Chantale Pamplin, Jodi Sydor-Jones & Wayne Sissons on their way to Bella Bella

## *Key Partnerships / Committees / Working Groups*

Quality & Patient Safety and Infection Control have close partnerships with many departments within Vancouver Coastal Health, are active participants in many professional organizations and are members of many provincial, national and international committees including:

### **Provincial**

- Association of Registered Nurses of British Columbia (ARNBC)
- BC Accreditation Advisory Committee
- BC Clinical Care Management Measurement and Coordination Working Group
- BC Environmental Cleaning Best Practices Working Group
- BC Health Information Management Professionals Society (BCHIMPS)
- BC Health Quality Network
- BC Patient Reported Experience Measures Steering Committee (BC PREMS)
- BC Patient Safety and Quality Council 'Quality Academy' Advisory Council
- BC Patient Safety and Quality Council 'Quality Forum' Steering Committee
- BC Patient Safety and Quality Council Provincial Director Network
- BC Provincial Hand Hygiene Working Group
- BC Provincial Infection Control Scientific Advisory Council
- BC Quality Group on Culture
- College of Registered Nurses of British Columbia (CRNBC)
- Emily Carr University of Art and Design
- Provincial Accreditation Advisory Committee (PAAC)
- Provincial Hand Hygiene Working Group
- Provincial Infection Control Network (PICNet)

- Surgical Quality Action Network (SQAN)
- Tropical Medicine Expert Group BC (TMEG, BC)
- BC Clinical Care Management Provincial Antimicrobial Stewardship Clinical Expert Group (PACE)
- Antimicrobial Stewardship Program (ASP) at Providence Health Care (PHC)
- WorkSafe BC Human Factors Community of Practice
- Perioperative Registered Nurses Association of British Columbia (PRNABC)

## National

- Accreditation Canada
- Canadian Healthcare Engineering Society (CHES)
- Canadian Institute for Health Information (CIHI)
- Canadian Nosocomial Infection Surveillance Program (CNISP)
- Canadian Western CEO Quality and Patient Safety Committee
- Health Canada
- Infection Prevention and Control Canada (IPAC-Canada)
- Association of Medical Microbiology and Infectious Diseases Canada Antimicrobial Stewardship and Resistance Committee
- National Collaborating Centre for Infectious Diseases and Association of Medical Microbiology and Infectious Disease Canada
- Canadian Medical and Biological Engineering Society(CMBEC)
- Mount Sinai Hospital-University Health Network Antimicrobial Stewardship Program
- Public Health Agency of Canada



## *International*

- American College of Surgeons
- American Association of Tissue Banking
- American Operating Room Nurses (AORN)
- Association of Professionals in Infection Control and Epidemiology (APIC)
- Eye Bank Association of America (EBAA)
- NHS/CareOregon/BC Patient Safety and Quality Council Collaborative
- International Society of Infectious Diseases (ISID)
- Human Factors and Ergonomics Society (HFES)
- The Food and Drug Administration of the United States of America (FDA)



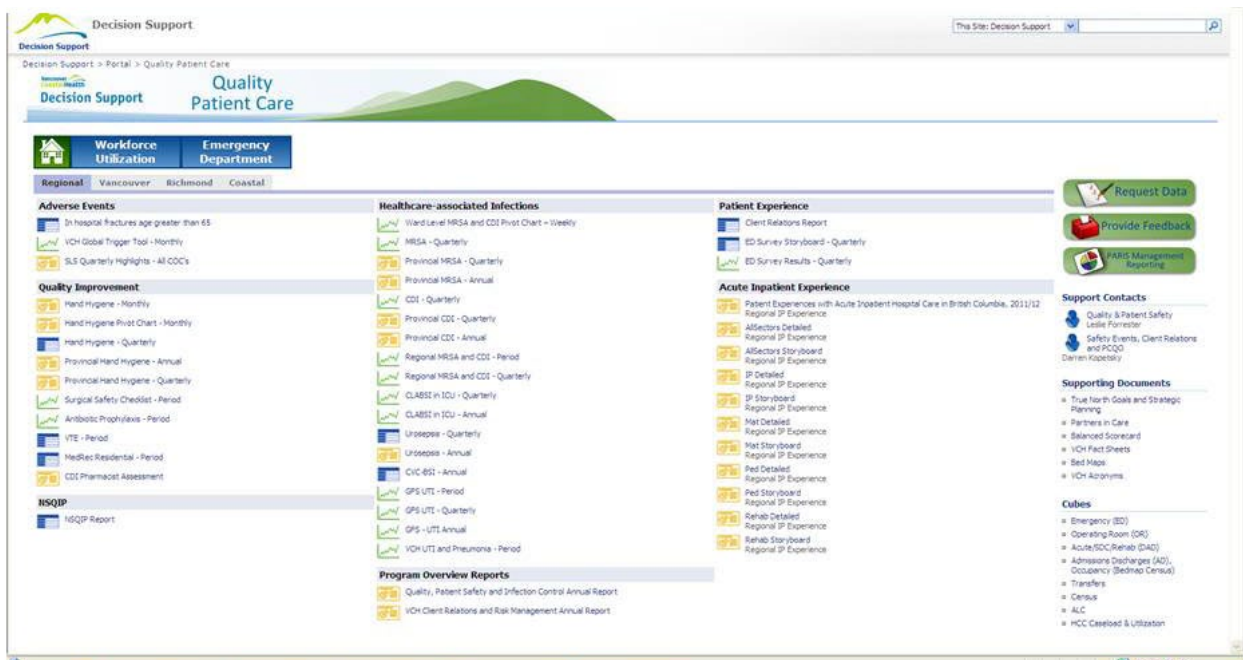
Mary Ackenhusen, President & CEO, VCH and Dr. Douglas Cochrane, Chair BCPSQC, receive the Clean Shots trophy

## Portal

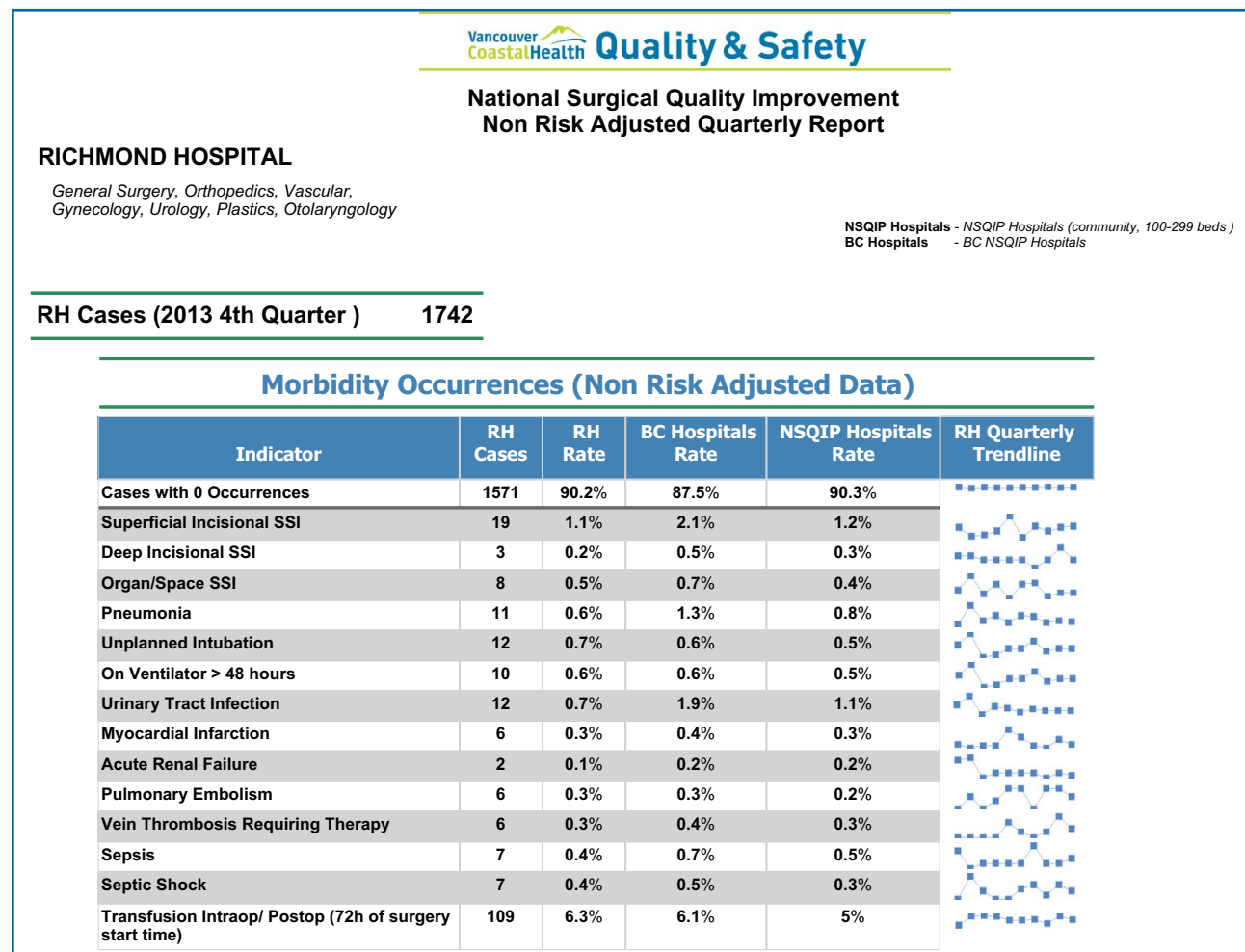
In collaboration with Decision Support, we continue to build and improve our [Quality Patient Care](#) portal providing staff with a “one stop shop” location for reports.

Over 2013/14 we made several changes to the portal based on user feedback.

- Front line and operational staff wanted the ability to create user-defined reports for more of our metrics. In response, we created pivot tables for Antibiotic Prophylaxis compliance, Surgical Safety Checklist compliance, and hand hygiene compliance enabling users to create more meaningful reports by filtering parameters of interest. These reports are updated every fiscal period or calendar month depending on the metric.
- As our portal grew users were finding it increasingly difficult to find reports of interest. We worked with our partners in Decision Support to tidy up the portal and make it easier for users to locate reports. We eliminated some redundant and/or outdated reports and created a new tab summarizing the Patient Experience reports thus reducing clutter.



In partnership with the VCH NSQIP team, we created new facility-specific quarterly reports using the non risk-adjusted data which show morbidity occurrences, trends, and relevant comparators (BC NSQIP hospitals and All NSQIP hospitals) to assist teams in evaluating performance and hasten the identification of opportunities for improvement in between receiving the bi-annual, risk-adjusted reports provided by NSQIP.



Sample of local non risk adjusted reports

## *Technology and Innovation*

Adopting new technologies continues to be a key component in enhancing our reporting capabilities and our [Quality Patient Care](#) portal. Our department purchased Windows Surface Pro tablets to allow our auditors to conduct their audits electronically. The Surface Pro tablets were chosen after assessing the potential options for the following reasons, portability, power, ergonomics, and security.

Currently, the tablets are used to support two of our major databases/reporting requirements, namely, Hand Hygiene and VTE/Med Rec Quality. These databases can be run simultaneously on the tablets allowing our auditors to seamlessly switch back and forth. This enables an auditor to complete a variety of audits while only needing to access a chart once thus saving significant time.

Surface Pro tablets are relatively light and easy to carry allowing our auditors to conduct audits directly on the units thus removing the need for paper forms. Forgoing double data entry (copying data from paper forms to our databases) significantly mitigates the risk for data entry errors. Auditors save time because they no longer need to copy their paper forms into our various databases. Additionally, the reporting team saves time because reports can be run sooner and automatically since the lag created by transcription no longer exists. Furthermore, eliminating transcription significantly reduces the workload of our department freeing up valuable and needed resources.

Our stakeholders value timeliness in our reporting and switching to tablets has enabled us to significantly reduce our reporting turnaround times. Saving time and improving quality are the primary objectives that drive our department's adoption of new technologies.



Screenshot 1. Doing hand hygiene and VTE audits on the tablet now takes ½ the time it did using the Black Berry app and paper audit forms. It is so convenient being able to do hand hygiene and VTE audits simultaneously and is a great time saving measure



## *Global Trigger Tool*

Beyond the treatment of diseases, recovery and rehabilitation; health care's overall goal includes the reduction if not total prevention of patient injury or harm. Distinguishing between errors and harm is important in the process of improving safety in health care delivery. Concentrating on actual events that patients or clients experienced, a health care facility can begin to foster a culture of safety that shifts from individual blame for errors to working on comprehensive system designs that reduces patient suffering.

### **Why is this important?**

Traditional efforts to detect adverse events have focused on voluntary reporting and tracking of errors. However, public health researchers have established that only 10 to 20% of errors are even reported and of those, 90 to 95% cause no harm to patients. Hospitals need a more effective way to identify events that cause harm to patients in order to quantify its degree and severity beyond the clinical assessment of the healthcare team that looks after them, but more importantly take in to consideration how patients perceive the harm they have experienced.

### **Where do we start?**

Before any processes can be initiated towards improving safety in patient care, adverse patient outcomes needs to first be identified, measured and analyzed. In 2003, to assist in collecting data pertaining to adverse events, the **Institute for Healthcare Improvement (IHI)** developed a tool that would help identify adverse events that patients encountered within their current admission including any healthcare encounters 30 days prior.

The **IHI-Global Trigger Tool (GTT)** for Measuring Adverse Events provides an easy-to-use method for accurately identifying adverse events (harm) and measuring the rate of adverse events over time. Tracking adverse events over time is a useful way to tell if changes being made are improving the safety of the care processes. The GTT methodology includes a monthly retrospective review of a random sample of patient records, using "triggers" (clues) to identify possible adverse events. Many hospitals have used this tool to identify adverse events, to measure the level of harm from

each adverse event, and to identify areas for improvement in their organizations. It is important to note, however that the IHI GTT is **NOT** meant to identify every single adverse event in a patient record.

## How are we doing?

The IHI GTT review generates the following data or indicators that the Quality & Patient team presents to both the VCH Senior Executive Team and the Board of Directors on a regular basis:

- Type of adverse events
- Severity of adverse events
- Total number of adverse events/ 1000 patient days
- Total number of adverse events/ 100 admissions
- Percent of admissions with at least one adverse event identified (Figure 1)
- Percent distribution by type of adverse events (Figure 2)

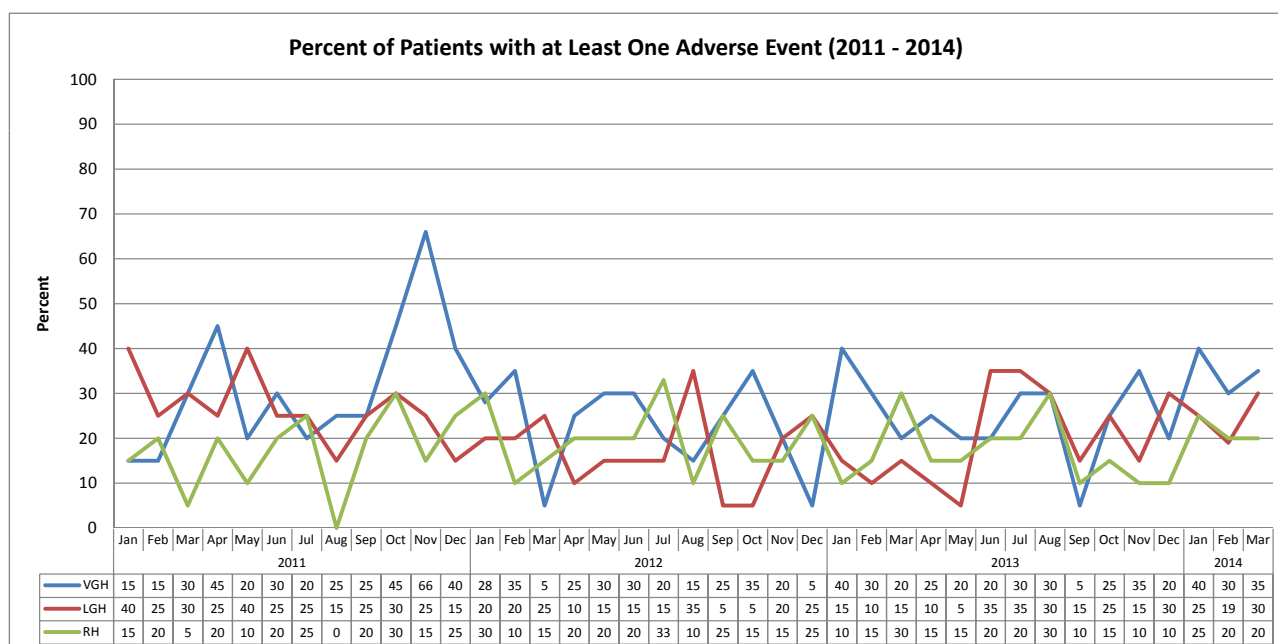


Figure 1.

Vancouver Coastal Health  
GTT - Adverse Event Breakdown  
by Fiscal Year

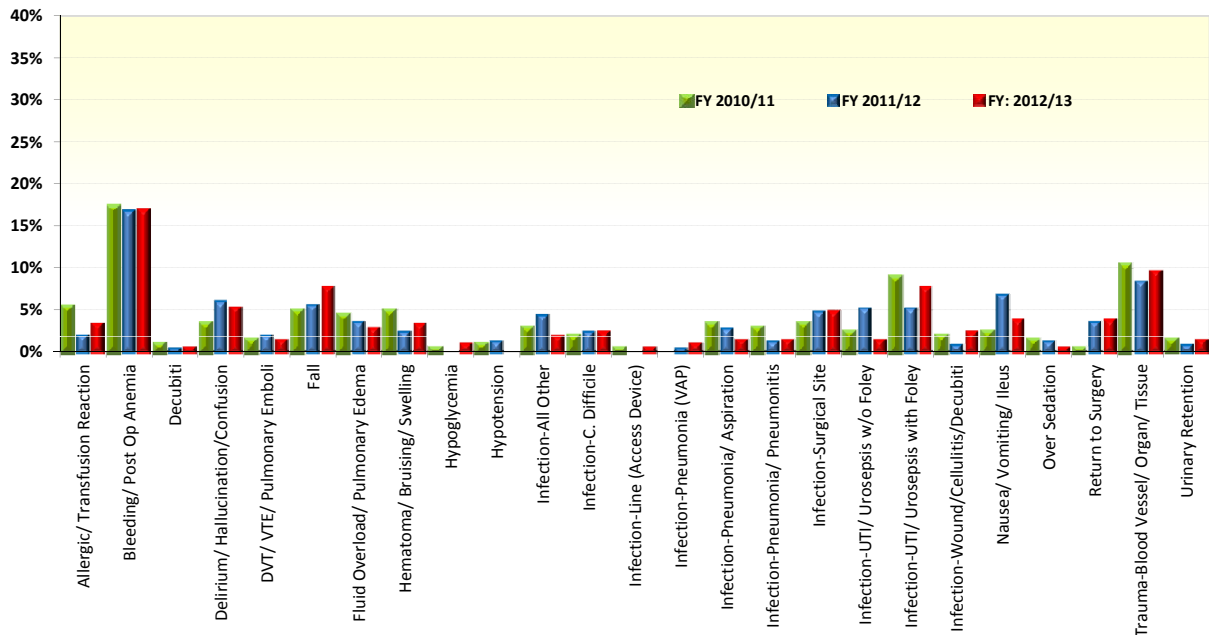


Figure 2.

## Global Trigger Tool's Overall Goal:

Unlike many other quality improvement measures, the IHI GTT looks at the bigger picture, covering a wide range of care modalities where results are tracked over time. Results are intended to provide a reflection of actual harm our patients or clients experienced, including those that they perceived as harm, regardless of preventability. Having identified areas of improvement, this information is shared and made available to the different stake holders interested or are already currently working on initiatives and projects where need for improvement is the greatest.

As the Global Trigger Tool indicators reflects the “bigger picture,” data generated using GTT are not intended to “*be all and end all*” of QI measurements, rather where applicable, GTT data can be used to complement existing (e.g. NSQIP, UTI/Urosepsis, CDI,



MRSA, Hand Hygiene Surveillance, etc) as well as future quality improvement metrics in our organization.

Vancouver Coastal Health's initiatives established towards prevention, reduction, if not complete elimination of healthcare associated adverse events include Releasing Time to Care (RT2C); Enhanced Recovery After Surgery (ERAS); Catheter Associated Urinary Tract Infection (CAUTI); Medication Reconciliation; Surgical Site Infection Prevention; Venous & Pulmonary Thromboembolism Prevention; Environmental Cleaning & Mobile Equipment Project and Antimicrobial Stewardship.



## *Clinical Guidelines Initiative*

### *About CGI*

The Clinical Guidelines Initiative (CGI) was established in 2010 to help pick up the pace on implementing region-wide, evidence-based guidelines and protocols in key priority areas.

CGI addresses VCH's core strategic goal, which is to: provide the best care.

To reduce unnecessary variation in care, CGI utilizes a systems level approach to help remove the organizational barriers that prevent clinicians from following these protocols at VCH. To make this happen, CGI's team includes executive level representation to connect Health Systems Integration, Quality & Patient Safety, Medicine, Professional Practice, and Decision Support.

CGI's major 2013/2014 projects are highlighted below.

### **1. Data for Accountability: Reporting Progress & Outcomes on Priority Topics**

CGI supports the BC Ministry of Health's Clinical Care Management (CCM) initiative. The purpose of CCM, which mirrors that of CGI, is to:

Improve the quality of patient care in BC through a well-supported system-wide approach to establishing, promoting implementation of, and reporting out on evidence-based clinical best practices.

CGI coordinates VCH's reporting to CCM on a quarterly basis, collaborating with Decision Support and Quality & Patient Safety in the creation of quantitative scorecards and qualitative implementation reports on priority topics. VCH councils and committees review these reports and scorecards to assess performance, as does CCM leadership.

These priority topics are listed at the end of this section. More detailed information about the various initiatives can be found throughout the Quality & Patient Safety annual report.

## **2. Data for Quality Improvement: Visualizing Data to Engage the Hearts & Minds of Frontline Staff**

In addition to coordinating CCM reporting for system accountability, CGI is leading an initiative to find new ways to effectively display data that engage clinicians in quality improvement.

**The Challenge:** VCH's reports and scorecards are optimized to display data for senior leaders. The focus is on high-level accountability, rather than quality improvement data designed for frontline staff.

VCH has many examples of excellent data displays that staff find engaging. Examples include the Releasing Time to Care boards and Lean Quality Boards. The Data Portals on the Intranet are another example.

But there are still gaps – particularly for the multi-step care pathways that are the focus of many of the priority topics set out by CCM, such as stroke, sepsis, and heart failure.

**The Opportunity:** Physicians and point-of-care staff have asked, “How can we improve the quality of patient care if we don’t know how we’re doing?” Frontline staff need frontline focused data that reflects how their actions contribute to patient outcomes. This would complement the ‘big data’ reporting that we do through scorecards with ‘small data’ displays that are visually appealing and display metrics that are meaningful to front line staff.

**The Response:** In 2012/13, CGI organized focus groups, individual interviews, and site tours to see how units currently display data. CGI asked leaders and clinicians:

- What data for improvement do staff need that they’re not currently getting?
- How can we display data that will stimulate unit-driven QI?

Based on the input from this work, CGI began a partnership in September 2013 with Emily Carr University's Health Design lab to design strategies for QI data displays for the ED-based guideline data that would address staff requests.

Students presented prototypes of data display and reporting tools to VCH staff. CGI followed up with clinical leads at VCH to get their feedback on how they could use the prototypes. In Spring 2014, CGI contracted a team of Emily Carr students to further develop the ideas selected by the clinical leads on getting data to frontline staff, focusing on ED staff's request to focus on Heart Failure, Stroke, STEMI, and Sepsis. These prototypes were showcased at CGI's March 2014 Regional Forum. Two examples are highlighted below (Figures 3, 4 & 5).

In Summer 2014, CGI worked with Emily Carr further to analyze which solutions might work best for the VCH context, and in the Fall, will work with a further group of students who will design prototypes to both collect and display unit-level QI data. The goal of this project is to encourage adherence to evidence-based clinical guidelines by creating templates and data displays for physicians and staff in a way that celebrates success and fosters learning for opportunities to improve quality.

This work is taking place in collaboration with colleagues across VCH, including Quality & Patient Safety, Decision Support, and Lean Transformation Services. Special thanks to Claude Stang and Rich Dillon for championing this work at Richmond Hospital.

### **3. Speeding Up the Implementation of Regional Guidelines**

**System Improvement:** In 2011/12, CGI partnered with Lean Transformation, Pharmacy and Therapeutics (P&T), and Professional Practice teams to create a streamlined process for the development and approval of new regional Pre-Printed Order Sets (PPOs). A new process was mapped out and trialed in 2013.

The primary focus of the redesigned system was to ensure broad and well-documented stakeholder engagement before the order sets were submitted to Regional P&T for final approval. The basic P&T process, scope or timelines were not addressed at this stage.

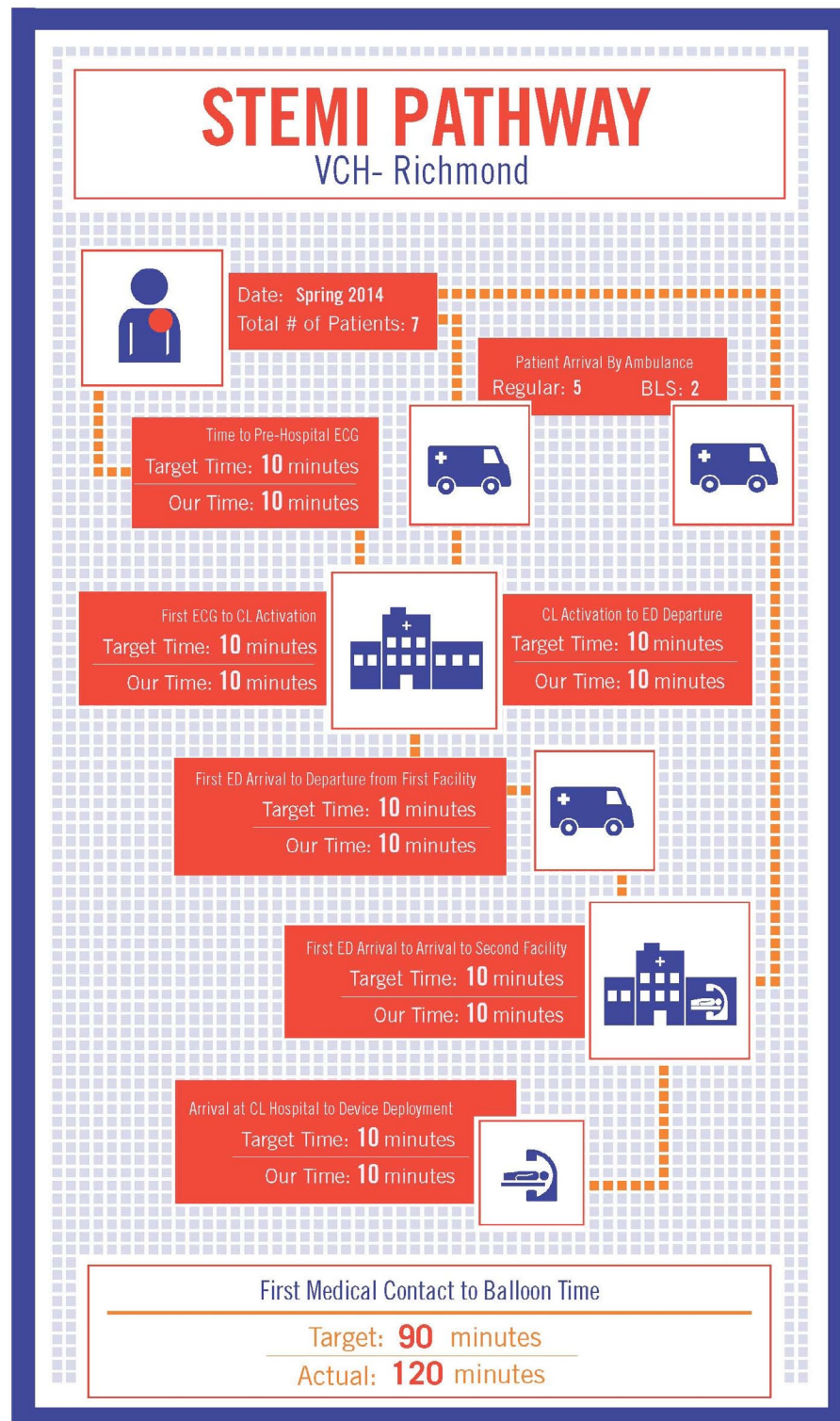


Figure 3. STEMI poster by Kayla Heald and Danielle Connor





Figure 4. Tablet displays for ED Stroke Care by Ben Westergreen and Scott Bell

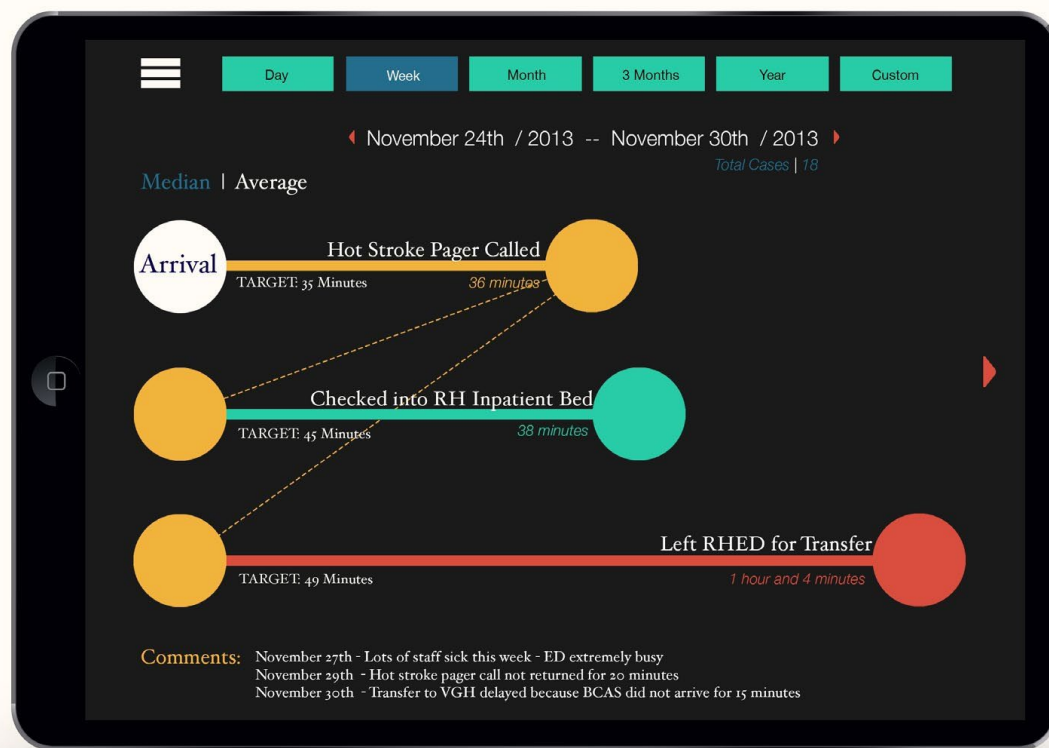


Figure 5.

The new process was piloted in 2013, and VCH's Clinical Guidelines Initiative (CGI) has provided 'way-finding' support to developers of regional PPOs, while also monitoring the effectiveness of the system. The first trial of the new system demonstrated stakeholder engagement was much improved when the new process was followed.

However, the audits also demonstrated that significant delays remain. PPO developers continued to find the overall system complex and difficult to navigate, especially where it crosses organizational silos & accountabilities are unclear. The stakeholder engagement process was improved, but not enough to consistently shorten the approval timelines.

The audit did, however, clarify other options to expedite approvals of PPOs. CGI, together with other VCH stakeholders, is pursuing these options as part of CST.

Since PPOs are, in many cases, the key tool to implement standardized clinical practices, CGI is leading a project to enable PPOs to be searchable on the VCH intranet. Currently, no such search function exists in Coastal, Vancouver Acute & Richmond CoCs, meaning that clinicians in these sites must locate a PPO either through an alphabetical listing (requiring one to know the title of a PPO) or under a particular site and/or service (like Cardiology or Neurology).

Working with colleagues in IMITS, P&T, and Regional Programs & Service Integration, CGI is updating the properties of 1000 PPOs, and transferring all PPOs to a new SharePoint platform that will allow clinicians to more easily find these documents.

By making it easier for prescribers to develop and use new PPOs, this initiative reinforces an overarching theme in CGI's work: promoting guideline-based care and reducing unnecessary variation so that patients at VCH are cared for in the best way possible.

**List of CCM / CGI Initiatives:**

Antimicrobial Stewardship - CDI Treatment

Hand Hygiene

Heart Failure Management

Medication Reconciliation

Regional Stroke Strategy

Seniors in Acute Care (48/6)

Sepsis Prevention

Surgical Site Infection (SSI)

COPD - Chronic Obstructive Pulmonary Disease

Surgical Safety Checklist

Critical Care – Improving Glycemic Control

Venous Thromboembolism (VTE) Prevention

## Accreditation

Accreditation is one of the most effective ways for VCH to regularly and consistently examine and improve the quality of its services. We participate in Accreditation to evaluate and enhance our services and demonstrate that they meet national quality standards. The process is voluntary and all health authorities in BC participate.



Accreditation is also an opportunity to showcase our leading practices and success stories, and celebrate the excellence of our staff, physicians and volunteers.

Accreditation aligns naturally with VCH's True North Goals: the standards include specific content to support each of our True North Goals, and more importantly, the overall spirit and philosophy of Accreditation is all about "providing the best care," and achieving an organizational culture that puts "people first."

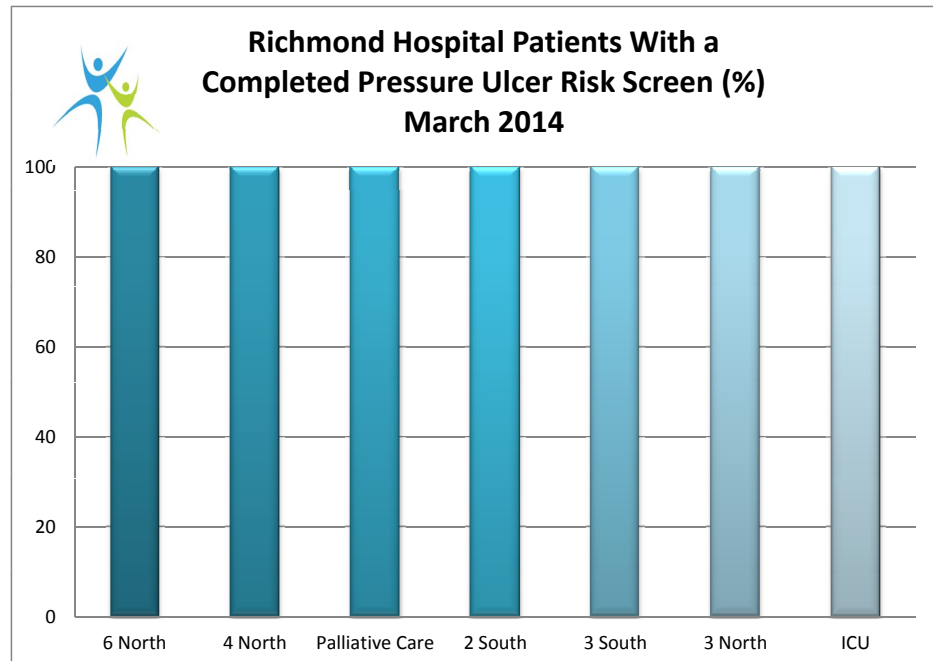
Accreditation allows us to:

- ✓ Identify what we do well and where we have room to improve the client/patient/resident journey.
- ✓ Analyze our services through an open and rigorous methodology.
- ✓ Have our services recognized as meeting national standards of excellence.
- ✓ Confirm the importance of staff and physician engagement in providing safe, high-quality care.
- ✓ Engage our teams in continuous quality improvement by embedding the standards in our day-to-day work.

The accreditation process is a powerful learning tool that supports a culture of safety and continuous quality improvement, from "ward to board." It allows us to share knowledge across VCH as we prepare together, as well as with other health organizations through our visiting surveyors.

Typically, the following phases are involved in the accreditation journey:

1. Self-Assessment
2. Identifying Areas for Improvement
3. Developing Action Plans
4. Implementation of improvements
5. Site Visit
6. Sustainment



The journey

starts with a self-

assessment questionnaire open for response by front line staff. Anyone on the health care team is encouraged to participate, especially frontline staff and physicians. In order for the Self-Assessments to give us useful information, it is really important that we hear from the people who touch our patients' lives every day. We then learn from self-assessment results by identifying and prioritizing opportunities for improvement; and engage leaders, staff and physicians in action planning to determine sustainable, locally relevant tests of change that address the key priorities. Some of these can be local quick wins, while others become centrally coordinated initiatives with longer-term implementation. Others yet build on existing initiatives to strengthen the linkage with accreditation requirements.

Clinical and Systems Transformation (CST) is an example of an existing key organizational priority that is linked to, and supported by accreditation. The Accreditation standards inform the work of the design teams so that applicable accreditation requirements can be integrated into CST processes and system functionality to the greatest possible extent across all three participating organizations (VCH, PHC, and PHSA). This will support clinical teams in being able to confidently and consistently demonstrate "compliance by design."



Between November 24-29, 2013, a team of seven Accreditation Canada surveyors visited clinical services across the continuum in the Richmond Community of Care. At the end of the site visit, they shared with VCH their observations. We learned that Richmond Community of Care had met 98.2% of over 2,000 criteria examined by our surveyors. This continues VCH's track record for achieving some of the best scores in Canada for integrated health systems. In April 2014, Richmond Community of Care provided a first round of status updates to Accreditation Canada on a few remaining areas of work in progress tied to Required Organizational Practices (ROPs), and successfully cleared those conditions for accreditation.

The improvements that were highlighted include:

- ✓ Process for delivering and tracking effective, ongoing training on infusion pumps across all clinical areas that use them
- ✓ Rollout of a consistent toolkit for falls prevention in outpatient settings
- ✓ Comprehensive pressure ulcer prevention strategy in acute inpatient care that applies standardized, validated screening and assessment, evidence-based interdisciplinary care planning and interventions, and evaluation of effectiveness

In each of these areas, the work that began in Richmond Community of Care is being shared and developed into VCH-wide systems and processes, so that other Communities of Care can benefit from the experience and lessons learned. Our next status update to Accreditation Canada is due in April 2015, to provide evidence of sustainment over time.

## What's Next

Historically, Vancouver Coastal Health participated in accreditation with separate site visits to different communities of care over the course of a four-year cycle. Going forward, Vancouver Coastal Health is transitioning to a single VCH-wide site visit model that showcases our communities of care as a unified region and aligns with the work of Clinical and Systems Transformation as a key strategic priority.

In September 2016, all of VCH will participate together in the first health-authority wide survey visit covering the full continuum of care across all the communities of care in

VCH's geography, including our newest members of the VCH family, the communities of Bella Coola and Bella Bella that joined in the Spring of 2014.

A key component of the transition to September 2016 includes hosting a bridging site visit in June 22-26, 2015 to review services in our Coastal and Central Coast Communities of Care, so that VCH's current accreditation status can be extended until September 2016. The bridging visit will focus on mostly acute care services: medication management and infection control, as well as emergency department, medicine, critical care, perioperative, inpatient mental health, obstetrics, and device reprocessing. Home care is also in scope in Bella Coola.

VCH also actively participates in the Provincial Accreditation Advisory Committee (PAAC), which works with Accreditation Canada to proactively identify and plan for changes to the accreditation program over time, and to promote a consistent approach across the BC health authorities. An example of this work is the process for consultation by Accreditation Canada on new standards and/or revisions to existing standards and Required Organizational Practices: PAAC ensures representation from experts from BC on the national consultation group, and also disseminates the proposed changes broadly among the health authorities to collect feedback from those programs and services that will be affected by the new content.

Examples of recent consultations with participation by VCH include revisions to the Infection Control and Device Reprocessing standards, and the development of a new Evidence Informed Skin and Wound Care ROP for Home Care. Additional consultation is currently underway for the development of a common indicator strategy, and strengthening of accreditation language around patient and family-centred care and community engagement.

## Community Engagement

The Community Engagement (CE) team at VCH works to develop and enhance patient and public participation in health service planning and decision-making, so that members of the public have a voice in the services and policies that affect their lives. To achieve this CE:

Strengthens capacity, in communities and within our organization, to ensure that community members have a role in decision-making

Consults with the public to inform health service planning, policy and operations

Forms and maintains partnerships with stakeholder groups

Develops and supports ongoing systems for public involvement

In August 2013, the CE Department joined the VCH Regional Quality and Patient Safety portfolio. This alignment strengthens VCH's commitment to People First and Providing the Best Quality of Care by assembling key program supports for engagement with patients, clients, family caregivers, and members of the public, within one strategic portfolio. Community Engagement structures our work within 5 key strategies:

**Strategy #1: Achieve diversity of public voices in planning**

**Strategy #2: Build capacity in public engagement within VCH**

**Strategy #3: Directly deliver (lead) public engagement projects**

**Strategy #4: Market & communicate CE and patient & public engagement**

**Strategy #5: Evaluate and innovate our work**

## 2013/2014 Year at a Glance

<b>Community Engagement Advisory Network</b> – a group of volunteers consisting of members of the public who support patient and public involvement in health service planning and decision-making at VCH.	<b>Growth to 90 members</b>
<b>Public Consultations</b>	<b>28 Public Consultations including:</b>
<b>CE Supported Public Advisory Groups</b>	Regional Patient Safety Advisory Committee, End of Life Community Reference Committee, Integrated Primary Community Care Committee – Richmond, North Shore, Local Governance Liaison – Coastal, Powell River, Richmond, Richmond Health Advisory Committee, Richmond MH&A Family Advisory Committee, Advance Care Planning Facilitator Group, Home is Best, Pearson Dogwood Community Advisory Committee, Clinical Systems Transformation Steering Committee, VCH MH&A Special Advisory Committee North Shore Mental Health Family Advisory Committee
<b>Capacity Building</b>	<b>46</b> VCH Programs/Services consulted with CE this past year. This includes staff coached/trained in CE and CE documents shared with staff
<b>Community Partners</b>	Richmond Seniors Network, Vial of Life Committee Fall Prevention Network, Safe Communities Richmond, Supporting Families with Parental Mental Illness & Addictions, Richmond Community Services Advisory Committee, Richmond Family Violence Prevention Network, Health Literacy and Public Libraries, Better at Home Advisory Committee, Richmond Multicultural Services, Inclusive Communities Advisory Committee, Public Health Association of BC, City of Vancouver Healthy City Steering Committee, City of North Vancouver Official Community Planning Group
<b>International Affiliations</b>	International Association of Public Participation (IAP2), National Engagement Network (Canada)

## Looking Ahead ...

Patient and public perspective enhances and adds value to any quality improvement initiative and ensures improved patient experience and health outcome. The Community Engagement Team provides staff support to the Community Engagement Advisory Network (CEAN), directing their involvement and feedback to a myriad of projects and initiatives every year.

**Has your program or initiative been CEANed?**



*Promoting wellness. Ensuring care.*



## *Patient Experience*

Patient experience measures are one of the purest measures of outcome that can be used to understand and improve the quality of our services. They are a direct expression of the voice of the patients and families who use our systems. Because they measure specific, observable behaviours and events, in addition to overall perceptions of quality and satisfaction, they hold a wealth of information on quality and consistency of care.

In 2002, the BC Health Leadership Council launched a province-wide initiative to monitor patient experience of care in priority health care sectors, starting with BC's Emergency Department services.

The BC Patient Reported Experience Measures Steering Committee (BC PREMS), with representation from the six Health Authorities and the Ministry of Health, was given the mandate to implement a coordinated, cost-effective, scientifically rigorous, standardized, provincial approach to measuring patients' experience of care.

The purpose of provincially coordinated surveying is two-fold:

- Public accountability: to measure and report the performance of the health care system from the perspective of our patients and clients, and
- Internal quality improvement: to support and inform quality improvement initiatives at the point of service, both at the regional health authority strategic level and local care-unit tactical level.

BC PREMS adopted the following definition of patient experience from the Beryl Institute, an international community of practice for the improvement of patient experience:

“The sum of all interactions, shaped by an organization's culture, that influence patient perceptions across the continuum of care.”

To date, the following priority sectors have been surveyed provincially under the BC PREMS mandate:

- 2003 Emergency Department Care
- 2004 Long Term Care (Residents + Family/Frequent Visitors)
- 2005 Acute Care (Inpatient, Maternity, Pediatrics)
- 2006 Outpatient Cancer Care (IV Chemo)
- 2007 – ongoing: Emergency Department Care
- 2008/09 Acute Care (Inpatient, Maternity, Pediatrics)
- 2010 Mental Health & Addictions Short-Stay
- 2011-2012 Acute Care (Inpatient, Maternity, Pediatrics, Rehab)
- 2012 Outpatient Cancer Care (IV Chemotherapy + non-IV therapy)

Going forward, the following activities are underway:

- Planning for survey of Acute Inpatient Care – transition to the new Canadian HCAHPS tool endorsed by CIHI as the national standard, and go to field in late 2014-early 2015, in alignment with accreditation requirements for acute care
- Planning for Residential Care surveying as a newly introduced accreditation requirement, starting with participation in a pan-Canadian experts panel to select and/or develop a national standard tool that allows measurement of both Family/Frequent Visitors' and Residents' experiences
- Transitioning the current Emergency Department survey to use the upcoming ED CAHPS tool, which will become available in the Fall of 2014 as a public-domain tool, to be better aligned with the Canadian HCAHPS tool already being adopted for acute inpatient experience surveying
- BC consultation group in process of developing and cognitively testing a new made-in-BC Continuity of Care survey that integrates the Acute Inpatient component with the Emergency Department component, so that patients' experience can be measured and followed across transitions of care centered around a hospital episode, and into the community. The survey will also be the first of its kind to integrate experience measures with Patient Reported Outcome Measures (PROMs)

Between April 28-May 2, 2014, BC health authorities joined in the celebration of the first Patient Experience Week, along with a variety of other health organizations across the world. Patient Experience Week was introduced by the Beryl Institute, and the theme for 2014 was “I am the patient experience,” to celebrate the many ways in which staff, physicians and volunteers go the extra mile and make a difference every day in the lives of patients and their loved ones.



I am the Patient Experience - The Beryl Institute

More information about the Beryl Institute and Patient Experience Week can be found here: <http://www.theberylinstitute.org/?page=PXWEEK>

Watch the “I am the patient experience” video here: [http://www.theberylinstitute.org/?page=IMPX\\_VIDEO](http://www.theberylinstitute.org/?page=IMPX_VIDEO)

## 48/6

### What is 48/6?

48/6 is a Ministry of Health Provincial Clinical Care Management (CCM) Guideline that is an assessment and care management model. It focuses on basic functional care areas including:

1. Bowel and bladder function
2. Cognition
3. Functional mobility
4. Medication management
5. Nutrition and hydration
6. Pain



At VCH, “Psychosocial” has been added as a care area. Screening and/or assessments are completed within the first 48 hours of admission, and are then supported by an individualized care plan to address key areas of health. Care Plans are also initiated within 48 hours of admission and are further supported by a discharge and/or transition plan. This helps to ensure the patient can return to home safely with established access to the health resources in the community they require.

### Background

In Canada, over 50% of acute care hospital beds are currently occupied by seniors on any given day. Thirty percent of them will be discharged at a significantly reduced level of functional ability and most will never recover to their previous level of independence. While initially 48/6 focused on elderly patients, all adult patients potentially benefit from 48/6. At VCH, 48/6 will be implemented for all admitted acute inpatients over the age of 18 (excluding maternity patients).

## **What is the purpose of this indicator and why is it important?**

### *48/6 Goals*

48/6 is a standardized approach to the assessment and care plans we already do. The goal is to return the patient back to, or as close to as possible, the patient's pre-illness/pre-injury status by working as a cohesive team. It is part of VCH's True North Goal to provide the best care and our commitment to Clinical and Systems Transformation.

### *Improved Patient Care*

Patient outcomes and experiences improve because patients are engaged in their personalized plan of care right from the time of admission (within 48 hours). Dealing with their expressed concerns early in their acute care stay helps ensure they are comfortable with their discharge plan and ready for discharge. Asking the questions around their baseline functional status prior to this admission helps health care providers to know the person better and facilitates working toward collaborative and realistic goals. Patients are more likely to retain the level of independence they had prior to admission when we use 48/6 screening and team care planning.

### *Improved Interdisciplinary/Inter-Professional Communication and Collaboration*

Having a structured approach makes it easier to collaborate with the rest of the health care team and involve patients in their care. The assessment and care plan become a permanent record in the chart making it easier to find the information during their stay and on subsequent stays. It's an opportunity to further coordinate patient care within our interdisciplinary team.

### *Implementation*

48/6 is being rolled out first as a pilot so that it can be shaped to meet VCH's needs. The first pilot sites were St. Mary's Hospital, Sechelt, and the Lions Gate Hospital Mental Health unit. The expanded pilot includes Powell River General Hospital and select units at Lions Gate Hospital, Vancouver General Hospital, and Richmond Hospital. Education and implementation are underway for the expanded pilot sites.



## What is being measured?

The Ministry of Health (MOH) Metrics focus on compliance and include:

1. Number of patients with completed 48/6 screening using a standardized approach within 48 hours of admission

- Screening must be inclusive of ALL 6 areas of care
- Includes reported baseline status, reported changes over the past 14 days, and current state

2. Percent of admitted patients with documented care plan initiated within the first 48 hours of admission

- Care plans involve the inter-professional/interdisciplinary team
- Care plans reflect and are built on the assessments indicated by 48/6 screening in each of the 6 care areas

Additional outcome measures and quality indicators are in the process of being defined for VCH.

## Methodology: How was the data collected?

1. A Trial Audit is underway to collect compliance data on the MOH metrics through Health Records. Data is being collected from our initial pilot sites using the following audit template:

### 48/6 Screening Form

1 - Present ... (At least one box is checked for ALL "CATEGORIES" of the form).

2 - Missing. (Not on the chart)

3 Present, but incomplete (one or more "CATEGORIES" does not have at least one box checked)

**48/6 Form Complete within 48 hrs of order to admit**

- 1 - Yes (form was completed within 48 hrs of admit order)
- 2 - No (form was not completed within 48 hrs of admit order)
- 3 - Unknown (form complete, no date)

**Care Plan on Chart**

- 1 yes (cannot be blank)
- 2 No

**Care Plan Initiated**

- 1 Yes (cannot be blank)
- 2 No
- 3 Unknown (date/time is missing making impossible to tell if the care plan was initiated within 48 hours of the decision to admit)

2. Retrospective and in-the-moment (one day snapshots) chart reviews have also been done to review completed documents, identify opportunities for improvement with documentation, and to capture Ministry metrics around compliance.

**Trend: What does the data show?**

Compliance with completing/initiating 48/6 related documents increased as the pilot progressed. Below is the SMH, Sechelt trend (Oct 2013 to present) based on snapshot chart reviews on the unit.

**What actions have been taken over the last year?**

48/6 is in the early stages of implementation at VCH. Information obtained through the trial audits and chart reviews were used to inform education planning, document development, and how best to capture information for future audits.



## Medication Reconciliation

### **What is Medication Reconciliation?**

Medication reconciliation is a *formal, systematic process* in which health care professionals *partner with patients* to ensure accurate and complete medication information transfer at interfaces of care. Prescribers are expected to reconcile patient/client/resident medications at admission, transfer, discharge and/or end of care utilizing the Best Possible Medication History (BPMH).

### **What is the purpose of this indicator and why is it important?**

The purpose of this indicator is to measure compliance with the regional medication reconciliation policy. Medication reconciliation is widely recognized as an important patient safety issue and is an Accreditation Canada required organizational practice and a BC Ministry of Health Clinical Guideline Initiative. Research indicates that over 50% of patients have at least one medication discrepancy upon admission to hospital. Many medication discrepancies can potentially lead to adverse health outcomes.

### **What is being measured?**

Within VCH, we assess compliance with medication reconciliation in both acute and residential care. Specifically, we measure the percent of admissions/re-admissions where medication reconciliation was performed. The performance target for 2013/14 was 75%.

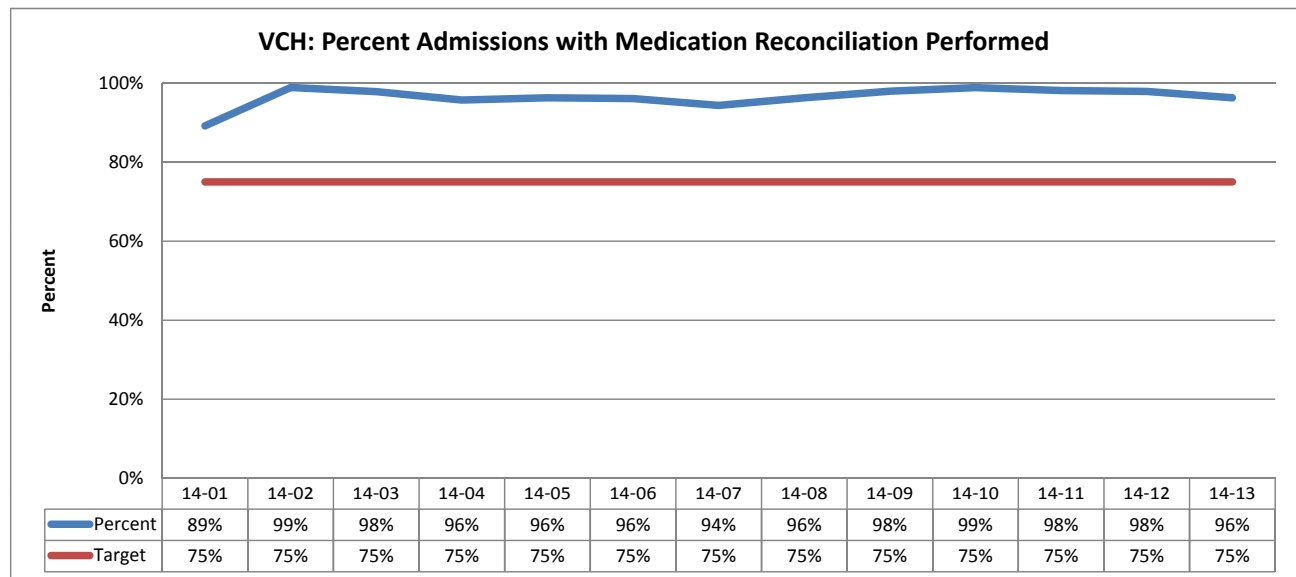
### **Methodology: How was the data collected?**

The data are collected by pharmacists or operational staff for directly funded residential care facilities. For acute care facilities, data are obtained from the Discharge Abstract Database.

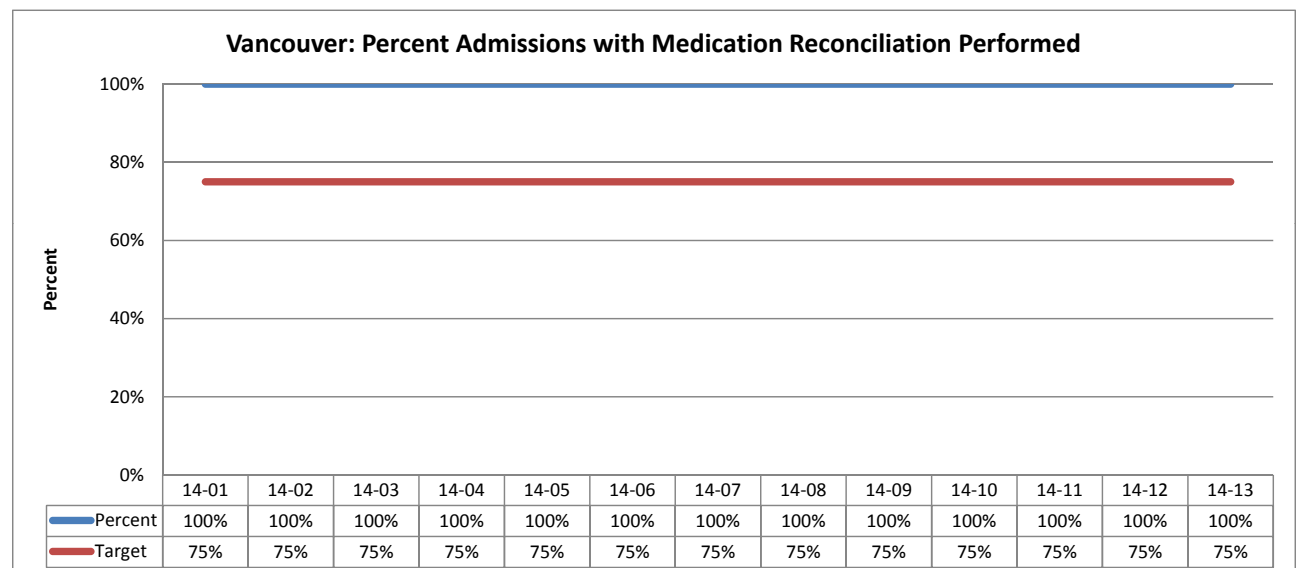
## Trend: What does the data show?

### *Residential Care:*

The data show that both overall and for each Community of Care (i.e. Vancouver, Richmond and Coastal) the percent compliance exceeds the target of 75%. The 2013/14 average percent compliance for VCH was 96.5%.

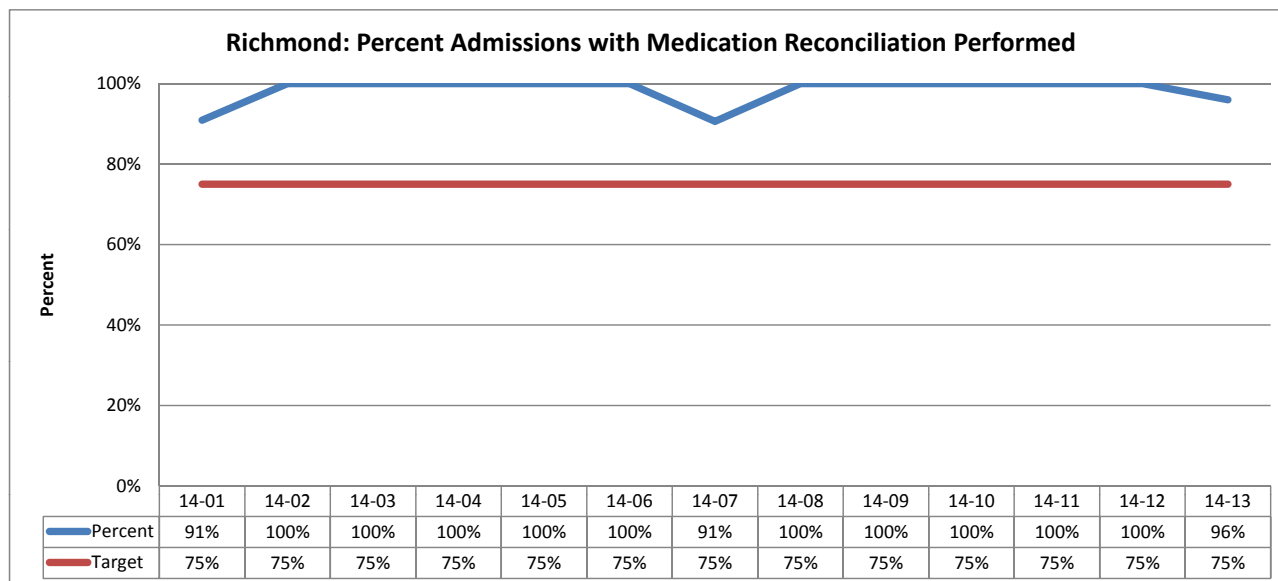


**Vancouver:** The percent compliance for Vancouver (i.e. Banfield Pavilion, Dogwood Lodge, George Pearson Centre and Purdy Pavilion) was 100% every fiscal period.

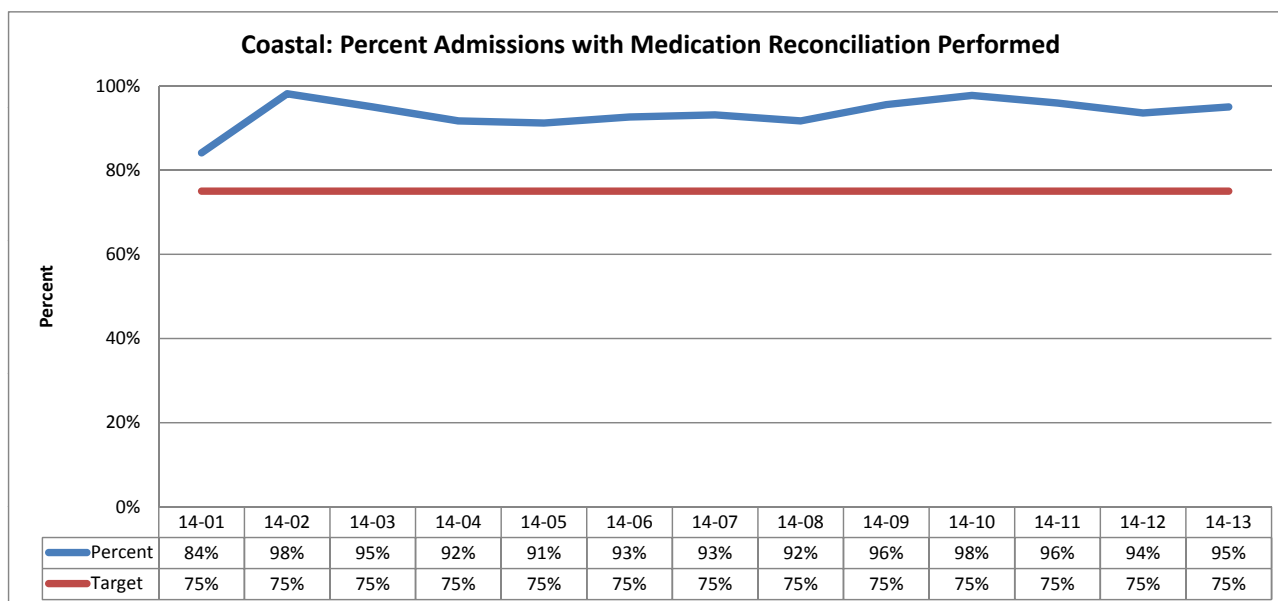




**Richmond:** The average percent compliance for Richmond (i.e. Lion's Manor and Minoru Residence) was 98%.



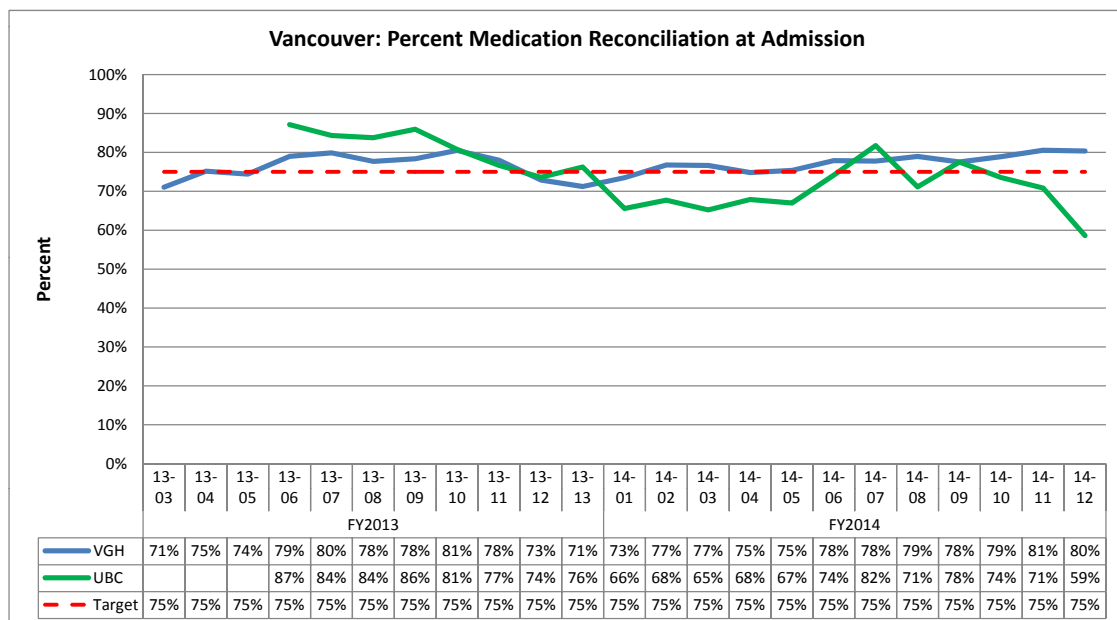
**Coastal:** The average percent compliance for Coastal facilities (i.e. Evergreen House (LGH), Cedarview Lodge, Kiwanis Care Centre, Hilltop House, Shornecliffe, Totem Lodge, Evergreen Extended Care, Olive Devaud, Bella Coola General Hospital, and RW Large Memorial Hospital) was 93.5%.



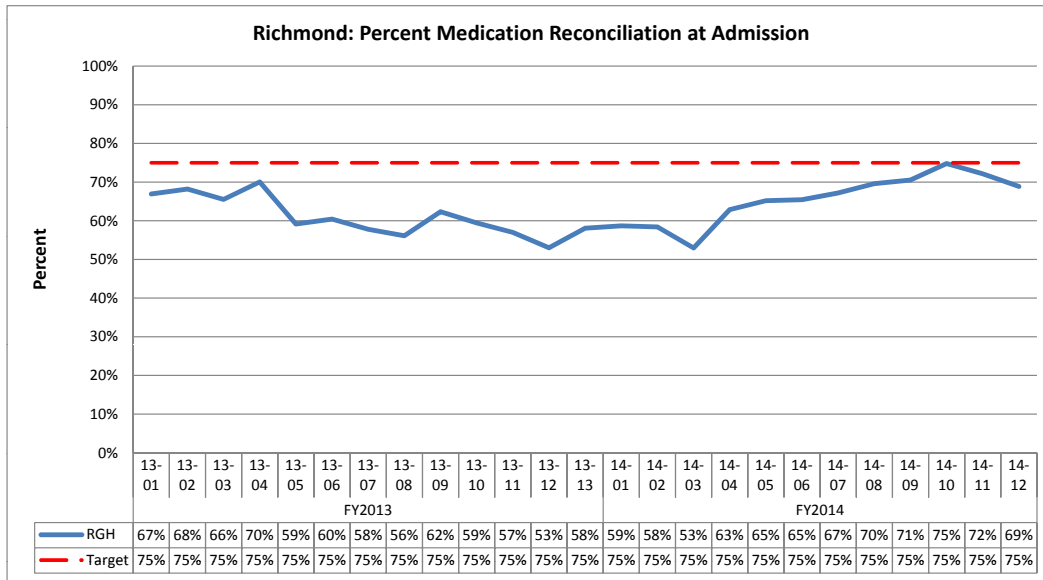
## Acute Care:

The following graphs show the percent compliance for each of the facilities by Community of Care.

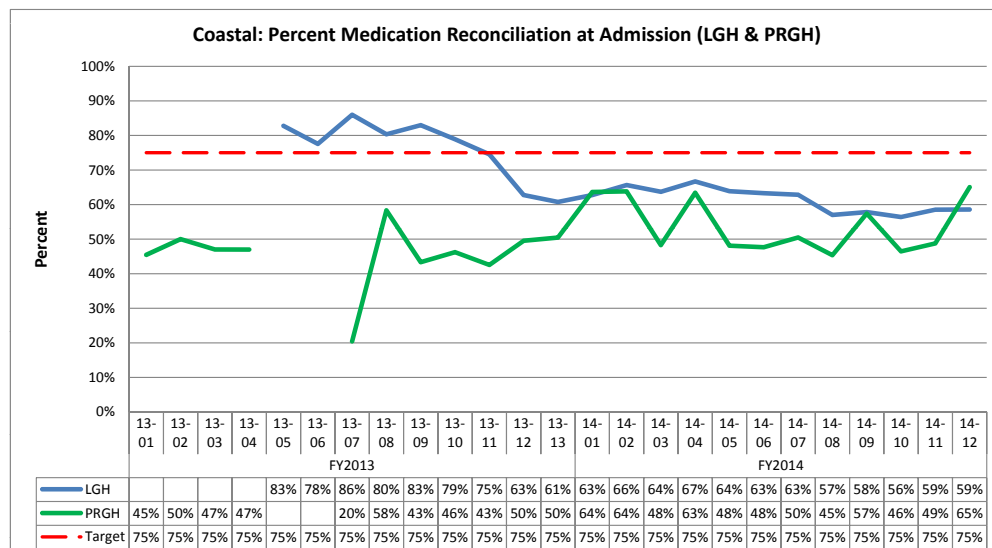
**Vancouver:** The results show that the average percent compliance for VGH and UBCH for 2013/14 was 77% and 70%, respectively. VGH has consistently met or exceeded the target of 75%. There is variation in the percent compliance at UBCH which is likely due to the smaller number of admissions compared to VGH. More work needs to be done to improve the percent of medication reconciliation at admission at UBCH.



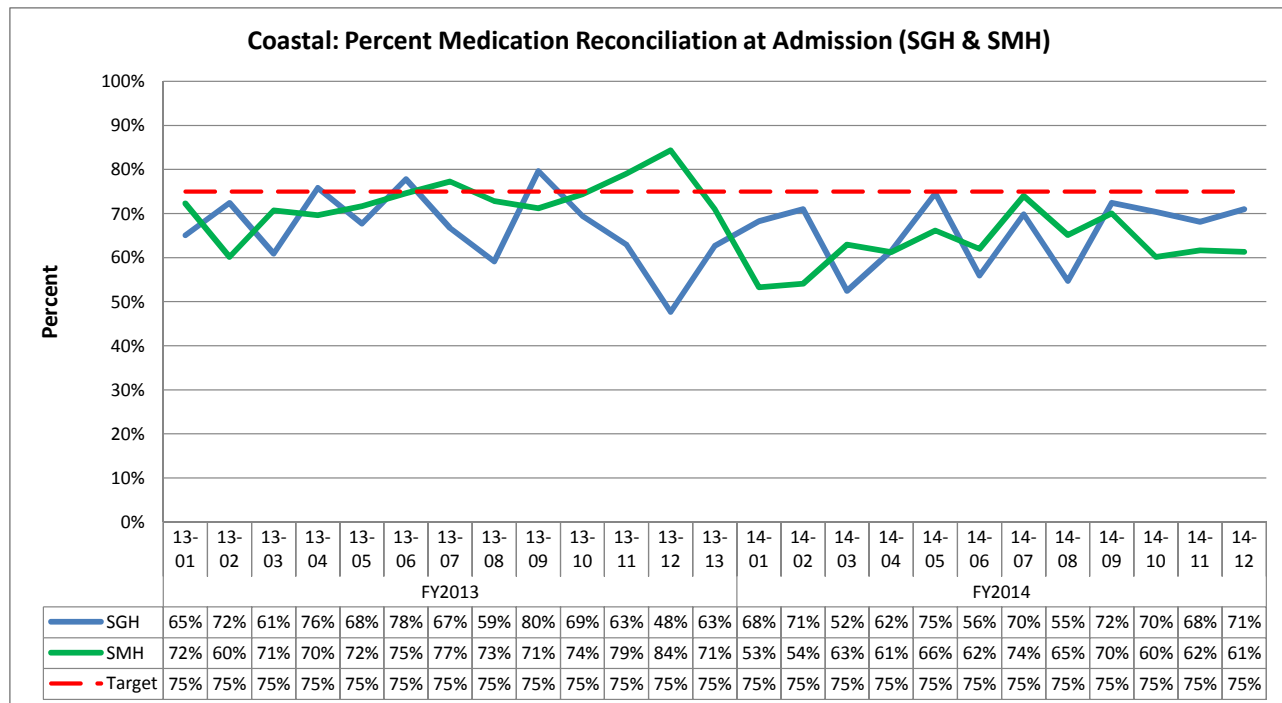
**Richmond:** The results show that the percent compliance with medication reconciliation has consistently improved at RH but is still below the target of 75%. More work needs to be done to meet the target.



**Coastal (LGH & PRGH):** Over 2013/14 there has been a downward trend for medication reconciliation at LGH with an average percent compliance of 61%. There has been considerable variation at PRGH likely due to the smaller numbers. The average percent compliance at PRGH was 54%. More work needs to be done at both facilities to achieve the performance target.



**Coastal (SGH & SMH):** Over 2013/14 the percent compliance for both SGH and SMH has been consistently below the target of 75%. The average percent medication reconciliation at SGH was 66% and 63% for SMH. More work needs to be done at both facilities to achieve the performance target.

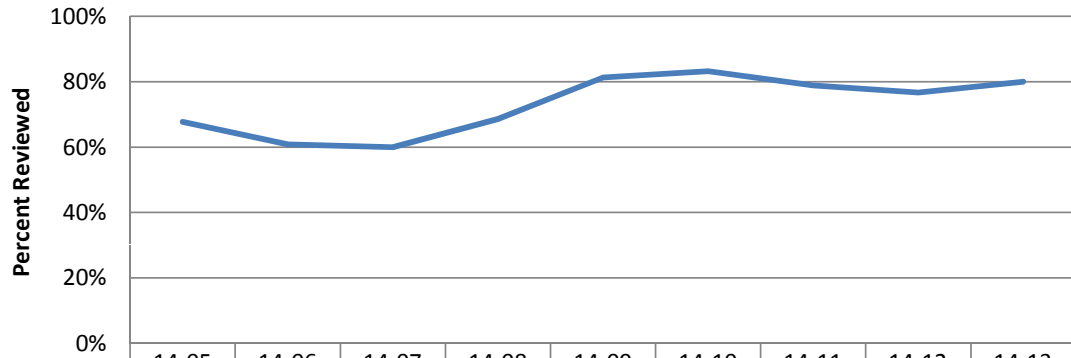


## Quality of the Medication Reconciliation Process:

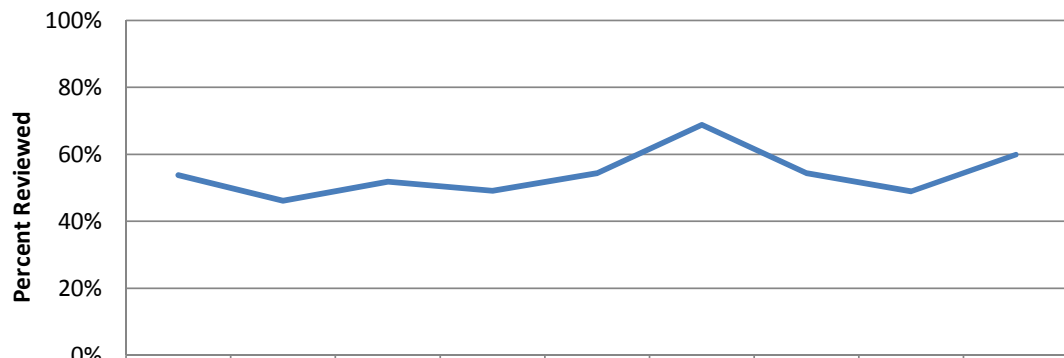
In addition to measuring the overall percent compliance, we initiated auditing to assess the quality of the medication reconciliation process within select acute care facilities (i.e. VGH, RH, LGH and SGH). Trained auditors select a sample of charts every fiscal period and examine the completeness of the medication reconciliation process. Specifically, auditors look at the section where the medication history is verified with the patient and/or family/care provider prior to reconciling and creating admission orders. The objective of this review is to obtain the Best Possible Medication History (BPMH) which is the cornerstone of the medication reconciliation process.

The following graphs show the completeness of the medication reconciliation for the audited facilities. For all facilities, there is room for improvement.

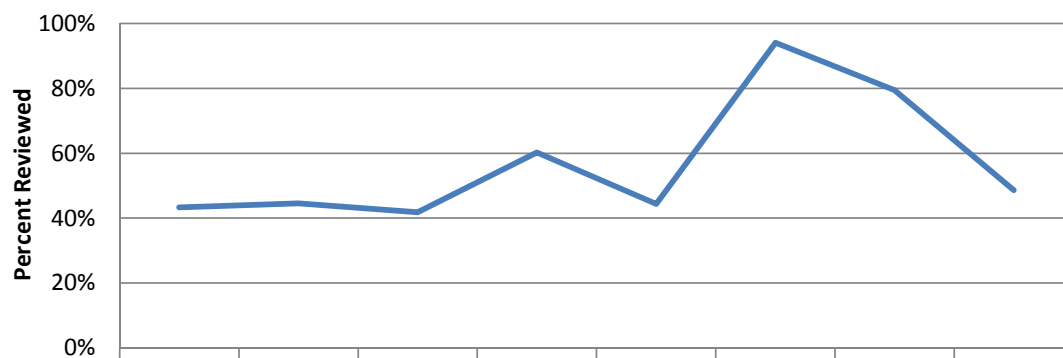
**VGH: Percent of Medications Reviewed**

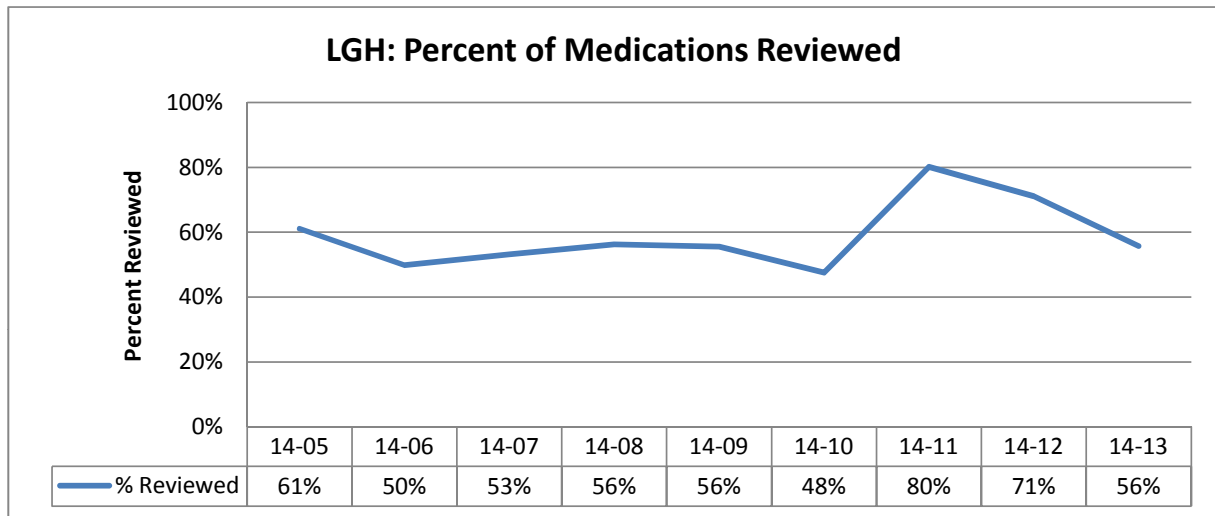


**RH: Percent of Medications Reviewed**



**SGH: Percent of Medications Reviewed**





## What actions have been taken over the last year?

Medication Reconciliation leads at each of the sites continue to work with programs to improve medication reconciliation at admission in acute care as well as the “quality” of the medication reconciliation process by focusing on collection of a BPMH prior to writing admission orders.



## *Human Factors*

The application of Human Factors expertise occurred on a variety of projects across Vancouver Coastal Health and areas focusing in Quality and Patient Safety across British Columbia. Some of the areas of focus include:

### **Formally Embedding Human Factors into Medical Device**

#### **Procurement:**

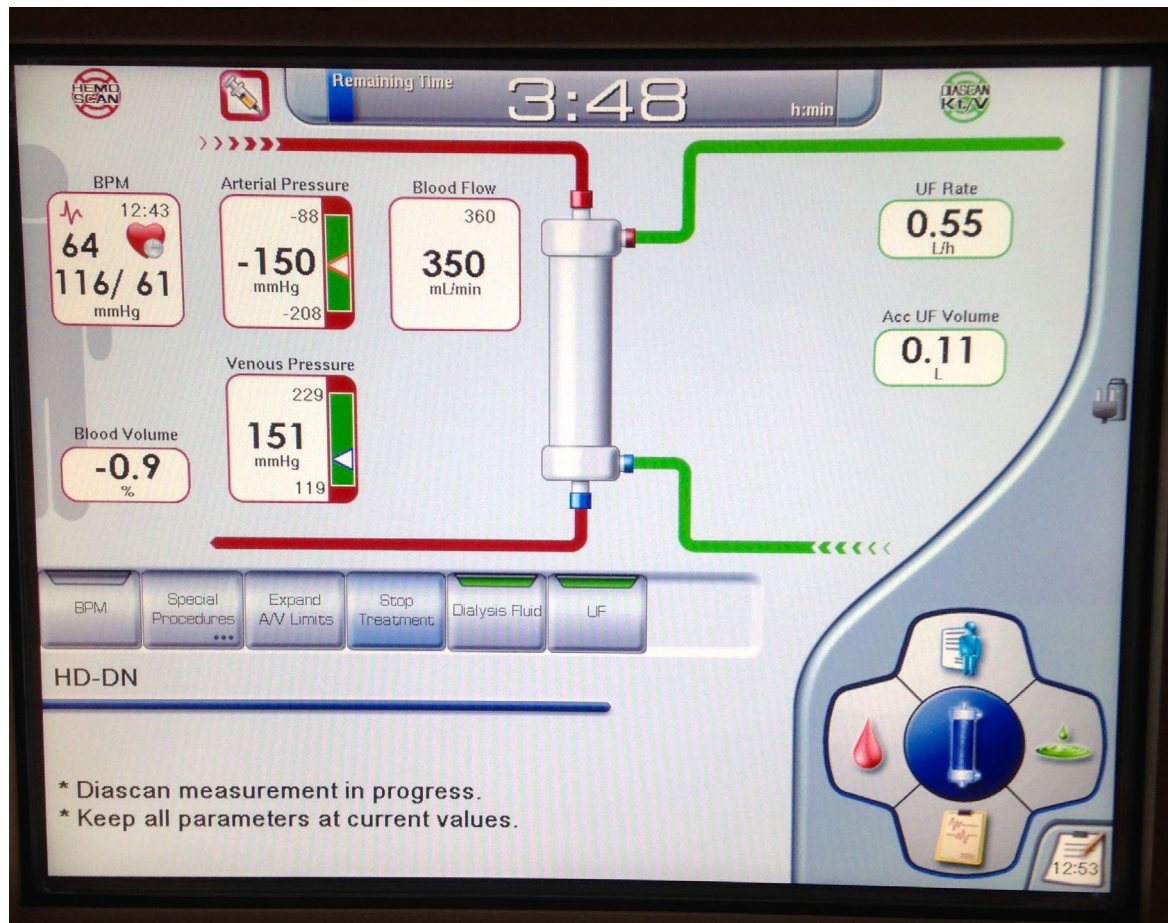
The Western Canadian CEO Quality and Patient Safety Committee requested to embed Human Factors methodologies and evaluations into a formal procurement process across the four western provinces of Canada. A Human Factors Collaborative was established to develop a consistent framework for equipment evaluation that requires Human Factors testing, checklists and guidance documents to provide assistance to procurement leads in engaging Human Factors expertise, defined requirements to be embedded in Request for Proposal (RFP) documents, and standardized evaluation methodologies and tools that can be applied to maintain consistency across provinces.

This initiative has provided an opportunity for interprovincial collaboration across Manitoba, Saskatchewan, Alberta, and British Columbia with Human Factors expertise, procurement leads, quality and patient safety teams, and clinical engagement. Specifically, it has also provided our team at Vancouver Coastal Health the chance to work more collaboratively with HSSBC to ensure consistency in medical device selection and acquisitions across BC.

#### **Evaluation of Medical Devices:**

As part of the Provincial HSSBC RFP process, a variety of medical devices have been evaluated for purchase with Human Factors methodologies over the past year. Each evaluation involved a multi-disciplinary team with a clinical, technical, and quality and safety focus. Heuristic evaluations, workflow mapping, usability studies, and user satisfaction evaluations were used to quantify the clinical experience and overall usability. Essential information about the predictive risk potential and any safety concerns for each device were also captured. The three device categories that were

evaluated were Automated Dispensing Cabinets (ADCs), Hemodialysis devices, and electro-surgical/smoke evacuator devices (in progress).



## Human Factors Assessment of UV Disinfection Options for Integration into Discharge Cleaning:

UV Disinfection technology was evaluated by a multi-disciplinary team throughout the year to assess the efficacy of the technology in the current hospital cleaning model. A Human Factors Assessment was conducted during November 2013 to evaluate the implementation options of UV Disinfection into the current work environment while identifying integration considerations to improve discharge cleaning for healthcare facilities. A heuristic evaluation of the two UV Disinfector devices, task analysis, workflow assessment, a weighted matrix, and a plan for implementation moving forward were produced.



## Teamwork and Communication in Interdisciplinary Teams:

Teamwork is recognized as the core component necessary for the provision of effective and safe patient care. However, minimal multidisciplinary training occurs for interdisciplinary clinical teams. Patient care is composed of technical and non-technical elements include teamwork, communication, leadership, situational awareness, and decision-making.

Through the Releasing Time to Care (RT2C) and Productive Operating Theatre (TPOT), we are developing teamwork and communication modules, presentations, interactive games, peer observation tools, and communication tools to assist surgical, medical, and community based teams in coaching non-technical skill development.

To date, a variety of presentations, facilitated communication and teamwork games, and initial interdisciplinary observations have occurred. A white paper was authored



by a few members of our team in collaboration with other provincial surgical members on the importance of teamwork and communication. This paper is posted on the BC Patient Safety and Quality Council website and is currently in press.



## **Providing Human Factors Expertise to Clinical System Transformation (CST):**

As is a priority with many areas throughout VCH, Quality and Patient Safety has been directly embedded into Clinical System Transformation (CST) activities. Human Factors expertise has supported a variety of areas throughout the build to date. Clinical documentation, medication management, provider ordering workflow, system information presentation consistency, and the evaluation and selection of devices for Cerner implementation and integration.



## *Venous Thromboembolism Prophylaxis*

In 2011/2012, VCH committed to implementing evidence based DVT/VTE prophylaxis protocols. VTE is the most preventable cause of hospital death and disability. Both hospital costs and median length of stay increases for patients who develop VTE. Long term consequences to patients of hospital acquired VTE are the risk of developing recurrent thrombotic events as well as developing chronic leg swelling. Both impact the quality of life of the patient.

VCH is ensuring that all hospitalized patients in acute care are assessed for risk of VTE, and prescribed appropriate prophylaxis (pharmacological or mechanical) as their clinical presentation indicates. In cases where a clinical indication not to prescribe VTE prophylaxis is evident, documentation in the patients' chart communicates this to other members of the healthcare team.

Measurement for compliance to this protocol is aligned with the BC Ministry of Health (MOH) Clinical Care Management Guidelines (CCM). We report our progress every fiscal quarter to the MOH and our compliance to our protocol is shared with staff and physicians through our Quality and Patient Safety portal on a monthly basis.

### **What have we done?**

To date we have implemented a [Regional Thromboprophylaxis Policy](#) and [Venous Thromboembolism Prevention Guideline](#) for VTE.

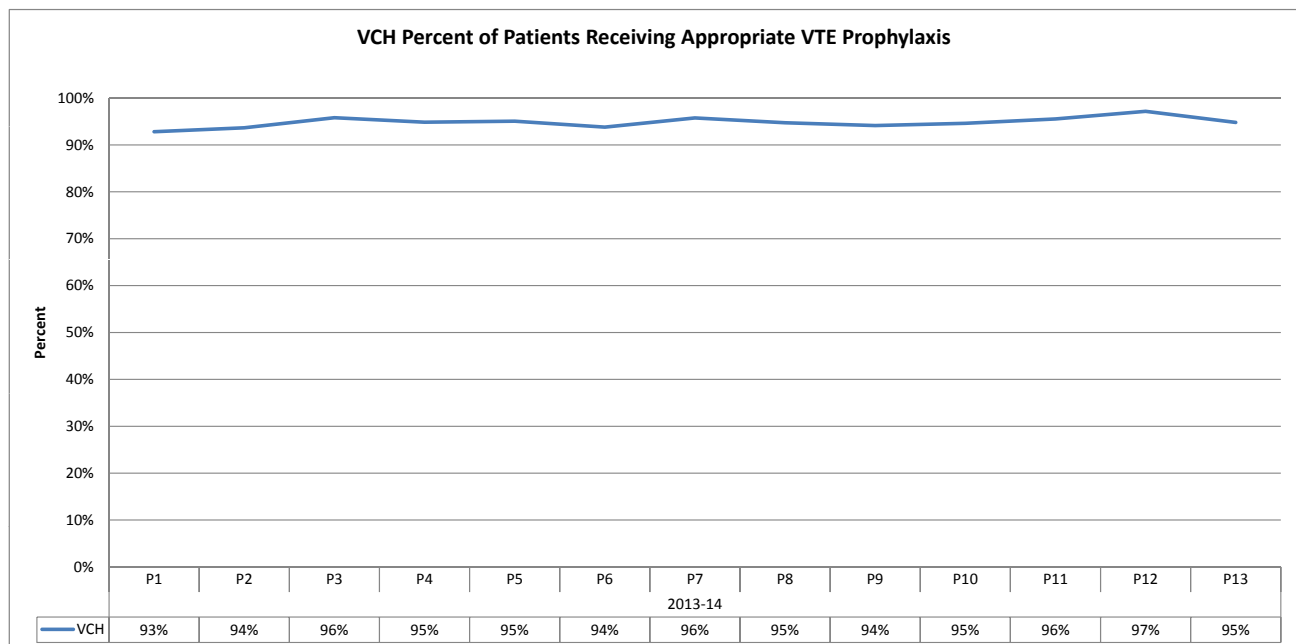
To augment this policy, VCH developed and now finalized a regional VTE PPO (Pre-Printed Order) for medical and for surgical patients. These orders, which guide the prescriber through the risk assessment and support ordering of appropriate prophylaxis, are now embedded into all program PPO's within VCH. Our rural sites have recently begun using the PPO's while the PPO's have cascaded through our urban centers since 2011.

### **How are we doing?**

Our target is 100% of our at risk patients in acute care centers are appropriately being prophylaxed for VTE on every admission. We audit on a fiscal period basis at all acute

sites within VCH. Auditors review charts for 1) PPO present on the chart, 2) a risk assessment is completed, 3) appropriate prophylaxis is ordered or documented when contraindicated. For 2013-2014, an average of 95% (range: 90% – 100%) of all audited charts showed that our patients are receiving the appropriate prophylaxis. This is an increase from last year where the average was 93%. The Regional Surgical Executive Council reviews the audit findings and supports follow up at the local and CoC level with medical and nursing practitioners to reinforce use and spread of this best practice initiative. Local level initiatives have included Plan-Do-Study-Act cycles to test changes to processes in Richmond General, VGH and Coastal acute sites.

Our period results are then posted every period by unit, by site and also rolled up regionally on the [Quality & Patient Safety portal](#) (intranet webpage) for all clinicians and physicians to review.





## *Tissue Banking and Cellular Therapy*

Within VCHA exists the Eye Bank of British Columbia (EBBC), BC Tissue Bank, and the Leukemia/ Bone Marrow Transplant Program of BC, all of which work in conjunction with Health Canada, and other health agencies and professionals in ensuring the safety, efficacy and quality of all transplanted tissues and cellular products used in our health authority, and beyond. The Quality and Patient Safety Department supports these Programs with ongoing reviews and improvements to their Quality Management Systems.

### **Tissue Bank of BC**

The Tissue Bank follows the model of a centralized distribution centre with strict adherence to the Regulations for the Safety of Human Cells, Tissues and Organs for Transplantation. A variety of tissues from bones to cardiac grafts are received from different manufacturers, stored and distributed to clients within VCHA ensuring indefinite traceability. All tissue is obtained from suppliers that are accredited and/or registered with the American Association of Tissue Banking, Food and Drug Administration of the United States of America, and Health Canada.

The Tissue Bank underwent a successful inspection by Health Canada in November 2012.



### **Eye Bank of BC**

The Eye Bank (EBBC), which operates out of VCH, is the only comprehensive ocular program in the province recovering over 600 donors annually and distributing

tissue provincially and nationally when there is an abundance of tissue. The quality framework of the EBBC follows that of the Regulations for the Safety of Human Cells, Tissues, and Organs for Transplantation Regulations (CTO Regulations) and the Eye Bank Association of America (EBAA). The EBBC underwent both a successful re-accreditation and re-inspection by the EBAA and Health Canada in 2013.

In addition to having a Facebook™ page, the EBBC also operates a Twitter Inc account, newly created in 2013 to provide up to the minute information. Social media has enabled us to reach a whole other generation of the technology savvy public.

For the first time ever, an EBBC staff member was awarded the 2014 Patricia Aiken-O'Neill Scholarship. This merit-based scholarship is awarded by the Eye Bank Association of America to an individual for their service and dedication to eye banking and was awarded to the Donor Development Liaison. This invaluable role provides education about eye donation and promotes public awareness which has culminated in a steady increase in eye donation numbers since its inception several years ago. The scholarship provides the funding for the staff member to attend the EBBA Annual Meeting, which was in Portland, Oregon this year.



## **Leukemia/ Bone Marrow Transplant Program of BC**

The clinical program, which resides within two health authorities, Vancouver Coastal Health Authority (VCHA) and the Provincial Health Services Authority (PHSA), is responsible for the provision of care for adult patients with hematological malignancies in the Province of British Columbia including chemotherapy and stem cell transplant.

The program has unique areas that are responsible for different processes involving:

- Diagnosis and the development of a treatment plan for referred patients, which may or may not result in a transplant.
- Canvassing for a donor, if needed, anywhere in the world. Some patients are candidates for autologous transplants.
- Harvesting the cellular product which can be performed by apheresis, the removal of a specific constituent of whole blood and returning the remaining to the donor, or by the surgical removal of bone marrow, mostly from pelvic bones, by using a needle. The program also collects product for other transplant centres, anywhere in the world.
- Processing and preservation of the cellular product for future use if required.
- Transporting the product to the transplant centre, either locally or to another continent.
- Data gathering and monitoring outcomes.
- Innovation and research activities.
- Working with many partners and stakeholders.

The highly-regulated Program is governed by the laws of Canada and of the Province of British Columbia. In addition, the Program and/or its staff maintain(s) registration with and are subject to regulations of:

- Health Canada as a Canadian program subject to and compliant with the Safety of Human Cells, Tissues, and Organs for Transplantation Regulations (CTO Regulations). The Program underwent a successful inspection in February 2012.

- Foundation for the Accreditation of Cellular Therapy (FACT). The Program received initial accreditation in August 2013.
- The Food and Drug Administration of the United States of America as a registered establishment for Human Cells, Tissues, and Cellular and Tissue-Based Products (CFR Title 21, Part 1271).
- The World Marrow Donor Association International Standards for Unrelated Hematopoietic Stem Cell Donor Registries as a production facility for unrelated donor stem cells for transplant. The Program underwent a successful inspection in February 2014.

A great milestone was achieved in the last year where a group of volunteer couriers were enlisted and trained to pick up stem cells for transplant from other collection facilities across the country and internationally. Historically, program staff members and physicians would transport these cells, taking them away from their clinical duties. In an effort to release time to care and to deal with the increasing number of patients requiring transplants, a sustainable solution simply had to be found. The Bruce Denniston Society, a group of retired RCMP, now performs the transport of the cells seamlessly, enabling the Program to align with the region's true north goals to provide the best and sustainable quality of care to their patients.



## *Utilization Management*

Utilization Management is a service that is accessible for the Vancouver Coastal Health Authority's (VCHA) operational/clinical staff or program delivery service to provide them with an objective assessment or evaluation of their utilization management proactive procedures (ie: discharge planning, VTE compliance, process of ALC designation, data quality assurance etc.). Clinical utilization reviews are conducted when it is to inquire or when it is required by necessity. A basic utilization review may be in combination of the following: an assessment of appropriateness, an evaluation of the medical/service needs in each level of care based on a guideline or evidenced-based criteria and an assessment of the efficiency of health care services procedures/facilities through the identification of patient flow delays.

Clinical Utilization Management has expanded. It has been consulted and involved in regional projects that required an independent assessment and evaluation of a program or process, as well as providing supplemental support on regional projects and operational tasks and duties required by the Health Authority.

### **2014: ER Appropriateness UM Review in Richmond Hospital**

The Director of Acute Care and Manager, Flow and Capacity from Richmond Hospital requested an appropriateness review of inpatient admissions from the emergency department. It was identified that the admit rate may have gone up compared to 2008. An assumption was whether current practices and changes in patient flow processes (with the implementation of the MedWorxx ACTIV UM System) have “relaxed the threshold for admission” based on the current data from Decision Support. It was suggested that given the focus on the “questionable” appropriateness of admitted medical patients, a utilization management review during FY 2014 Period 10 and 11 would be helpful in response to this question.

### **2014: Bed-Mattress Safe Combination Project**

Bed entrapment is a very real concern in acute care, long term care facilities and in home based care. In response to this concern, a review was coordinated by Biomedical Engineering to assess the current bed systems that exist in Vancouver Acute and

Banfield facilities, report the findings and make recommendations. Risk Management and Clinical UM developed the following documents for VCHA Acute and Long Term Care facilities: The Bed-Mattress Entrapment Risk Care Planning Guidance 2014, Facilities Management Procedural (Bed Labeling and Mattress Tagging), Potential Bed Entrapment Zone Care Planning Guidance, VCHA Bed Mattress Safe Combination Policy and designed the Bed Frame Labels for easy reference for clinicians.

## **2012- 14: The Standardization and Roll-Out of the New Regional “Alternate Level of Care” Definition and Process Development**

This is led by Joleen Wright (Director, Data Release Management/Decision Support).

## **2013: UM Review of the Data Collection Processes between NSQIP Coordinators and Health Records Coders/Administrators**

The validation of data quality process and procedures with respect to the NSQIP Project and the current data reporting to the Canadian Institute for Health Information. This was in response to the disparity in the results received from the Discharge Abstract Database (co-morbidities) and the NSQIP Database (post-op occurrences) on Urinary Tract Infections and Pneumonia. This project was led by Mary Cameron-Lane (VCHA NSQIP Lead Coordinator/Quality & Pt Safety).

## **2005 - ongoing (Ad Hoc): UM ALC Reconciliation Reviews/Audits (by period or Fiscal year end) – Lions Gate Hospital**

Requests are made from Health Records Coders and Administrators to assist them with the validation of Alternate Level of Care days.



## *VCH Improvement Strategy: Releasing Time to Care™*

### *The Productive Ward, the Productive Mental Health & Addictions Ward, the Productive Operating Theatre*

#### **Why is it important?**

Releasing Time to Care is a program that is part of the Productive Series from the National Health Services (NHS) England. It provides a systematic way to deliver safe, reliable and efficient patient care by empowering front line staff to ask questions about their practice and making positive changes to the way they work. The program focuses on being led by staff and enables staff who are looking at driving improvements in their work environment. It is about releasing more time for direct patient care.

The showcase units at Richmond Hospital and Squamish General Hospital are moving into their third year of implementing Releasing Time to Care and have seen remarkable results with improved staff engagement and patient outcomes.

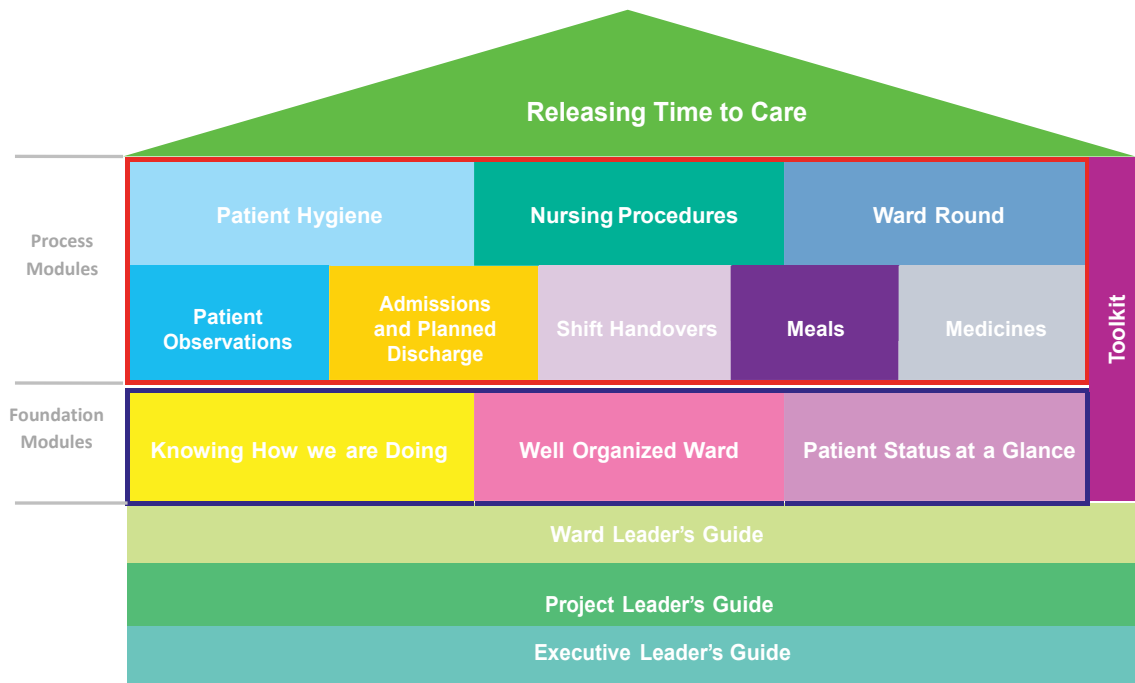
*“Releasing Time to Care changes the unit’s culture for better patient care and team work.” ~ Pharmacist, Squamish General Hospital*

*“We have gone from a culture of ‘I can’t do anything differently. This is how it has to be,’ to striving to make better for our patients; looking every day for so-lutions that can make things different for them.” ~ Staff nurse, Richmond Hospital*

Putting People First is Vancouver Coastal Health’s (VCH) strategic priority. Releasing Time to Care provides a quality improvement framework that aligns with VCH’s strategic goals. It is integrating existing approaches such as Lean principles and the Improvement Model, to support teams to achieve innovative and best practices for patient-centred care.

## What are we doing?

Since April 2012, Squamish General Hospital and three medicine units, (2S, 3S and 3N) from Richmond Hospital have been working through three foundation modules and eight process modules that comprise Releasing Time to Care (RT2C).



Releasing Time to Care modules for Productive Ward and Productive Mental Health & Addictions

In April 2014, VCH partnered with the BC Patient Safety & Quality Council and NHS consultants Maggie Morgan-Cooke and Hugh Rogers to introduce nineteen new teams from across BC to one of three programs under the NHS Productive Series: Releasing Time to Care/Productive Ward, Releasing Time to Care Mental Health & Addictions or the Productive Operating Theatre. Teams representing Vancouver Island Health Authority, Fraser Health Authority and Vancouver Coastal Health Authority attended a three-day training course in Richmond. In addition to the four existing pilot units, VCH supported eleven new teams to be the first wave of spread of the RT2C program as well as being the first showcase Operating Rooms for the program in Canada.

The core team members represent nursing, anesthesia, surgery, social work, psychiatry, assistants and are supported through collaboration between Quality & Patient Safety, Professional Practice, Lean and Strategy Deployment.

## 1. Knowing How We're Doing

The Knowing How We're Doing (KHWD) foundation module describes and measures in-the-moment performance in a way that's accessible and understandable to staff. These measures help the unit identify key issues and provide the evidence to have discussions that will drive improvements from the grassroots level. Tools used for the KHWD module include huddles to discuss the unit's performance, safety crosses, breakthrough improvement lanes, quality control charts, patient observation audits and activity follows.

**Inpatient Psychiatry (PRGH IPU)** prioritized communication of RT2C to the interdisciplinary team by creating a newsletter describing what the program is and who is on the IPU support team. The newsletter generated curiosity and engaged staff with asking about the program. Staff heard that they will be able to concentrate on delivering the best care that is safe and supportive for their patients and that by being able to spend more direct care time, their patients will respond to interventions better.

IPU: RELEASING  
TIME TO CARE

SPECIAL  
POINTS OF  
INTEREST:

- RTC launch party on IPU coming in August 2014
- RTC purpose is to increase direct patient care time
- RTC is about staff doing fewer tasks that do not have value for staff or the patients

## Releasing Time To Care

VOLUME 1, ISSUE 1


JULY 8, 2014

### IPU: Finding Ways to Increase Patient Care Time

**Releasing Time to Care**, is an approach used on Mental Health Wards to explore ways to free up staff time so that more time can be spent with patients and the quality of care given can be improved.

**Releasing Time to Care** supports staff to

Nurses and other care providers presently



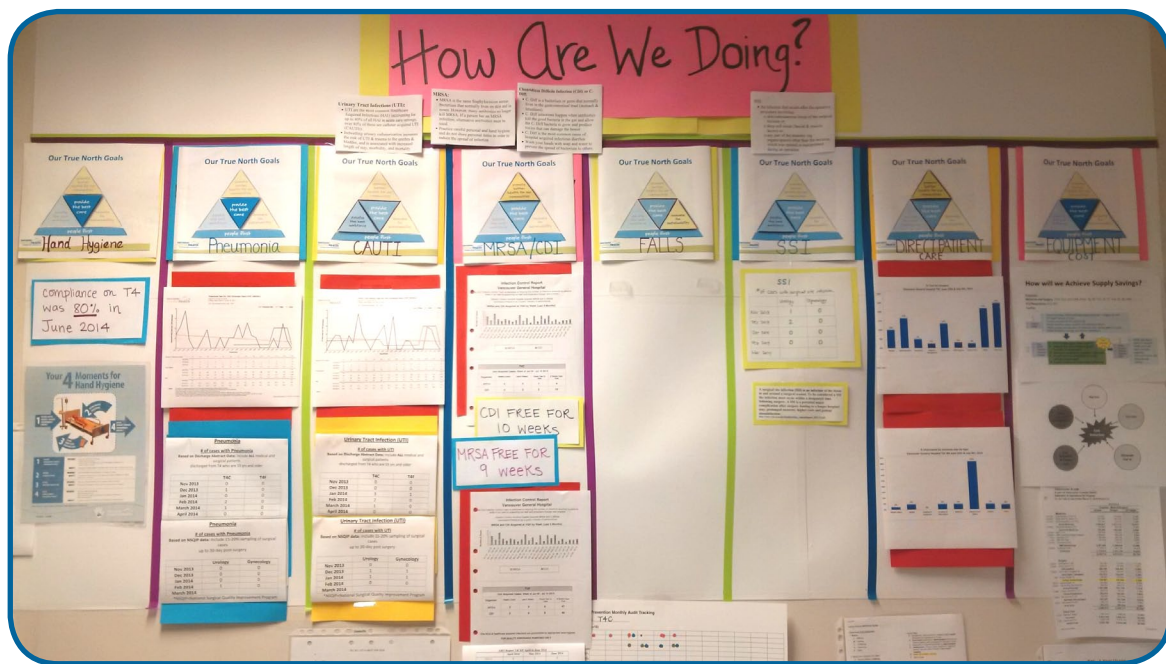
care, duplicating charting, sitting in on long shift hand overs and dealing with numerous interruptions. This is frustrating for staff!

**Releasing Time to Care** helps staff do what they really want to do: **spend more time**

Inaugural Releasing Time to Care Newsletter for PRGH Inpatient Psychiatric Unit

**Psychiatric Emergency Unit (RH PEU)** are building excitement to bring the voices and expertise of staff into making a difference for patients on their unit. Their vision statement anchors the work they are about to embark on with RT2C as it involved the entire team and physicians to co-create. Through the use of safety crosses they are identifying what is the most common reason for patient falls and the use of seclusion so they can drill down to the changes they will action on.

**Urology/Gynecology Surgical Unit (VGH T4)** The RT2C process included implementing daily huddles and tracking measures through break-through improvement lanes. This included monitoring and documenting patient fall activity and surgical site infections and displaying a visual representation of the data that is aligned with the VCH True North goals. Overall RT2C has opened up channels for the interdisciplinary team to discuss and implement change.



Breakthrough improvement lanes on the Knowing How We're Doing Board – VGH T4

**OR (LGH, RH, SGH), Psychiatry (LGH A2; VGH West 1, PAU, AHBT; RH 2W)** The newly implemented teams are in various stages of getting ready. SGH and LGH operating room have completed their team visioning of “What would make the perfect OR day?” and will be setting goals on what to work on to achieve their vision. The two teams have also



developed an OR newsletter to communicate updates on TPOT and current news at their sites. Kick-offs for staff and physicians will be occurring in the Fall 2014 for RH TPOT and the mental health units at VGH, LGH and RH.

## 2. Well Organized Ward

The Well Organized Ward (WOW) or Well Organized Theatre (WOT) is a foundational module that applies basic lean 5S principles (Sort, Set, Shine, Standardize, Sustain) to simplify the workplace environment and reduce waste. These methods help with the reorganization of areas by having everything in the right place, at the right time and ready to go.

**Operating Room (LGH)** staff tackled several areas in the OR that had been frustrating them and found some simple ways to declutter and optimize their spaces. Carts holding positioning equipment for patients were sorted and easy-to-read labels were placed on each shelf that stored the items. Hallways that were previously cluttered with extra carts are now clear, allowing patients to walk down corridors without obstruction. Unneeded wall hangings and outdated posters were removed from the ORs making the rooms seem larger. Using the principles of the Well Organized Theatre, the Implant Room has more space and is less confusing to work in. Overall, staff have noticed the small changes and have been able to do their daily work more efficiently.



Before and after implementing Well Organized Theatre module of the Implant Room at LGH OR

*Promoting wellness. Ensuring care.*

**Medicine (RH 2S)** reviewed their clean core room under the WOW module. The process required collaboration with Supply Distribution and unit staff to identify par levels of linens, layout of the room and storage of the linen supply. The result was easier access to frequently used items and an appropriate volume of stocked items (more flannels and housecoats, less towels and bibs).

### *3. Patient Status At A Glance*

Patient Status at a Glance (PSAG) uses visual management to display patient information relevant for the interdisciplinary team to continue their clinical activities without interrupting others or spending time searching for information. The PSAG board helps enhance patient flow and communication.

**Medicine (RH 2S, 3S, 3N)** The use of bedside whiteboards are being used to keep patients and families up-to-date on daily goals and discharge plan. Patients commented that having basic information like today's date and the name of today's nurse and doctor have been very helpful. The whiteboards are updated daily and regular audits are performed to ensure this standard is maintained.

### *4. Meals and Medicines*

The meals module helps ensure that the patient receives the best patient experience by receiving the right meal on time after it has been recently prepared.

Through scheduled medication administration, patient safety is improved with timely delivery, reduced wasted time and decreased medication errors.

**Medical/Surgical/Maternity unit (SGH)** Patients at SGH now have a choice of meals from a variety of options for different diets and they feel they are not interrupted during their meal times. In an effort to address incidents related to late meal starts, food waste and missed assistance for patients requiring support, protected meal times are now enforced. For 30 minutes at every breakfast, lunch and dinner, all staff avoid performing non-emergent assessments, tests and procedures on patients. Laboratory and Radiology staff also defer their procedures around the protected meal times. Patients requiring assistance with their meals receive their meals delivered on a Blue Tray so they are easily identified and prioritized to receive support.



As a result of the medicines module, Pharmacy regularly attends the daily team huddles to review medication errors. Common narcotic conversions are discussed and have been posted for reminders. One of the most common errors identified include transcription errors for handwritten medication administration records (MARs) for which staff have developed a buddy check system to verify.



SGH team

## *5. Nursing Procedures, Patient Observations and Patient Hygiene*

These modules improve how nursing procedures are carried out on the unit so that patient care is provided consistently, in a timely and standardized manner and the reliability of patient observations are increased. The goal is to support safe, comfortable and dignified care yet promote confidence and independence from the patient's perspective.

**Medicine units (RH 2S, 3S, 3N)** involve patients and their families to prevent the development of healthcare-associated pneumonia by using ICOUGH (Inspiration, Coughing, Oral care, Understanding, Get up, Head of bed).

Standard operating procedures (SOP) outlining intravenous and foley catheter fluid balance assessment and documentation, urinary catheter care, oral care and pericare, have been developed with clear language and pictures for demonstrating nursing care. To ensure that changes are understood and sustained, staff perform regular audits and discuss actions at team huddles.

## *6. Shift Handovers and Ward Rounds*

The shift handover module reduces the time teams spend on handovers, while making the information handed over more appropriate, easier to remember and easier to understand.

The ward round process module focuses on improving the efficiency and experience of rounding by providing staff with the right information, promoting teamwork and maximizing the time for direct patient care with reduced interruptions.

**Medicine (RH 2S)** standardized morning and evening reports to deliver system-focused information that included patient identity, diagnosis, recent and anticipated patient status changes. The handovers are shorter in length but provide higher quality information and the time released allow better continuity in nursing care. Staff are able to perform vital signs assessments earlier, provide on-time medication administration and prepare patients to eat their meals on time.

**Medicine/Surgery/Maternity (SGH)** In order to reduce the number of patients who were being missed on daily ward rounds, Emergency Department physicians are partnering with community GPs by texting them notifications of each admission to the unit. The team is now working on a physician to physician hand-over/communication process to facilitate continuity of care throughout the weekends when the ED physician is responsible for rounding on the inpatients.

**Medicine (RH 3S)** involves the patient and family member in interdisciplinary rounds at the patient's bedside. The discussion is focused on patient care goals and discharge

planning and promotes patients and families to participate and be aware of their own roles in achieving an improved patient experience.



Interdisciplinary bedside rounds with the patient and family member – RH 3S Medicine.

## How are we doing?

### *Building on success*

The Releasing Time to Care teams have much to be proud of and are capping the past year with many acknowledgements.

- 1 Getting Better BC Quality 2014 award
- 6 VCH News stories



- 16 unit tours hosting staff and leaders from VCH, 4 other Health Authorities, Provincial sectors and China
- 4 conference presentations
- 1 video showcasing the VCH RT2C teams. View at this link: (<http://www.youtube.com/watch?v=FbGcKYM4X7w>)



RH and SGH team members receiving the BC Getting Better Quality Award 2014.

## Building leadership and staff engagement

Releasing Time to Care is fostering the development of staff for leading change that embraces patient-involved and patient-centred care. The Ward Leads have presented at numerous venues including the Quality Forum, BC Nurses' Union Conference and the BC Quality Café. Staff are driven to engage their peers, to achieve ongoing learning and to model approaches for continuous and innovative improvement and this is building a succession of leaders for our future.

The work with RT2C and TPOT is being recognized by senior leadership on an ongoing basis with leadership walks on the units and visits to team huddles. Weekly updates from the teams keep a cross section of point-of-care-staff and members throughout the organization informed of challenges and successes.



Leadership walk and signing the Visit Pyramid.

The measures and outcomes from the four core objectives of RT2C are shown on pages 72-73.

## What's next?

Releasing Time to Care has shown successful results in VCH with staff engagement and improved patient outcomes. Based on this, a VCH Quality Improvement Strategy has been developed that incorporates RT2C with Lean management methodology. Fifteen teams across the health authority are now implementing this QI framework, allowing further development in integrating quality initiatives and building interdisciplinary teamwork.

## Improving Patient Experience



### SGH:

- 20% Increase in proportion of patients feeling respected
- 40% increase in proportion of patients who felt included in decisions around their care

### RH- 2 South:

- Disposable bath wipes
- Bedside white-boards
- Welcome brochures

### RH – 3 North:

Patient satisfaction surveys show improvements: 34% increase in patients feeling respected

### RH – 3 South:

- Bedside rounds with patient/family around care goals and discharge
- Bedside white-boards

## Improving Staff Well-Being

### SGH and RH:

Significant increase in 2013 VCH People First engagement scores

### SGH:

- Organized break times leading to fewer missed breaks
- Board for staff ideas around improving work environment

### RH- 2 South:

- Staff lounge improvements
- Improved teamwork

### RH – 3 North:

SOP on teamwork

### RH – 3 South:

Superstar of the month awards

## Improving Efficiency of Care



### SGH:

- Pre-packaged admit kits to reduce admission time
- Well-organized medication room and linen trolley
- ED staff alerting MRP of admitted patients via text messages
- Increased direct care time from 26% to 39%
- Improved patient handover reporting and decreased handover time from 7% to 5% of each shift

### RH- 2 South:

- Well-organized medication room and linen area
- Pre-packaged admit kits to reduce admission time

### RH – 3 North:

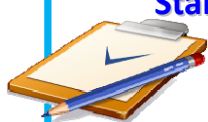
- Implementation of bedside charting to increase accuracy of information and reduce charting time
- Well-organized IV trays

### RH – 3 South:

- Well-organized units, medication drawers, wound carts, and isolation carts
- Implementation of bedside charting
- Increased direct care time from 30% to 44%



## Improving Patient Safety and Reliability of Care



### Standardized Operating Procedures and Safety Check Lists

#### SGH:

##### SOPs for

- admitting patients to wards
- nightly duties by nursing staff

#### RH – 2 South:

SOPs for fluid balance tracking

#### RH – 3 North:

##### SOPs for

- ward to ward transfer
- catheter care, mouth care, peri care
- designated dirty and clean storage

#### RH – 3 South:

Safety check sheets at bedside



### Improved Communications

#### SGH:

Regular huddles with Pharmacy to prevent medication errors

#### RH – 2 South:

Standard handover/morning reports

#### RH – 3 North:

- Sticky Care Plans for (care issues?)
- Communications with P.T. regarding mobility issues

#### RH – 3 South:

- Morning rounds at Patient Status At a Glance boards to discuss each patient

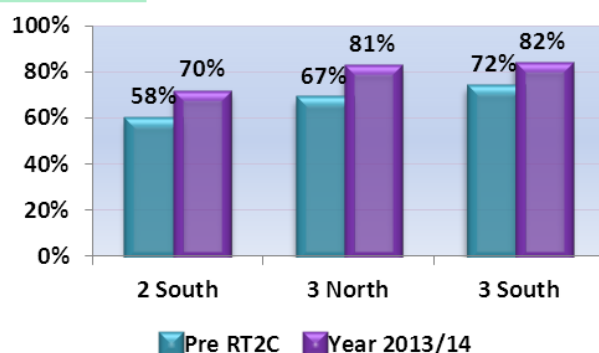
### Reduced Healthcare-Associated Infections

	SGH	RH 2 South	RH 3 South	RH 3 North
MRSA	✓			✓
C. difficile	✓			✓
Pneumonia		✓	✓	✓
UTI/CAUTI		✓		



### Increased Hand Hygiene Compliance

Hand hygiene has increased at all three RH sites since RT2C



### Reducing Patient Falls

Patient Falls reduced by 13% at the three RH sites since RT2C

Median # falls per month		
Site	2012/13	2013/14
3N	5.0	4.5
3S	9.0	7.5
2S	5.0	4.5

The next steps include the following:

- Further develop the VCH improvement framework that blends RT2C with Lean management methodology and integrate with upcoming initiatives such as the Clinical & Systems Transformation (CST) initiative and 48/6.
- Implement RT2C or TPOT on at least 10 new units or departments in 2014/15.
- Advance patient involvement in planning, designing and feedback of process improvements.
- Partner with NHS to develop local capacity for training new teams on RT2C and TPOT.
- Continue to create a cascade of leadership development that roots from Ward and Clinical Leads to every staff member.

Develop capacity for patient-centered care so that it is embedded in everyday practice.



3S team receiving the BC Getting Better Quality Award. SGH, 2S and 3N were co-recipients.

## *Surgical Quality*

### **What are we doing?**

VCH conducts over 40,000 surgical procedures every year. Measuring indicators of quality surgical care is critical in knowing how we are doing and allows us to identify where to focus efforts to optimize patient care. The VCH Quality and Patient Safety department, in collaboration with the VCH Regional Surgical Executive Council, is participating in a provincial initiative aimed at reducing adverse events from surgical care.

The Surgical Quality Action Network, uses a risk-adjusted data collection tool called the National Surgical Quality Improvement Program (NSQIP) that was developed by the American College of Surgeons. This program collects and analyzes clinical outcomes data that empowers participating hospitals to develop quality initiatives to improve surgical outcomes.

The Surgical Quality Action Network, which includes the 24 BC facilities participating in NSQIP, is supported by the BC Patient Safety & Quality Council. There is a dedicated Quality Improvement Leader and a provincial Clinical Lead to provide guidance for surgical activities in the province.

### **How does it work?**

Participating hospitals collect data on pre-operative patient risk factors, pre-operative laboratory results, intra-operative variables, 30-day post-operative morbidity and mortality for patients undergoing major surgery which meet program criteria..

Information is obtained from the Operating Room and Information Systems (ORMIS), patient care systems and the chart. Each case requires a 30 day post-operative telephone call to the patient.

## VCH NSQIP by Numbers

8

Day cycle

40 - 55

Cases reviewed  
per week/site



approx. 20%  
of surgery volume



30

day follow-up  
post surgery

7600

Cases reviewed annually



7-10

Surgical services

General Surgery  
Urology  
Orthopedics  
Plastics

99

Variables

NSQIP performs risk-adjustment analysis on the data from all participating hospitals to enable the calculation of an odds ratio. Odds ratios are produced for each individual participating hospital and reported quarterly.

Outcomes are reported as odds ratios (OR) and are distributed in quarterly reports (SARs). These comprehensive reports, along with continuously available online reports, allow each hospital to monitor and benchmark its surgical outcomes with other participating hospitals and national averages.

### Methodology: How is the data collected?

Surgical cases are selected using a systematic sampling process. Each site reviews between 1600 and 2200 cases annually. Data is collected by Clinical Quality and Safety

Coordinators by reviewing patient records, following up with physicians and surgeons and conducting 30-day post-surgery patient telephone surveys.

## **What is being measured?**

The surgical outcomes measured are reported as odds ratios and include mortality, morbidity, cardiac events, pneumonia, unplanned intubations, ventilator 48 hours, deep vein thrombosis/pulmonary embolism, renal failure, urinary tract infection, surgical site infection and unplanned return to the operating room. The odds ratio is calculated by taking the odds of having an adverse surgical outcome in the reporting hospital divided by the odds of having an adverse surgical outcome in the comparator group. The comparator group is comprised of other NSQIP participating hospitals that perform the same surgical procedures.

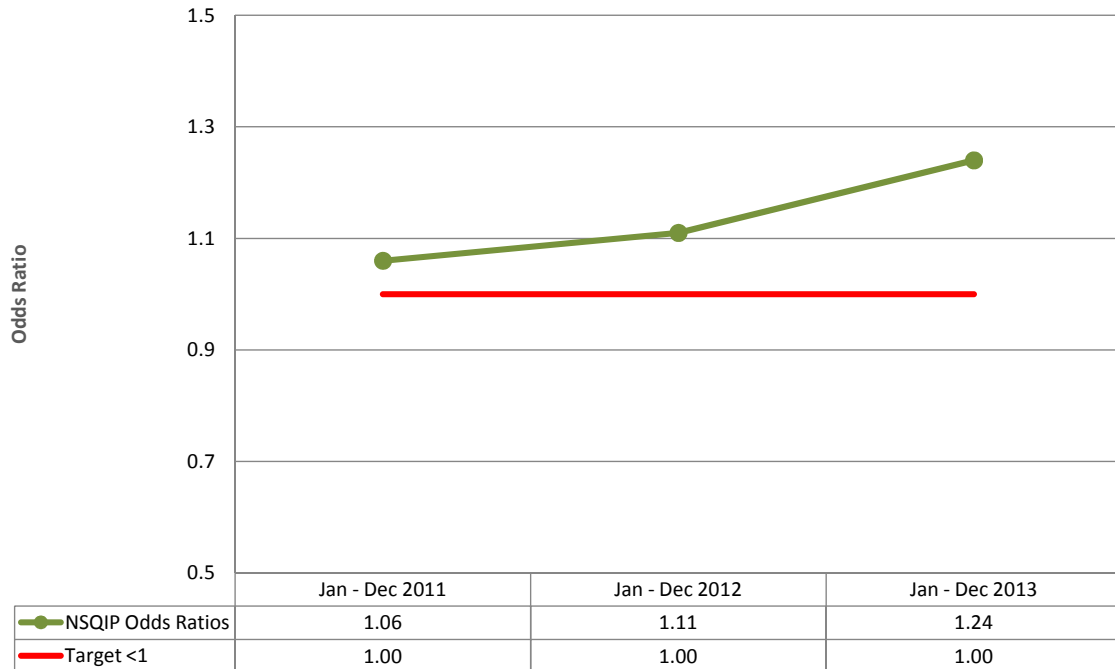
## **What are the results?**

The following charts show the aggregated adverse events for each site. Adverse events include pneumonia, unplanned intubations, ventilator > 48 hours, renal failure, urinary tract infection, surgical site infections, stroke, cardiac events and sepsis. Each data point represents one year of data.

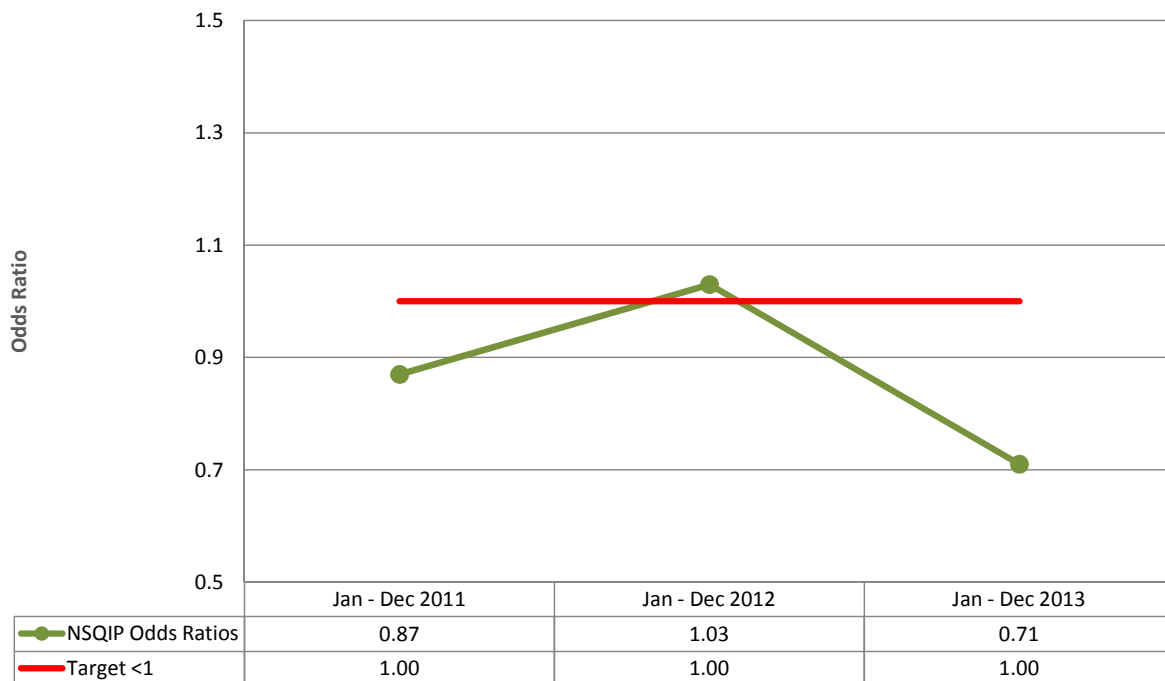
An odds ratio of greater than 1 indicates that the hospital is experiencing more adverse surgical outcomes than expected whereas an odds ratio of less than one indicates that the hospital has fewer adverse surgical outcomes than expected. Odds ratios are adjusted to take into consideration pre-operative patient risk factors and complexity of the surgical procedures performed.



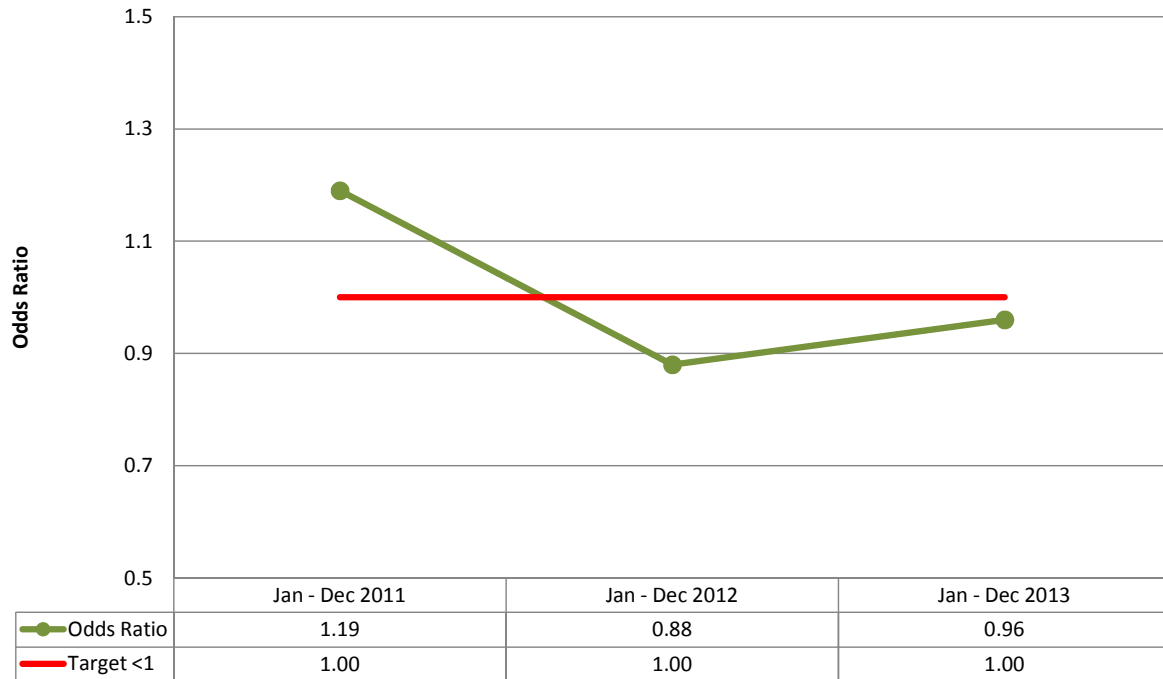
## VGH Surgical Adverse Events: Annual Odds Ratios



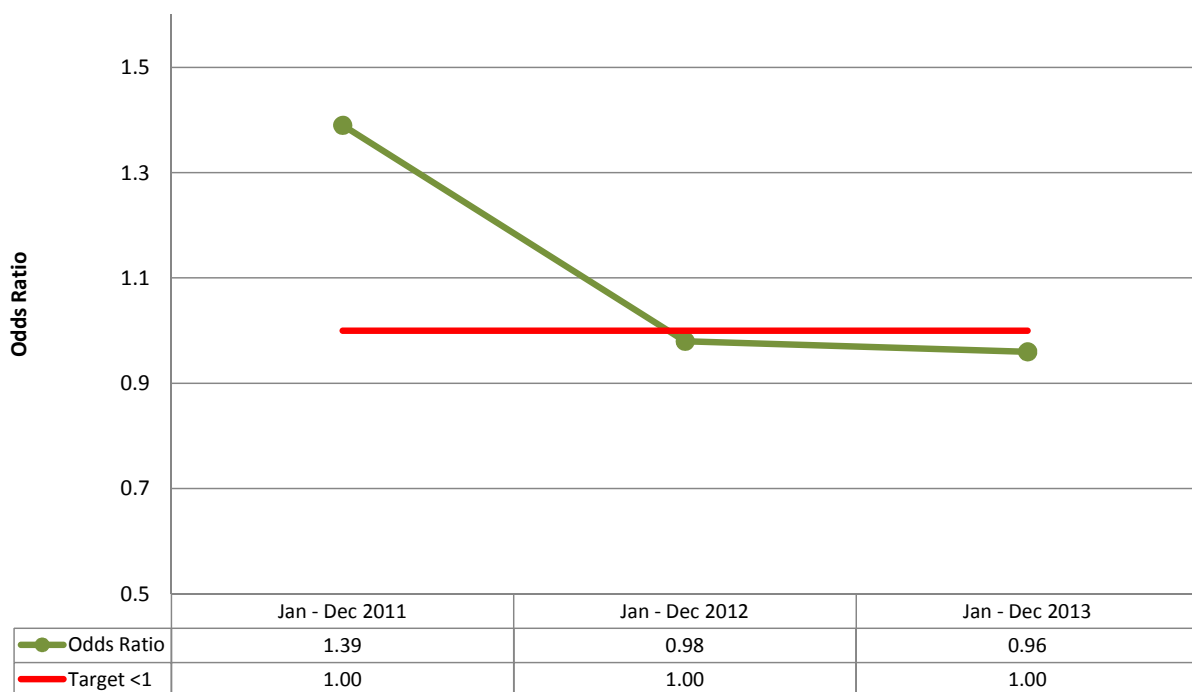
## UBC Surgical Adverse Events: Annual Odds Ratios



## LGH Surgical Adverse Events: Annual Odds Ratios



## RH Surgical Adverse Events: Annual Odds Ratios



## How are we using the results?

Regionally, respiratory occurrences, urinary tract infections and surgical site infections provide areas of opportunity to improve our systems. The NSQIP Clinical Quality and Safety Coordinators and/or the NSQIP surgeon champions, share the results, support and/or lead multidisciplinary action teams aimed at improving care for the surgical patient.

A regional pneumonia prevention toolbox has been developed. Patient information, staff education and resource materials have been produced. This has been a collaborative effort that not only involved healthcare providers but included the patient's view. The team worked with the Community Engagement Advisory Network which provided valuable patient input.

ACS NSQIP program also provides access to the Participant Use File (PUF) which is a Health Insurance Portability and Accountability Act (HIPAA) compliant data file containing cases submitted to the ACS NSQIP. The PUF contains patient level, aggregate data and does not identify hospitals, healthcare providers, or patients. The intended purpose of this file is to provide researchers at participating sites with a data resource they can use to investigate and advance the quality of care delivered to the surgical patient through the analysis of cases captured by ACS NSQIP. The 2012 PUF contained nearly 550,000 cases submitted by 375 sites.

This data source is rich in information and the physicians and residents from VCH sites have applied for access to this data to look at outcomes within neurosurgery, spinal and thoracic surgery patient groups.

Each site has identified their priorities and has initiated plans to address concerns.

The VCH NSQIP program clinical coordinators will continue to



work with the surgical groups to provide reliable data, access to NSQIP best practice guidelines, case studies, facilitate action teams such as The Productive Operating Room, Enhanced Recovery after Surgery.

## *Lions Gate Hospital*



The ACS NSQIP recognized LGH as one of 37 ACS NSQIP participating hospitals that have achieved meritorious outcomes for surgical patient care. This award is based on their outstanding composite quality score in these areas; mortality, unplanned intubation, ventilator > 48 hours, renal failure, deep vein thrombosis/pulmonary embolism); cardiac incidents (cardiac arrest and myocardial infarction); respiratory (pneumonia); SSI (surgical site infections-superficial and deep incisional and organ-space SSIs); or urinary tract infection.

Lions Gate Hospital continues to focus on optimizing surgical care. The multi-disciplinary team that forms the Operating Room Quality Committee has been addressing the surgical site infections by first assessing application of best practice. The team showcased their work in a poster presentation at SQAN conference in November 2013.



## Lions Gate Hospital Preventing Surgical Site Infection (SSI): How do we align with best practice?

### PROJECT SUMMARY

- Utilizing data from the National Surgical Quality Improvement Program (NSQIP), it was identified that we had a higher than expected rate of SSI
- The project goal was to assess how we currently use best practice guidelines related to prevention of SSIs in the peri-operative setting, and identify plans for future improvement
- 5 weeks of observations were undertaken using convenience sampling, in our General Surgery and Orthopedics population, to provide a baseline for current practice. A total of 81 cases were observed

### MEET THE TEAM!

#### LGH Operating Room Quality Improvement Committee

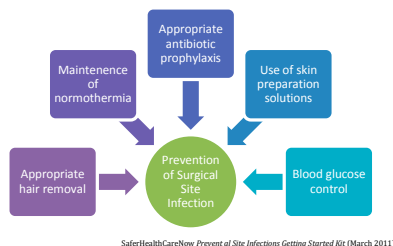
Formed in the spring of 2013 to provide a platform for exploration of topics in safety and quality related to the peri-operative setting. Goal is to use a multidisciplinary approach to ensure best practice for the benefit of both patients and staff



### CONTACT US:

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Surgeon Champion: Ramesh.Sahjpaul@vch.ca

### PERI - OPERATIVE BEST PRACTICES



### OBSERVATIONAL RESULTS & LESSONS LEARNED

#### Antibiotic Prophylaxis

GOALS	RESULTS	NEXT STEPS
<ul style="list-style-type: none"> <li>Pre-op antibiotics infused within 0-60 minutes prior to incision</li> <li>Intra-op redosing of cefazolin during procedures &gt;4 hours</li> <li>Weight-based dosing—2g cefazolin for patients &gt;80kg; 3g for &gt;120kg</li> </ul>	<ul style="list-style-type: none"> <li>Average = 16 minutes prior to incision. 98% met goal</li> <li>NSQIP sample: 9/581 cases &gt;4 hour duration. 44% met goal</li> <li>Preop Cefazolin: 23 patients &gt;80kg. 65% met goal</li> </ul>	<ul style="list-style-type: none"> <li>Develop protocol to ensure appropriate re-dosing</li> <li>Finalize and implement standard new weight-based dosing protocol</li> </ul>

#### Hair Removal

GOAL	RESULTS	NEXT STEPS
<ul style="list-style-type: none"> <li>Clipper only when pre-op hair removal needed</li> </ul>	<ul style="list-style-type: none"> <li>0% razor use</li> </ul>	<ul style="list-style-type: none"> <li>Ensure availability of clippers and eliminate any remaining razor stores</li> <li>Continue education and monitoring</li> </ul>

#### Use of Skin Preparation Solutions

GOAL	RESULTS	NEXT STEPS
<ul style="list-style-type: none"> <li>Use of Chlorhexidine Alcohol 2%/70% per manufacturer directions</li> </ul>	<ul style="list-style-type: none"> <li>0% of cases met all criteria</li> </ul>	<ul style="list-style-type: none"> <li>Staff education to align with recommended practice</li> <li>Identify barriers to meeting the goal</li> </ul>

#### Normothermia

GOAL	RESULTS	NEXT STEPS
<ul style="list-style-type: none"> <li>Patient temperature <math>\geq 36^{\circ}\text{C}</math> at surgery stop time or arrival to post-anesthesia recovery (PAR)</li> </ul>	<ul style="list-style-type: none"> <li>79% of cases had a documented post-operative temperature</li> <li>15% had a temperature below <math>36^{\circ}\text{C}</math></li> </ul>	<ul style="list-style-type: none"> <li>Aim for 100% documentation of post-op temperatures</li> <li>Explore use of normothermia protocol</li> </ul>

A standardized skin preparation protocol has been introduced, postoperative temperature is now documented more than 95% of the time, and pre-warming for patients has been initiated for those at higher risk of a low postoperative temperature.

Jessica Foster, a staff nurse and member of the OR QI group, identified, researched and worked with a small group of the general surgery team to introduce the use of dedicated bowel closure sets for colorectal procedures. The goal is to train OR teams to proficiently adopt the new protocol and implement for all bowel cases by fall 2014.



## Richmond Hospital

Respiratory events have been higher than expected in the Richmond surgical population since the first risk adjusted reports in July 2012. Over the last fiscal year, focused effort has been made to decrease the pneumonia in the postoperative patients. ICOUGH pneumonia prevention strategy mentioned previously was adapted to further meet the needs of the Richmond patient population. This information is given to the patients when first seen in the Pre-operative Surgical Screening Clinic. Staff education has included all nursing and allied health disciplines. The next phase, beginning autumn 2014 will have the Emergency Department staff begin to share these steps with patients who have emergent/unanticipated surgeries.



### Prevent Pneumonia

## Remember to **ICOUGH**<sup>sm</sup> everyday



**B****R****E****A****T****H****E**

**I****N** & **H****O****L****D** for 3 seconds: *Every 30 min*  
To open up your lungs (3 breaths)



**C****O****U****G****H****I****N****G**

& deep breathing: *Every 30 min*  
To clear your lungs (3 coughs)



**R****A****T****H****E**

**C****A****R****E**: *3 times per day*  
A clean mouth is safer



**P**

Have the head of bed up – Ask how high  
This helps your lungs expand



**E****T**

**M****O****V****I****N****G**: Movement is good for you!  
Ask about your personal activity plan

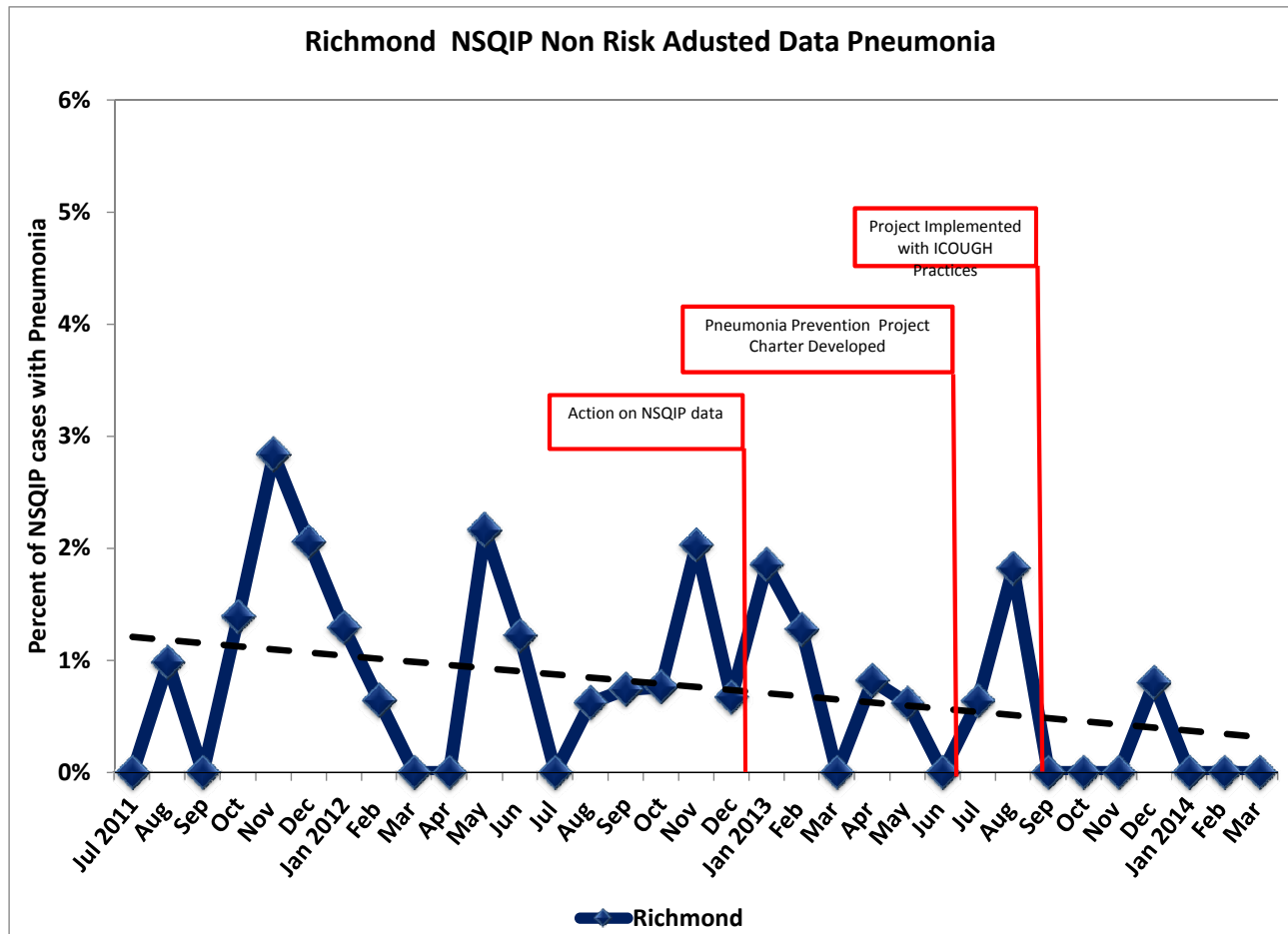


**H**

**A****V****E** **A** **C****O****N****V****E****R****S****A****T****I****O****N**:  
You're at risk to get pneumonia!  
Talk to your care team about pneumonia prevention

**DON'T give pneumonia a chance!**

ICOUGH™ is a registered service mark of Boston Medical Center Corporation. We gratefully acknowledge their consent to use an adapted version in VCH materials.



Unplanned Intubation postoperatively is also a respiratory occurrence with a higher than expected occurrence rate compared to similar NSQIP hospitals. Review of the data showed that there were no common themes or trends in the reasons for the patients' unplanned intubation. The team continues to monitor these occurrences.

Colorectal Surgery mortality review was undertaken as the NSQIP results indicated a higher than expected result for these procedures. All cases were reviewed and no preventable deaths were identified. The majority of cases were palliative procedures performed to relieve symptoms; the outcome was expected.

## Physician Engagement

Surgeons representing general surgery, orthopedics, urology, plastic and gynecology; anesthesiologists; administrators and Quality and Patient Safety have initiated routine

meetings to review the data and develop action plans. Unfortunately, lack of available funded time for physicians to work on quality improvement projects has been a barrier to moving some ideas forward. Improving the quality of the Surgical Safety Checklist process is a multidisciplinary project that is being planned for 2014/15.

## Vancouver General Hospital

### Colorectal Surgery

The risk adjusted NSQIP reports indicated that the colorectal surgeries have a higher than expected rate of adverse events. A multidisciplinary group, led by Andrea Bisailon & Tracey Hong, coordinated the introduction of the Enhanced Recovery after Surgery (ERAS) program for those with elective colorectal surgery. This pathway is an evidenced based program that has been shown to improve outcomes following major surgery. The program is designed to enhance recovery by optimizing pre-operative, intra-operative and post-operative factors.

### Enhanced Recovery After Surgery

Active Patient Involvement		
Pre-operative	Intra-operative	Post-operative
•Pre-admission education	•Active warming	•Early oral nutrition
•Early discharge planning	•Opioid-sparing technique	•Early ambulation
•Reduced fasting duration	•Surgical techniques	•Early catheter removal
•Carbohydrate loading	•Avoidance of prophylactic NG tubes & drains	•Use of chewing gum
•No/selective bowel prep		•Defined discharge criteria
•Venous thromboembolism prophylaxis	•Goal directed peri-operative fluid management	
•Antibiotic prophylaxis	•Pain & nausea management	
•Pre-warming		
Audit of compliance & outcomes		
Whole Team Involvement		

Intraoperative components began in June 2013, with full implementation in November 2013. All steps in the surgical journey are involved in this process. Process measures are audited in real time. This real time audit provides further opportunity to provide patient and staff education as well as identifying barriers.

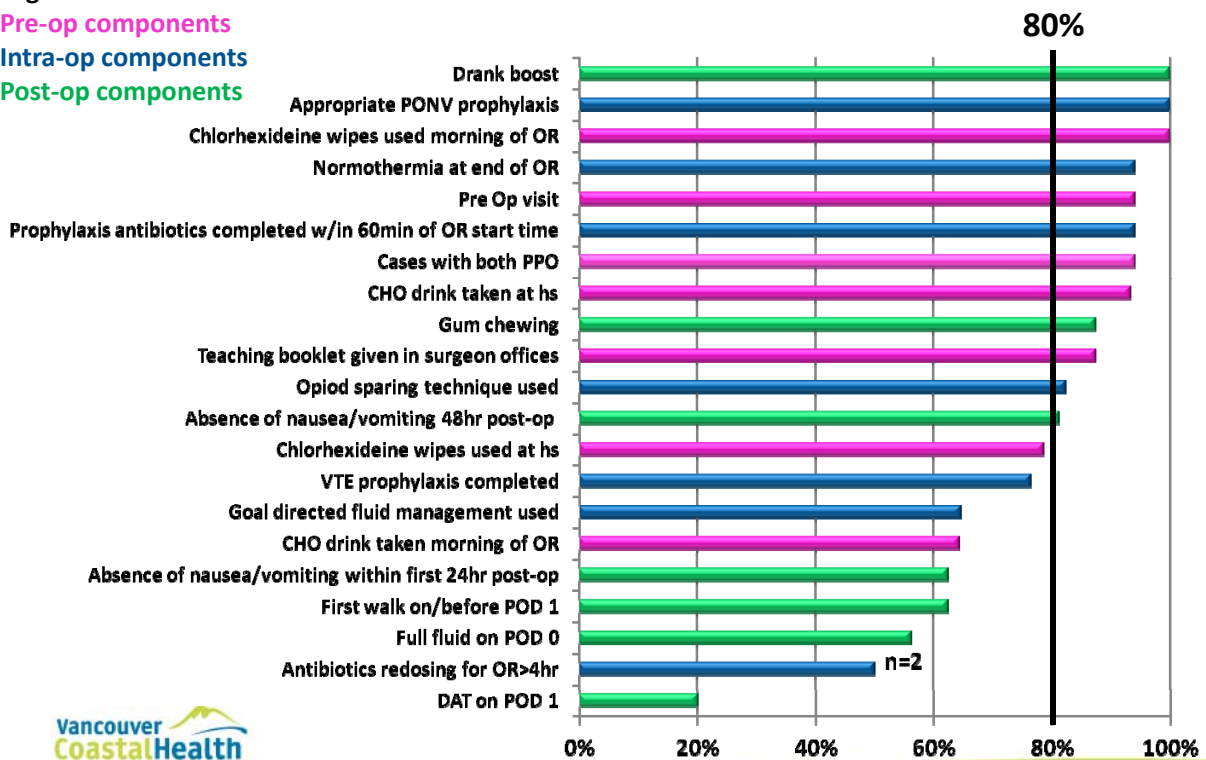
## ERAS Audit Summary for June

Legend:

Pre-op components

Intra-op components

Post-op components



Each of the components should meet an 80% compliance rate. Although we have not quite achieved the target compliance, there is a trend now of decreasing adverse events in this patient population.

Patient education is a key component, a comprehensive patient information booklet shared by Providence Health was updated and customized for Vancouver Coastal. Feedback from our patients has been extremely positive. They are very happy with the detail of information and feel well prepared the hospitalization.



a place of mind  
THE UNIVERSITY OF BRITISH COLUMBIA

## Implementation of Enhanced Recovery After Surgery (ERAS) for Elective Colorectal Surgery on T8&9 at Vancouver General Hospital

Andrea Bisailon, RN BScN, Tracey Hong RN BScN on behalf of the ERAS Steering Committee

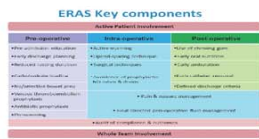


### Background

The risk-adjusted results from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) demonstrate that colorectal surgery at Vancouver General Hospital has a high odds ratio of postoperative mortality (1.55). Mortality impacts patients safety and experience, increases length of stay and health care costs.

\* Data rate >1.0 indicates hospital is performing worse than expected

Enhanced Recovery After Surgery (ERAS) is a multidisciplinary, evidence-based perioperative care pathway. It has been in use in Europe for more than 10 years, and has been validated to achieve early recovery after major surgeries by maintaining preoperative organ function and reducing the profound stress response following surgery.



### Method

A multidisciplinary team (anesthesiologists, surgeons, frontline staff, organizational leaders and quality improvement staff) was formed in February 2013.

**Goal:** To decrease the mortality rate for general surgery patients undergoing elective colorectal surgery at Vancouver General Hospital by 50% by 2014.

Implementation: The ERAS protocol was implemented in two phases.

	February-October 2013	June 2013-Ongoing
Phase 1	<ul style="list-style-type: none"><li>• Provided ongoing education for all staff on the ERAS protocol</li></ul>	<ul style="list-style-type: none"><li>• Implemented intra-operative components by a new group of anesthesiologists</li></ul>
	<ul style="list-style-type: none"><li>• Developed ERAS documents<ul style="list-style-type: none"><li>○ Standardized order sets</li><li>○ Clinical pathway &amp; bundle</li><li>○ Patient teaching booklet</li><li>○ Poster highlighting changes in practice</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Audited compliance with intra-operative components</li><li>• Measured patient outcomes in post-anesthesia care unit (PACU)</li></ul>

November 2013-Ongoing

Phase 2

Implemented pre-operative and post-operative components

Audited compliance with all ERAS components

Measured patient outcomes within 30 days after surgery on 100% of ERAS cases

Conducted chart review to collect data to measure:

Auditing compliance with pre-operative, intra-operative and post-operative components

Outcomes:

Length of stay and complications in the PACU

Hospital length of stay

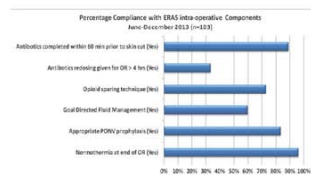
Readmission rate

ACS NSQIP rate 30 days post-operative complications and mortality rate



Promoting wellness. Ensuring care.

### Results



From June-December, 103 cases were audited for intra-operative components.

**Issues:**

At times, non-ERAS anesthesiologists were assigned to ERAS cases

**Action taken:**

Automation of identification of ERAS cases on OR slate

Communication with OR staff to assign ERAS core anesthesiologists to ERAS cases if possible

A "system" to notify anesthesiologists to review if they are assigned to ERAS cases

For November-December, 31 cases were audited for pre-operative and post-operative components.

51.6% of these cases had both the pre-operative and post-operative components

**Issues:**

Knowledge deficit regarding selecting the appropriate anti-emetic

Delayed in administering appropriate anti-emetics

Knowledge deficit regarding fluid management and techniques

Urinary catheter was not removed in an appropriate timeframe

**Action taken:**

Education staff daily based on audit findings

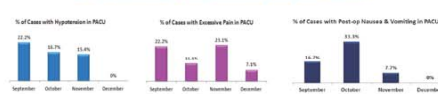
Provided education regarding safe medication by pharmacists

Education & supported staff regarding proper use of anti-emetics

Education & supported staff to follow catheter acquired urinary tract infection (CAUTI) Protocol



### Complications in Post Anesthesia Care Unit (PACU)



### Hospital Length of Stay (days): Mean



### Lessons Learned

- Process mapping can highlight the strong and weak links as well as relationship, system. It is crucial to see the system from the perspective of different end-users.
  - Suggestions:**
    - Involve stakeholders in all stages of planning in order to have the team involved in the outcomes and sustainability of the project.
    - Know your stakeholders' strengths and leverage them.
- Involve and educate multidisciplinary teams on ERAS principles so they can support and monitor staff during implementation.
  - Suggestions:**
    - Provide staff with ERAS protocol education.
    - Engage organizational leaders to provide support/education when needed.
    - Active involve clinical leaders in the process including taking responsibility for mitigating barriers.
- Communication is vital.
  - Suggestions:**
    - Use multifaceted communication, e.g. email, face-to-face, team meeting.
    - Facilitate stakeholders' buy-in by clearly sharing the goals.
    - Engagement of stakeholders can be time consuming but well-worth the effort.
    - Improved communication and building relationships can improve patient outcomes and enhance potential for growth.
- A culture of quality and patient safety in health care should be integrated into our daily work.
  - Suggestions:**
    - Support quality improvement training for frontline staff, providing them with the tools to be actively involved in the change process.

### Sustainability Plan

- Continue ongoing education of staff
- Continue auditing 100% of ERAS cases
- Disseminate audit results to Steering Committee & the stakeholders monthly, gather feedback, and develop strategies to mitigate barriers.
- Generate quick wins
- Celebrate the team's accomplishments

### Team Quotes

"The ERAS patient teaching booklet was good information, I really knew what to expect." - Patient

"I found the booklet very, very useful and I read it several times. I noticed things that I missed with the first reading. I was pretty much understanding all the things" with before surgery and now that I have had my surgery." - Patient

"After ERAS, we improved the patient and the staff to do their best." - Tracy Hong RN

"ERAS protocol gives me an idea of how to plan the day and not get lost in the patient's care." - J. Lam RN

"ERAS has emphasized the need for collaborative perioperative care. It has been a pleasure to be involved in the team based, patient focus care, with the goal of improved patient outcomes. Sometimes, even small changes in management, and attention to details in these cases can result in dramatic improvements in outcomes." - Dr. M. S. Wong

"Implementation of the ERAS protocol for patients undergoing colorectal surgery has allowed patient safety, provided sustained postoperative pain control and promoted better gut recovery." - Dr. M. Parkin

### Acknowledgments

Perioperative Teams: Surgeon offices, Preanesthesia Clinic, Perioperative Care Centre, Operating Room, Post Anesthesia Recovery Unit. It is a pleasure to...

VCH NSQIP Team leads by Mary Cameron Lane and Dr. Gary Reddick.

ERAS Steering Committee: Andrea Bisailon (RN), Dr. Andrea Buchowski (MD), Mary Cameron Lane (RN), Tracey Hong (RN), Elizabeth Lane (RN), Rita Malt (RN), Dr. Kelly Mayson (MD), Dr. Neely Parson (MD), Jacqueline Par (RN), Tara Smith (RN) and Dr. Geoff Warrack (MD).

Stephen Parker, Clinical Nurse Specialist, Providence Health Care, Providence Health Care (2012), Colon Surgery: Your Guide to Recovery: Post Health Education Materials.

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Quality Forum 2014 Storyboard Winner

## Normothermia Initiative

Drs. Kelly Mayson and Neil Ramsey, in collaboration with the NSQIP Quality Coordinators, reviewed 870 adult patients undergoing major non-cardiac surgical procedures in the NSQIP dataset at Vancouver Acute. Their review revealed a 21% incidence of hypothermia. These patients had higher incidence of hypotension and pain in the recovery room, and had a higher incidence of surgical site infections (SSI) and number of blood transfusions.

Active prewarming was instituted in patients undergoing major surgery in general surgery, vascular, thoracic, neurosurgery, spine, plastics and urology. Prewarming was associated with a reduced rate of intraoperative hypothermia and PACU admission



hypothermia; a reduced rate of desaturation and excessive pain in the PACU. Study limitations preclude conclusions about transfusion rates, hospital length of stay. This study was presented at the ACS NSQIP Conference in New York 2014.



## Does Active Pre-Warming Reduce the Incidence of Hypothermia and Post Operative Complications in Non Cardiac Surgery?

Neil Ramsay MD, Dan Werry BSc, Alana Flexman MD, Kelly Mayson MD



### Introduction

It has been shown that perioperative hypothermia can cause adverse outcomes in surgical patients. Our primary objective was to determine if active pre-warming reduced the incidence of intra- and postoperative hypothermia in non-cardiac surgery. Our secondary objectives were to determine if active pre-warming reduced the incidence of PACU complications and rates of transfusion and surgical site infection.

### Methods

In this retrospective cohort study, we included patients undergoing non-cardiac surgery scheduled for greater than 90 minutes duration from the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database. We compared patients from our baseline cohort (October 2011 to May 2012 (N=323) to a similar cohort after we introduced an active pre-warming program (May to Aug 2013 (N=191)). The average period of pre-warming was 60 ± 40 minutes (SD) with forced air gowns. Temperature was recorded pre-operatively, intra-operatively and on arrival to the recovery room. We compared the rates of hypothermia in each group as well as transfusion and surgical site infection rates. All statistical analysis was performed with Graphpad Prism 5.0, using t-tests or Fisher's exact tests where appropriate.

Table 1: Patient Demographics

	Control (n=323)	Prewarmed (n=191)	P values
Age (yrs)	62.1 ± 15.0 (SD)	62.4 ± 13.6 (SD)	0.93
Sex (% female)	47.2	47.1	1.00
BMI(kg/m2)	27.1 ± 5.0 (SD)	27.7 ± 6.0 (SD)	0.24
Smoker (%)	13.6	18.5	0.16
COPD (%)	8.4	9	0.87
Hypertension (%)	40.2	41.8	0.85
Diabetes (%)	14.9	13.2	0.60
Anemia preop (hct<30) (%)	2.9	2.2	0.78
ASA ≥2 (%)	47.3	50.2	0.58

Table 2: Breakdown of Procedures

	Control % (n=323)	Prewarmed % (n=191)	P value
Major Abdominal	32.8	35.6	0.56
Major Laparoscopic	12.4	15.7	0.29
Endovascular Abdominal	5.6	2.6	0.13
Open Thoracic	5.3	2.1	0.11
Thoracoscopic	2.5	7.9	<0.01
Extremities (Orthopedic)	8.7	4.7	0.11
Extremities (Vascular)	6.8	6.3	0.86
Head and Neck	5.9	4.2	0.54
Neurosurgical	18.9	17.3	0.72
Trunk (reconstructive breast)	1.2	3.7	0.11

Table 3: Type and Duration of Anesthesia

	Control (n=323)	Prewarmed (n=191)	P values
GA Only (%)	62.5	56.2	0.19
Spinal Only (%)	10.5	6.3	0.11
GA + Thoracic Epidural (%)	26	36.1	0.02
Duration of Anesthesia (min)	225 ± 126 (SD)	270 ± 130 (SD)	<0.01

### Results

Table 4: Post-Surgical Complications

	Control % (n=323)	Prewarmed % (n=191)	P values
% time hypothermic intraop	27.3 ± 26.9 (SD)	21.0 ± 28.3 (SD)	0.03
Hypothermic on arrival to PACU	33.0	5.4	<0.01
PACU Desaturation	13.6	3.2	<0.01
PACU excessive pain	27.6	12.7	<0.01
PACU ventilation	4.3	1.1	0.06
Transfusion	14.6	17.2	0.45
Surgical Site Infection	6.8	6.3	0.86

### Conclusions

Implementation of an active pre-operative warming program was associated significant reductions in:

1. Intraoperative hypothermia
2. Hypothermia on arrival to PACU.
3. Desaturation in PACU.
4. Excessive pain in PACU.

We hypothesize that reductions in pain and desaturations were secondary to reduced hypothermia following pre-warming, since shivering can contribute to thermal pain and increase oxygen requirements.

A limitation of this study is that there was more use of thoracic epidurals in the pre-warmed population, which may have contributed to a reduction in PACU pain. In addition, the study was underpowered to detect any reduction in transfusion and surgical site infection rates for specific procedures.

## *Surgical Site Infection (SSI) Rates*

### **What is a *surgical site infection* (SSI)?**

A surgical site infection (SSI) is an infection of the tissue in and around a surgical wound. To be considered a SSI the infection must occur within a designated time following surgery. A SSI is a potential major complication after surgery, leading to a longer hospital stay, prolonged recovery, higher costs and patient dissatisfaction.

### **What is the purpose of this indicator and why is it important?**

This indicator measures the incidence of SSIs among patients that have had a select surgical procedure at a VCH facility. Measuring the incidence of SSIs is an important measure of surgical quality. It allows infection prevention and control (IPAC) to identify potential infection-related sources and work collaboratively with surgeons to reduce the risk of infection to patients.

### **What is being measured?**

IPAC performs SSI surveillance on targeted orthopedic, spinal, cardiac, vascular, thoracic, and neurosurgical procedures. The SSI rate is calculated by taking the total number of SSIs acquired by patients that had a select surgical procedure at a VCH hospital, divided by the number of the same surgical procedures performed and multiplied by 100.

### **Methodology: How was the data collected?**

IPAC performs SSI surveillance on targeted orthopedic procedures, namely hip and knee replacements and arthroscopic knee procedures. Surveillance is performed using standard definitions for the identification and classification of SSIs (CDC/NHSN 2013). In January 2013 CDC/NHSN released updated surveillance definitions which reduced the post-operative follow up period from one year to 90 days for procedures involving implants. VCH had implemented the same change in 2011/12 based on an analysis of ten years of SSI data for procedures involving implants which revealed that 86% of all

SSIs were identified within one month of surgery and 93% were identified within three months.<sup>1</sup>

With the change in post-operative surveillance, procedures performed in 2011/12 have a variable follow up period based on when they were performed with all cases having a minimum follow up period of three months.

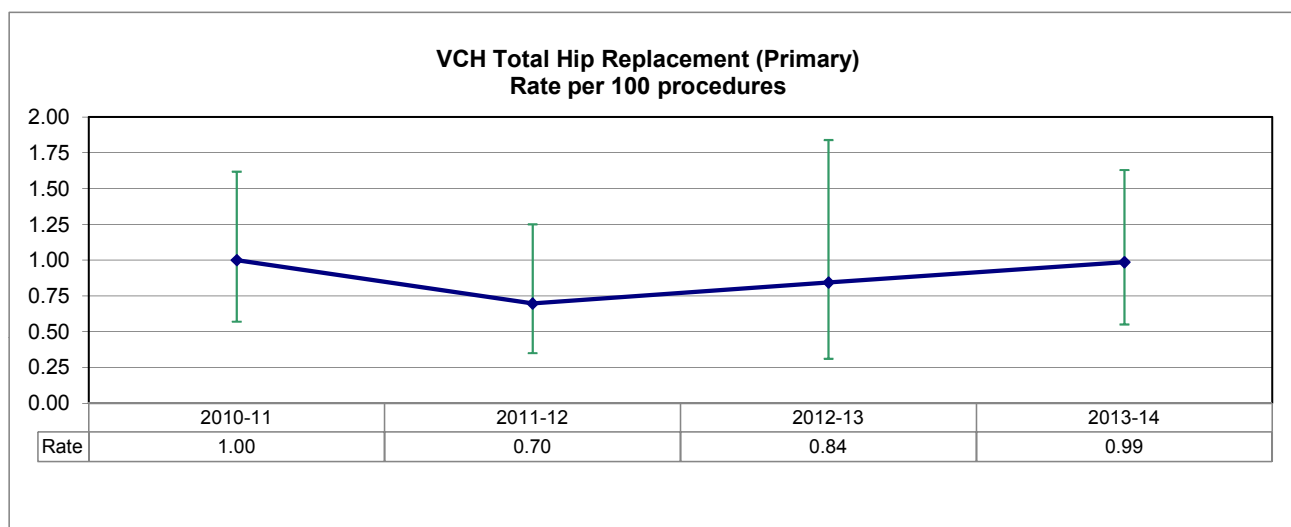
## How did we do?

### Orthopedic Procedures

Surveillance for SSIs associated with select orthopedic hip and knee procedures is performed at the VCH hospitals that perform these procedures; namely Vancouver General, UBC, Richmond, Lions Gate and Squamish General hospitals. Not all facilities perform all followed procedures. Surveillance was not performed at UBC Hospital in 2012/13 but resumed in 2013/14.

The graphs below shows the aggregate SSI rates and corresponding confidence limits for each of the orthopedic procedures followed for SSIs.

### Hip Replacement (Primary): VGH, UBCH, RH and LGH



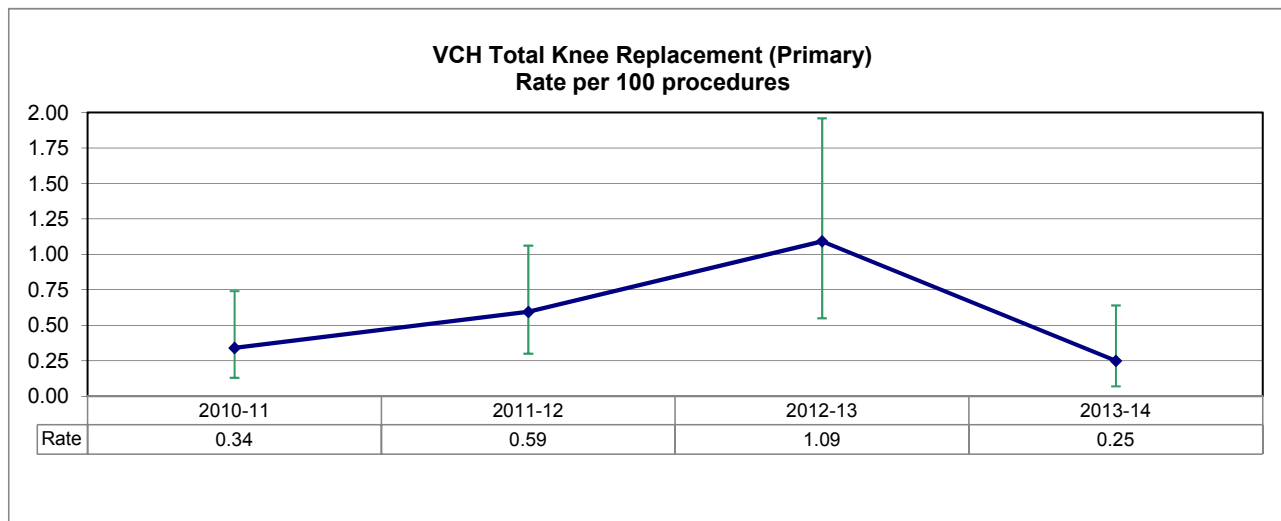
<sup>1</sup> Bryce, E & Forrester, L. How Long is Long Enough? Determining the Optimal Surgical Site Infection Surveillance Period. Infect Control Hosp Epidemiol 2012; 33(11):1178-1179.

The rate for primary hip replacement (0.99; 95% CI = 0.55 – 1.63) increased in 2013/14 but rates have been consistently below the NHSN benchmark of 1.27 (95% CI = 1.21 – 1.33).

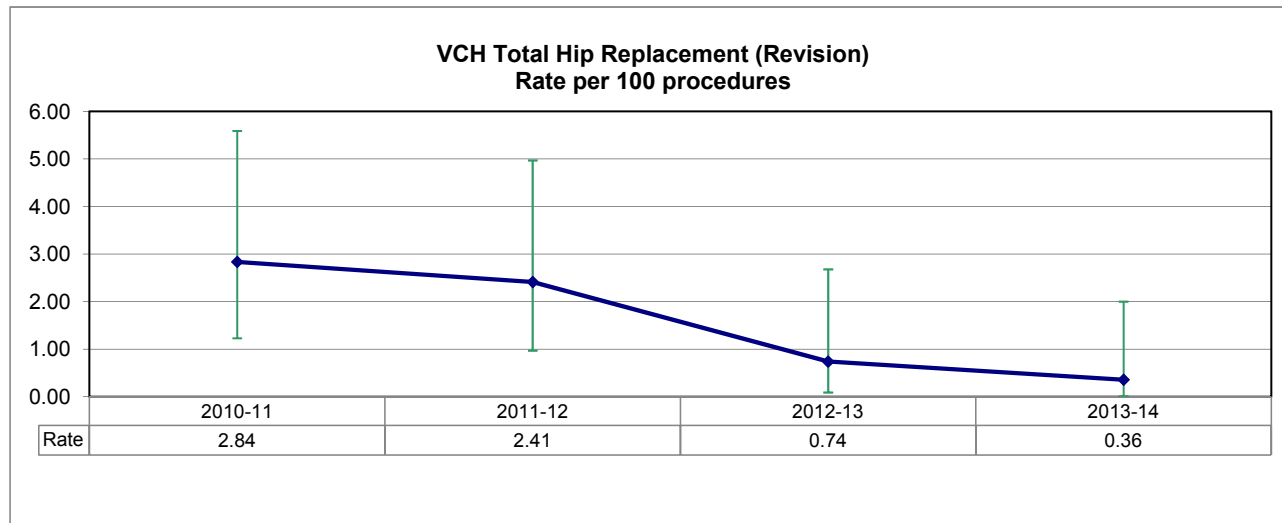
A total of 15 cases were identified in 2013/14 of which seven were associated with UBCH (0.84; 95% CI = 0.34-1.73), four at VGH (1.83; 95% CI = 0.50-4.70), three at LGH (1.01; 95% CI = 0.21-2.96) and one at RH (0.57; 95% CI = 0.01-3.17).

## *Knee Replacement (Primary): VGH, UBCH, RH and LGH*

The rate for primary knee replacement (0.25; 95% CI = 0.07 – 0.64) decreased sharply in 2013/14 and is statistically significantly below the NHSN benchmark rate of 0.89 (95% CI = 0.85 – 0.94). A total of four cases were identified in 2013/14 of which two were associated with UBCH (0.29; 95% CI = 0.03-1.04) and one each at RH (0.36; 95% CI = 0.01-2.03) and LGH (0.24; 95% CI = 0.01-1.31).

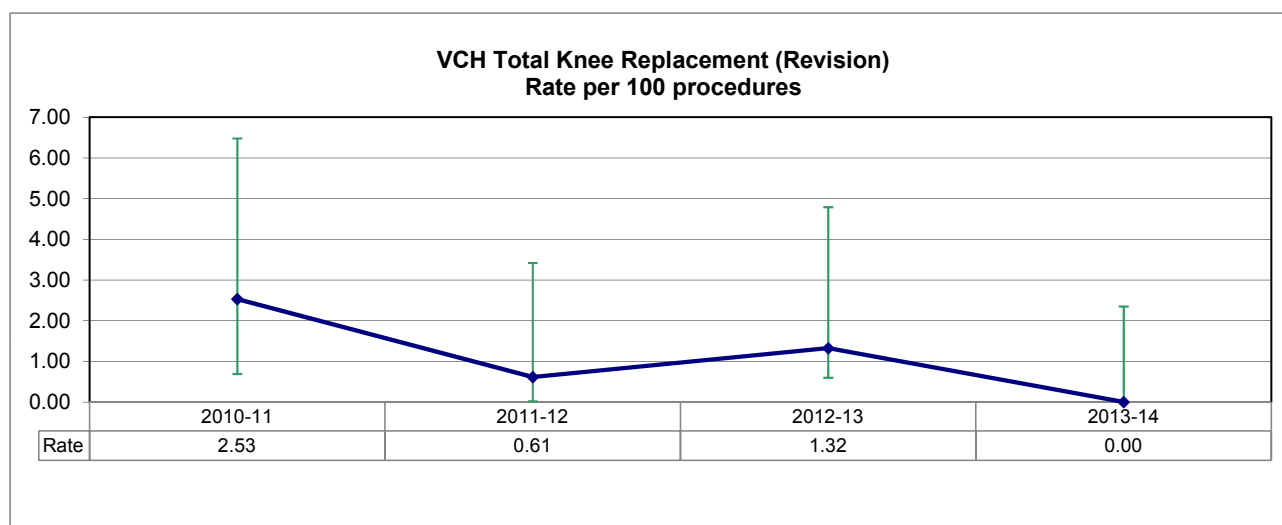


## *Hip Replacement (Revision): VGH, RH and LGH*



The rate for revision hip replacement has declined steadily over the last four years. The difference in rates is not statistically significant. VGH performs 80% of these procedures; UBCH does not perform hip revisions. In 2013/14, one SSI was identified at VGH (0.44; 95% CI = 0.01-2.47).

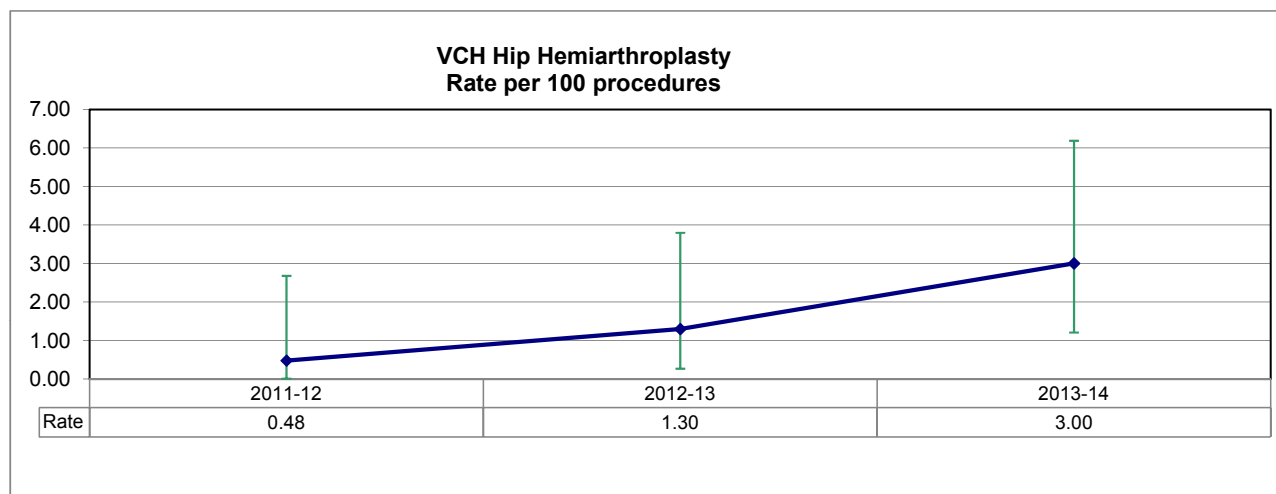
## *Knee Replacement (Revision): VGH, RH and LGH*



There were no SSIs associated with revision knee replacements in 2013/14.



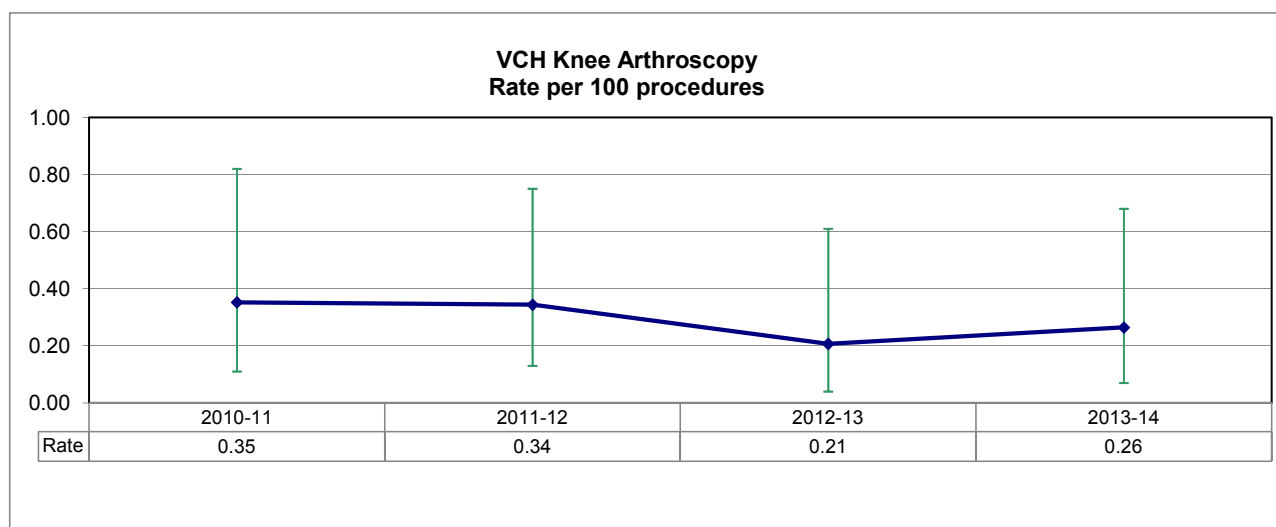
## Hip Hemiarthroplasty: VGH, RH and LGH



A sharp increase has been observed with the hip hemiarthroplasty rate in 2013/14. The increase is not statistically significant. A total of seven cases were identified in 2013/14 of which five were associated with LGH (5.05; 95% CI = 1.64-11.79) and two with VGH (1.75; 95% CI = 0.21-6.34).

## Knee Arthroscopy: VGH, RH, LGH and SGH

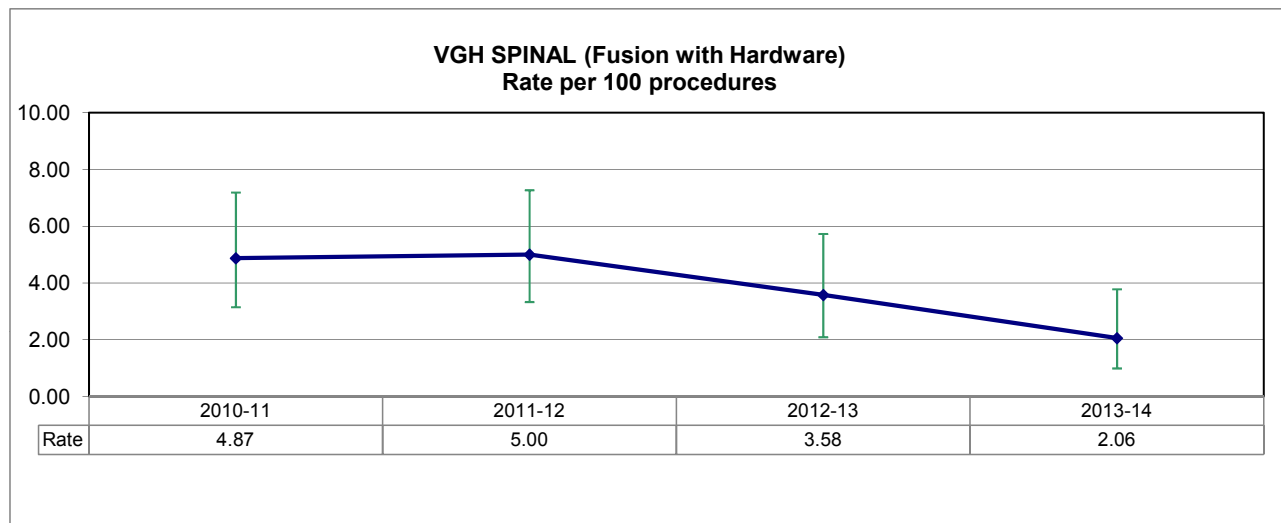
The SSI rates for arthroscopic knee procedures have remained low over the last four years. A total of four cases were identified in 2013/14 of which three were associated with SGH (1.03; 95% CI = 0.21-3.00) and one with RH (0.20; 0.00-1.09).



In addition to orthopedic hip and knee procedures, IPAC at Vancouver General Hospital performs SSI surveillance on targeted spinal, cardiac, vascular, thoracic and neurosurgical procedures.

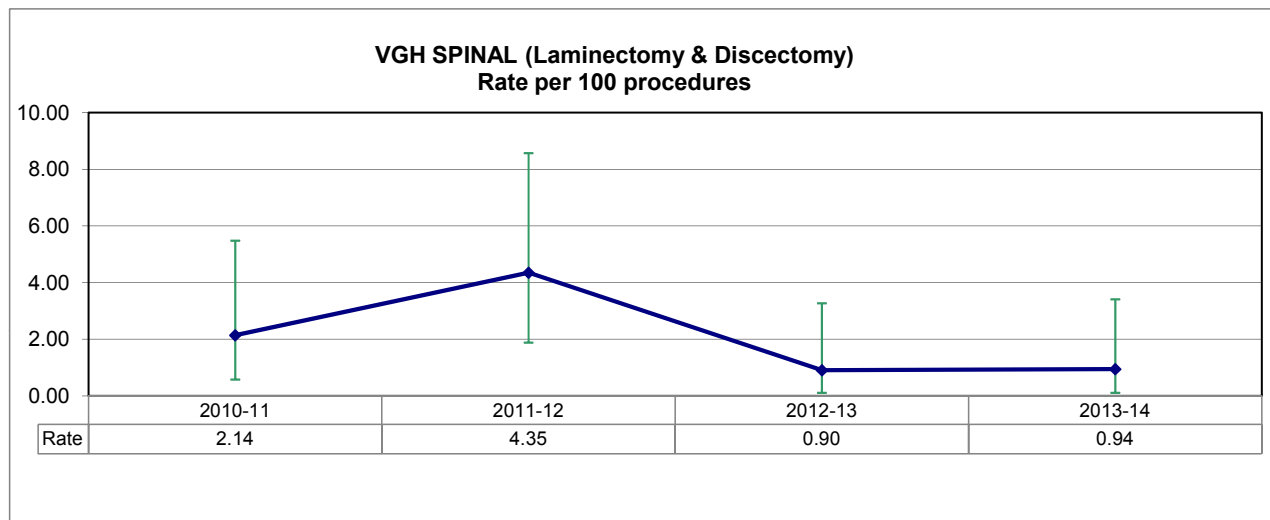
## Spinal Procedures

### Spinal Fusion with Hardware



The SSI rates for spinal fusions with hardware continue to trend downwards. In 2013/14 there were 10 SSIs for a rate of 2.06 (95% CI = 0.99 – 3.78) compared to 17 cases the year prior representing a 41% reduction in cases. Though the rate is higher than the NHSN (2009) benchmark (1.54; 95% CI = 1.42-1.66) it is not statistically significantly different.

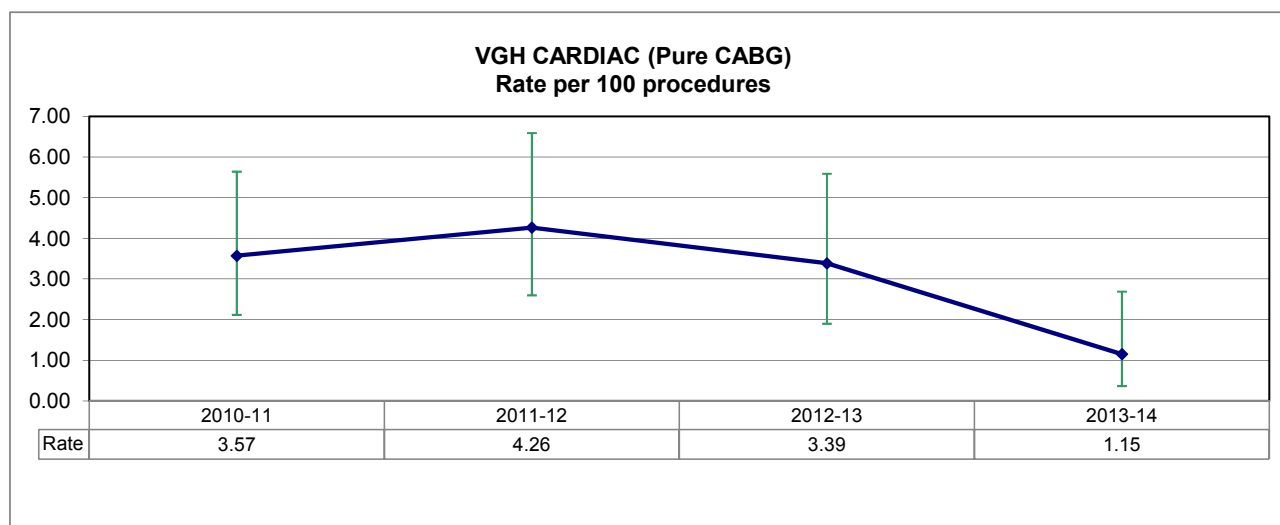
## Laminectomy and Discectomy



The 2013/14 rate for laminectomy and discectomy procedures (0.94; 95% CI = 0.11 – 3.41) is below the NHSN benchmark of 1.02 (95% CI = 0.92-1.12) though the difference is not statistically significant.

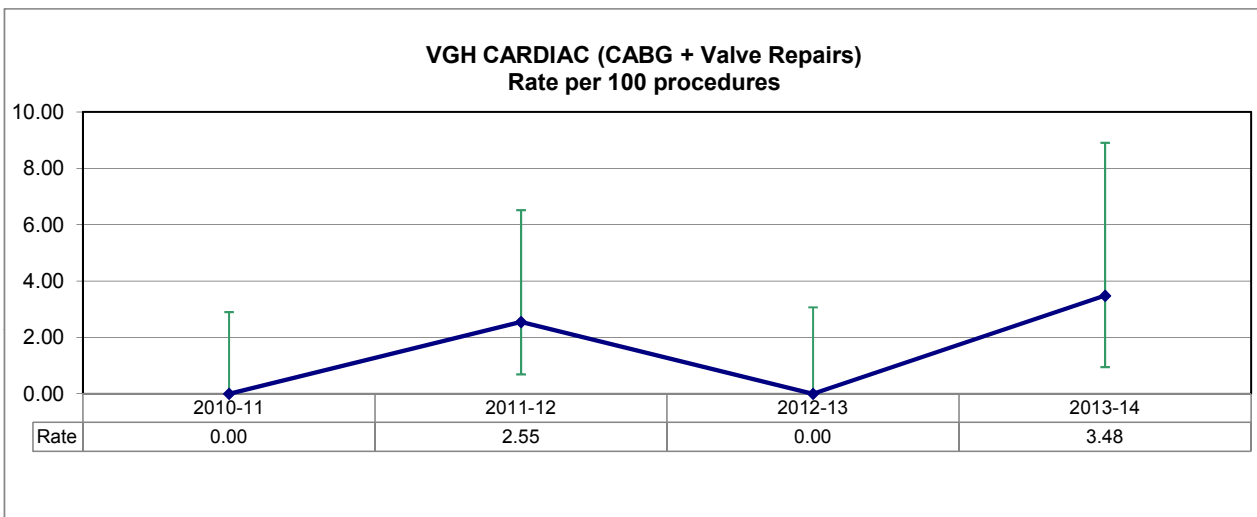
## Cardiac Procedures

### Pure CABG



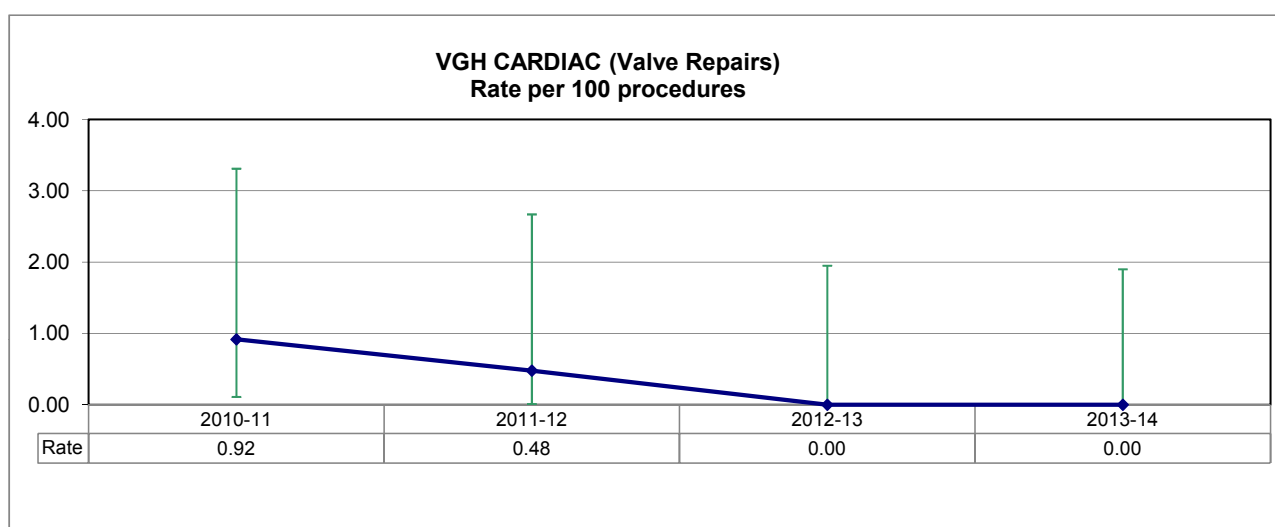
The 2013/14 rate for Pure CABG procedures (1.15; 95% CI = 0.37 – 2.69) is below the NHSN (2009) benchmark (2.83; 95% CI = 2.74-2.92) but not statistically significantly.

## CABG + Valve Repairs



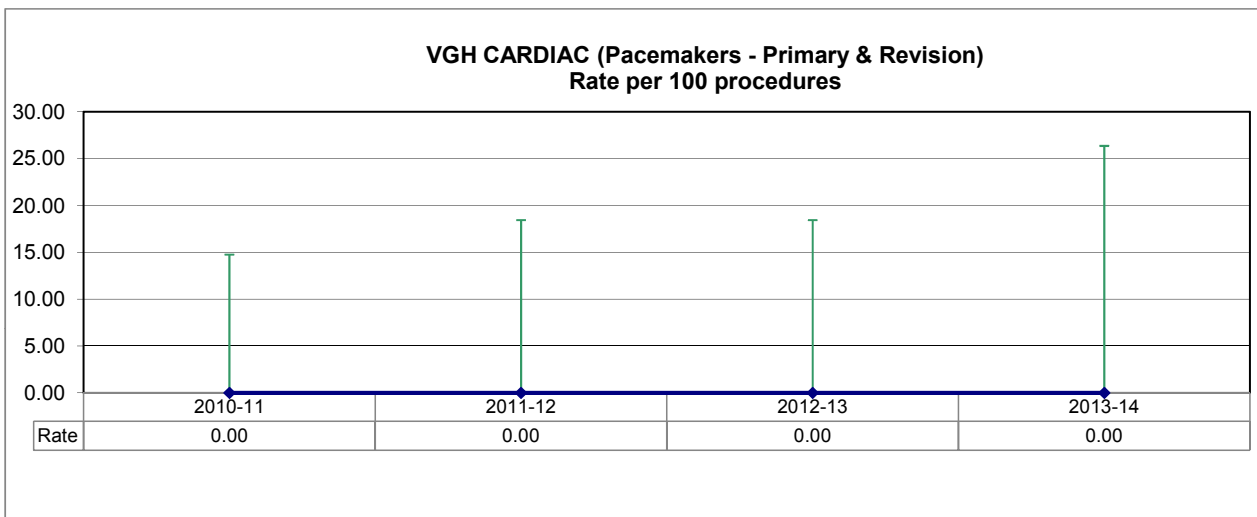
The 2013/14 rate for CABG + Valve Repair procedures (3.48; 95% CI = 0.95 – 8.91) is higher than the previous three years though the difference is not statistically significant. There is no NHSN published benchmark for these procedures. There were four SSIs in 2013/14.

## Valve Repairs (Pure Valve and Valve + Other)



The SSI rate for Valve Repairs has remained at zero for the last two fiscal years. There is no NHNS benchmark published for these procedures.

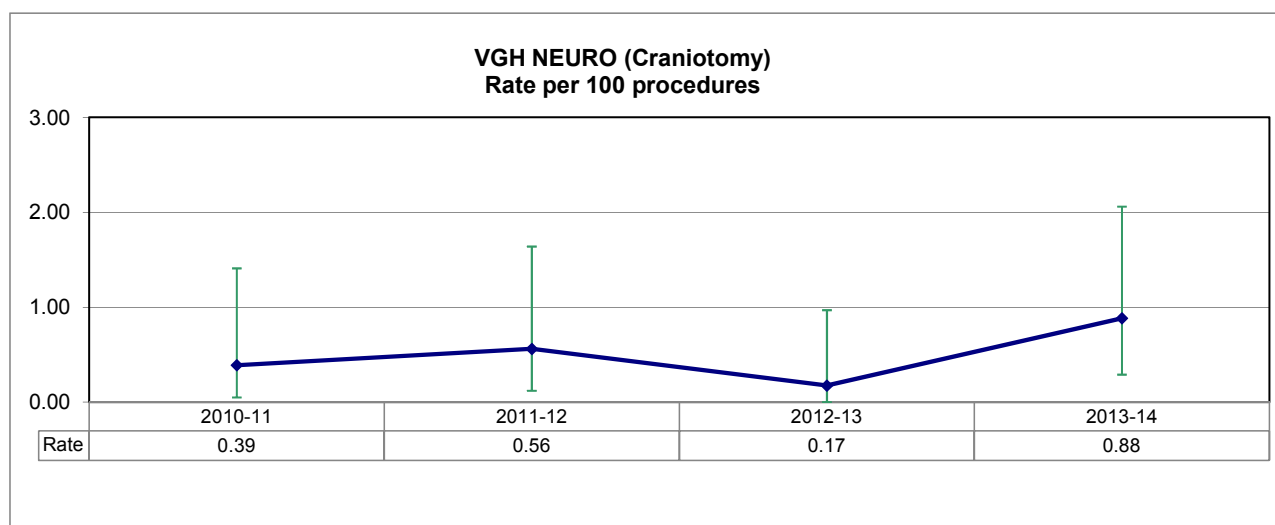
## Pacemakers (Primary & Revision)



There have been no SSIs associated with pacemaker procedures performed in the operating room. The NHSN (2009) benchmark for pacemakers is (0.44; 95% CI = 0.25-0.73).

## Neurosurgery Procedures

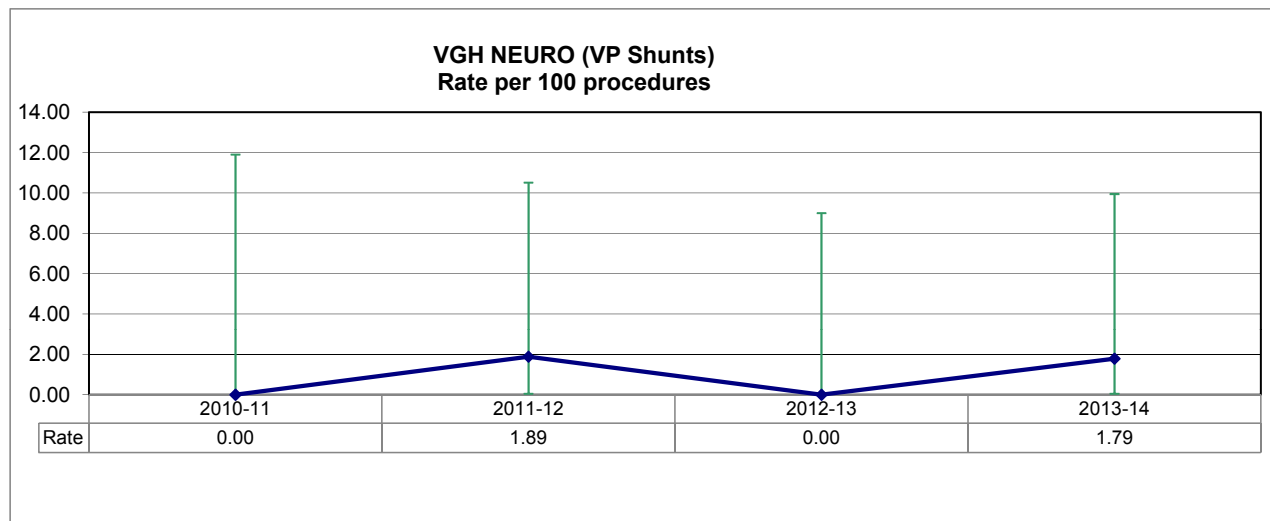
### Craniotomy



The SSI rate for craniotomies increased in 2013/14 to 0.88 per 100 procedures (95% CI = 0.29-2.06) but remains statistically significantly below the NHSN (2009) benchmark of 2.61 (95% CI = 2.30-2.95).



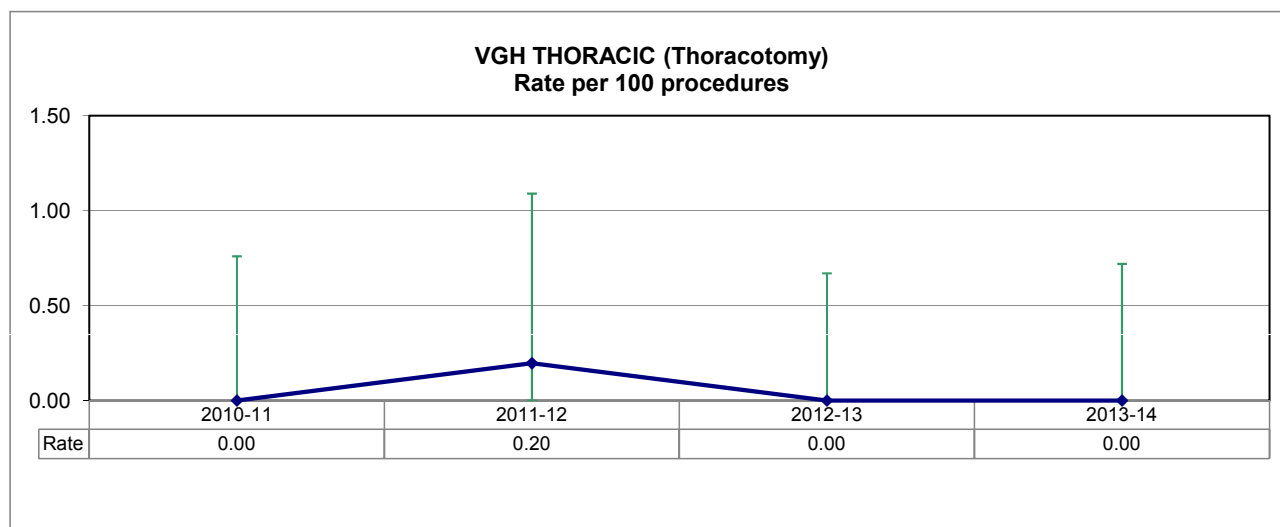
## VP Shunts



The 2013/14 there was one SSI for rate of 1.79 (95% CI = 0.05-9.95) which is below the NHSN (2009) benchmark of 5.61 (95% CI = 4.98-6.29) though the difference is not statistically significant.

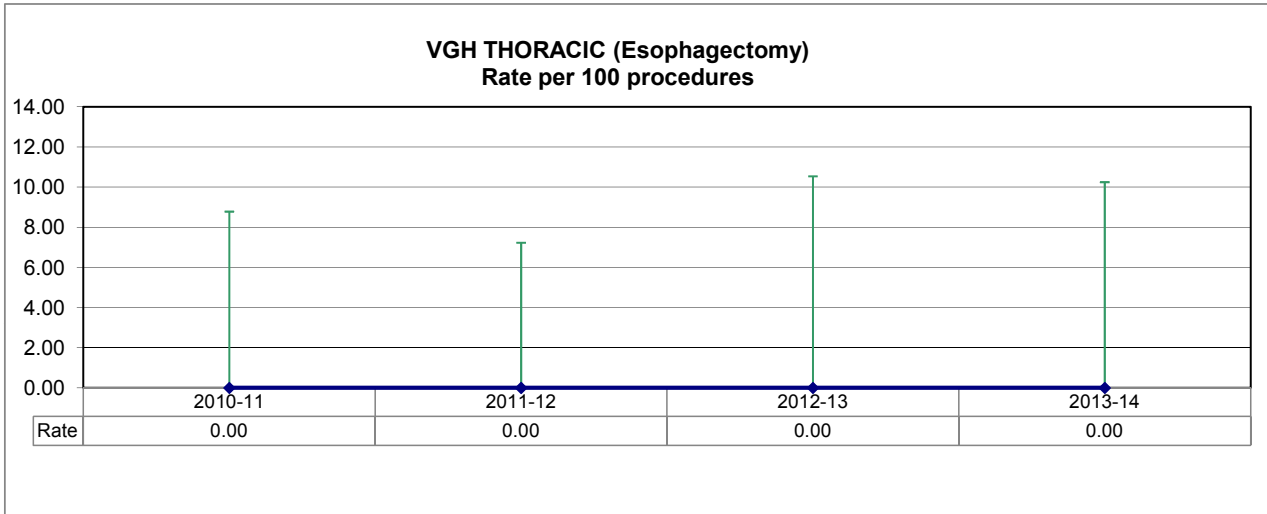
## Thoracic Procedures

### Thoracotomy



There have been no SSIs for the last two years associated with thoracotomies. There is no comparable NHSN benchmark for this procedure.

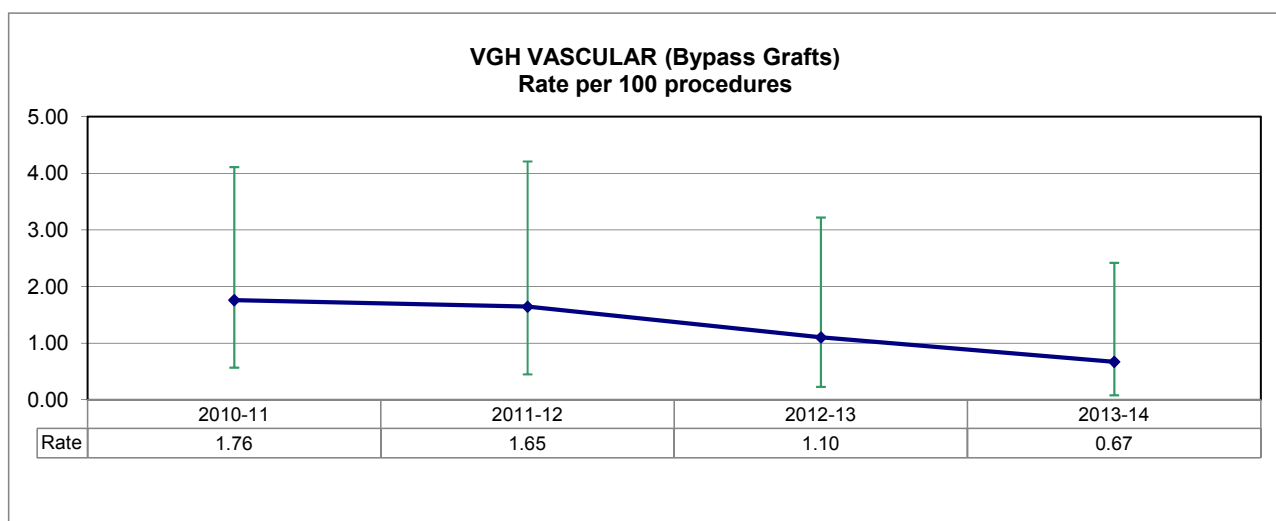
## Esophagectomy



There have been no SSIs associated with esophagectomies over the last four years. There is no comparable NHSN benchmark available for this procedure.

## Vascular Procedures

### Bypass Grafts



The SSI rate for all bypass graft procedures continues to decline with a 2013/14 rate of 0.67 per 100 pro-cedures. In 2013/14 there were 2 SSIs.

## **Benchmark & Comparators: How do our rates compare to our benchmarks?**

CDC/NHSN (2009) comparable benchmarks, where available, are used to evaluate our performance. With the exception of spinal fusion with hardware, all SSI rates are lower than the comparable benchmark with total knee replacements (primary) and craniotomies having rates that are statistically significantly below the NHSN benchmark.

## **What is the 2014/15 Annual Target the organization seeks to reach?**

Our goal is to keep our SSI rates below or within the range of the comparable CDC/NHSN benchmarks.

## **What actions have we taken over the last year?**

Observed immediate preoperative decolonization therapy using a novel combination of nasal photodynamic therapy and chlorhexidine impregnated body wipes was implemented at VGH for scheduled cardiac, neurosurgical, spine, thoracic, vascular and orthopaedic surgeons starting June 1, 2011 and continues to date. We are very pleased with the very low SSI rates that continued.

In addition, surgical teams now receive their data quarterly (sooner if a clinical situation should warrant this) to ensure immediate action should cluster events occur. The Surgical Quality Teams also receive a copy of the data.

## *Surgical Safety Checklist*

### **What are we doing?**

The Surgical Safety Checklist (SSCL) is designed to promote effective team functioning, by developing an interactive tool to empower healthcare teams, improve team dynamics, and increase team communication in high-risk healthcare procedures.

A high-risk healthcare procedure is one that involves two or more healthcare professionals who are involved in and rely on each other in completing a multi-step procedure together. By applying human factors principles to the development and implementation of the surgical safety checklist, improvements to safe practices, greater situational awareness, increased leadership and management, compliance with infection control policies, and increased team communication can be achieved between clinical disciplines.

The SSCL is used as an opportunity to verify that all critical safety steps are consistently completed during three strategic phases: **Briefing** before induction of anaesthesia; **Time Out** before skin incision and **Debrief** before the patient leaves the operating room.

VCH is committed to ensuring that the SSCL and other surgical safety tools are used in all operating rooms in VCH, all the time, for all patients. Compliance with the Checklist may help to reduce the rate of complications experienced within operating room settings.

Overall compliance and compliance on each of three components is measured every fiscal period and is reported in the PSQI scorecard. In addition, reports by facility and surgical service are posted to our portal every fiscal period.

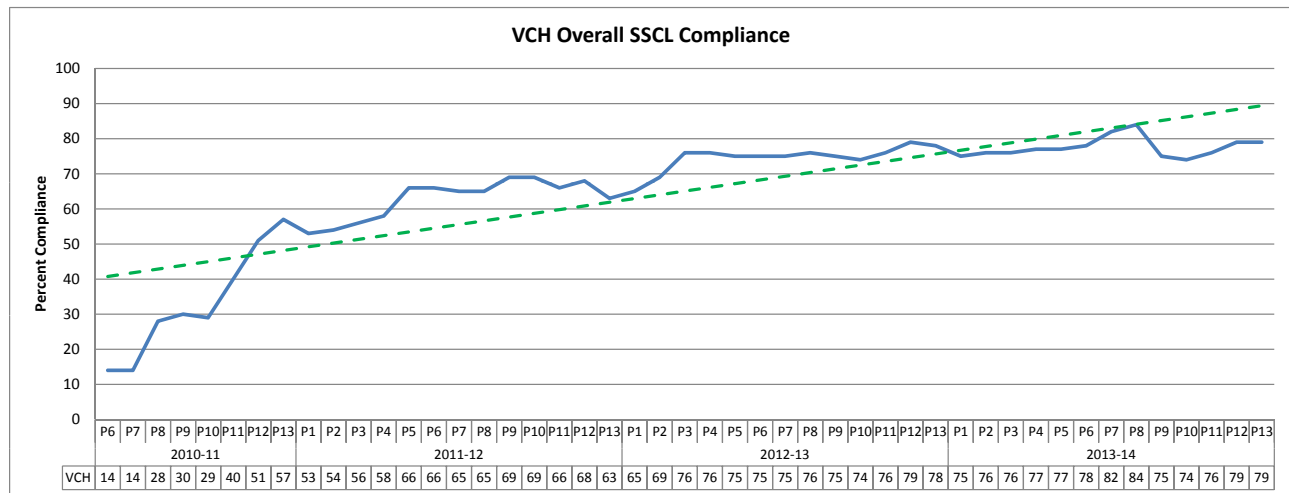
Our next steps will be to work with our interventional and procedural areas such as radiology and endoscopy, to implement a version of the surgical safety checklist in these areas.

### **How are we doing?**

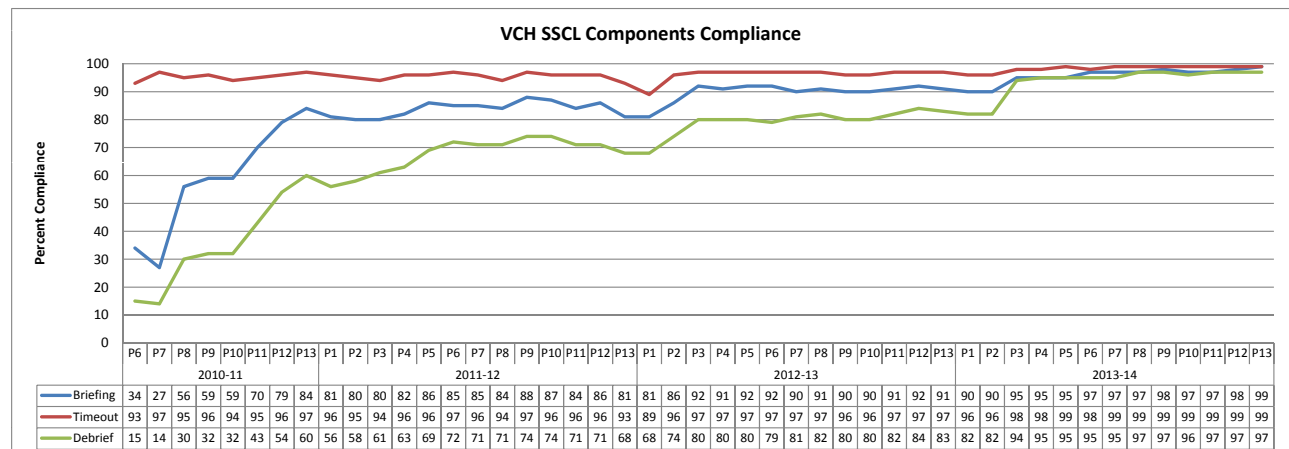
The results show that overall compliance with the SSCL has been steadily improving from its first introduction in 2010/11. The average compliance in 2013/14 was 77.5% compared to 74.5% in 2012/13 and 62.9% in 2011/12. When examining compliance on

each of the three components we see that there have been significant improvements in compliance with the Timeout and Debriefing components.

As an example, the VCH SSCL includes asking if antibiotic prophylaxis has been administered as well as whether VTE/DVT prophylaxis has been given. We have seen a steady improvement in antibiotic prophylaxis administration and a consistently high rate of DVT prophylaxis in part due to the use of the SSCL in our operating rooms. Qualitatively, our staff and surgeons have commented that they would want the SSCL used in their surgery!



Percentage of completed surgical cases compliant on the use of all three components to the SSCL (Briefing, Timeout, Debriefing). Measured by fiscal period and reported quarterly on the PSQI Scorecard. Target 100%.



Percentage of completed surgical cases compliant on each of the three components to the SSCL (Briefing, Timeout, Debriefing). Measured by fiscal period and reported quarterly on the PSQI Scorecard. Target 100%.



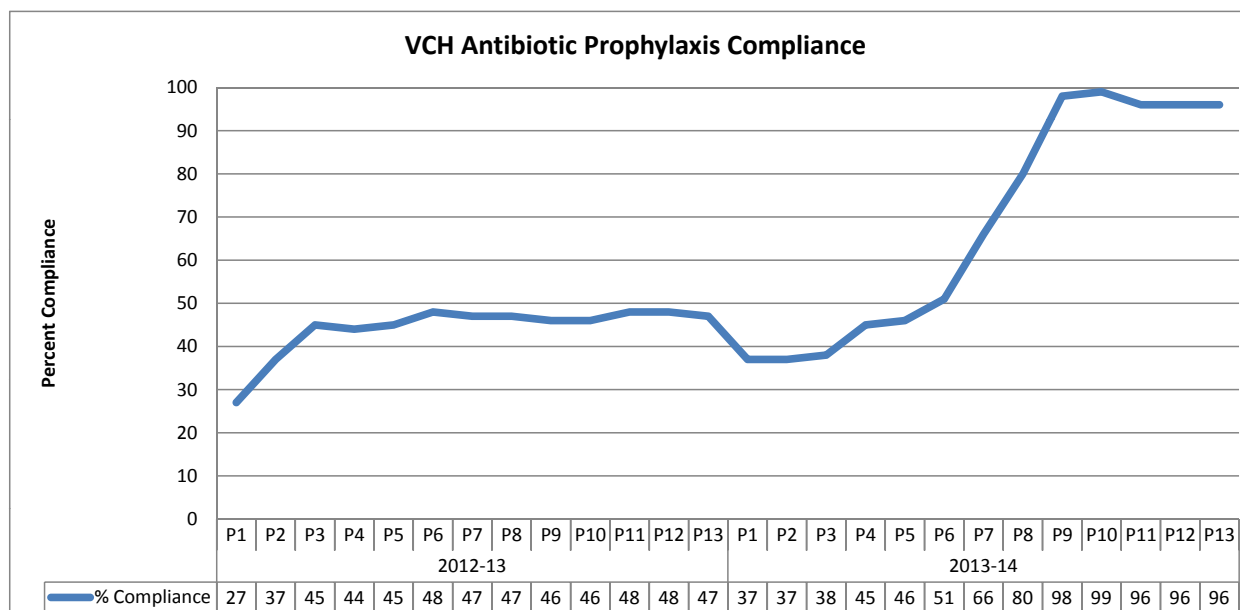
## Antibiotic Prophylaxis

### Improving Surgical Care

Appropriate timing and dosage of pre-operative prophylaxis plays a key role in reducing the risk of surgical site infections.

### Why is it important?

Evidence suggests that the appropriate antibiotic at the appropriate dose should be administered within one hour of the start of certain surgical procedures. VCH Quality and Patient Safety department monitors this data and informs the surgical teams of their performance on a regular basis. Reports are generated every fiscal period and posted to our portal. This information is provided to the surgical teams to improve their compliance with this important guideline.



### How are we doing?

Overall compliance increased dramatically to 98% in period 9 of 2013/14 with resolution of the documentation issues that had skewed the previous results. Even when the reported compliance was low, periodic auditing showed that the appropriate antibiotic was being administered within the correct time frame but that it was not being documented.

## *Catheter Associated UTIs (CAUTI)*

### **What is CAUTI?**

Urinary tract infections (UTIs) are the most common type of healthcare-associated infection (HAI), accounting for more than 30% of infections reported by acute care hospitals.<sup>1</sup> Seventy to eighty percent of healthcare-associated UTIs result from the placement of an indwelling urethral catheter (CAUTI). The daily risk of developing a urinary infection is 3-7% when an indwelling catheter remains in place without an appropriate indication.<sup>3</sup> It is estimated that 65-75% of these infections could be avoided through the implementation of current evidence-based strategies.<sup>2</sup>

Catheter-associated urinary tract infections have been associated with increased morbidity, mortality, hospital cost and length of stay.<sup>1</sup> CAUTI is the leading cause of secondary healthcare-associated bloodstream infections.<sup>3</sup> It's estimated that 15-25% of hospitalized patients receive a short-term indwelling urinary catheter.<sup>1</sup> Urinary catheters are often placed for inappropriate indications and healthcare providers are often unaware that their patients have catheters, leading to prolonged and unnecessary use.<sup>1</sup> Approximately 50% of patients with an indwelling catheter >5 days develop bacteriuria and progress to infection if the catheter is not removed. Bacteriuria leads to unnecessary antimicrobial use, while the urinary drainage systems act as a reservoir for multidrug resistant microorganisms and a source of transmission to other patients.<sup>3</sup>

### **What are we doing?**

The Regional CAUTI Steering Committee formed in 2012 continues to support the CAUTI initiative across VCH through a collaborative effort between Quality & Patient Safety and Professional Practice. VCH is committed to improving the care we provide our patients by implementing the best evidence-based practices to prevent HAI's including CAUTI. This is done with the knowledge that while the harm caused by CAUTI is not intentional, it is often preventable. Our goal, therefore, is to provide health care workers with the knowledge and tools required to prevent and minimize harm from the use of urinary catheters.

VCH has accomplished several important milestones in the past year as this multidisciplinary collaborative effort continues to spread across the region. The CAUTI initiative has been fully implemented at Vancouver Acute, while Lions Gate Hospital has implemented the initiative on several units and Richmond Hospital has started baseline data collection and staff education. Coastal rural hospitals have all begun CAUTI education.

Regional achievements include standardization and revision of clinical practice documents to support clinicians in preventing CAUTI with a focus on catheter insertion technique, care and management of catheters, removal decision-making algorithm and urine sampling. Prevention strategies are focused on 4 key drivers: avoiding unnecessary urinary catheters; standardized aseptic insertion techniques; follow guidelines for care and management including appropriate urine sampling; daily review of catheter necessity and prompt removal where appropriate. A CAUTI toolkit has been developed and posted on the regional Quality and Patient Safety intranet site along with a variety of resources for VCH staff including: Educational resources about CAUTI; A guide to support on-going Surveillance in Acute Care Settings; Process measure tracking tools; Lean tools including Pareto Chart templates and action plan templates. Finally, the CAUTI Team has undertaken a comprehensive review of urinary catheter products working in collaboration with unit Educators, clinical buyers and the vendor to develop all in one urinary catheter kits and introduce urinary drainage systems with a reflux valve to prevent backflow.

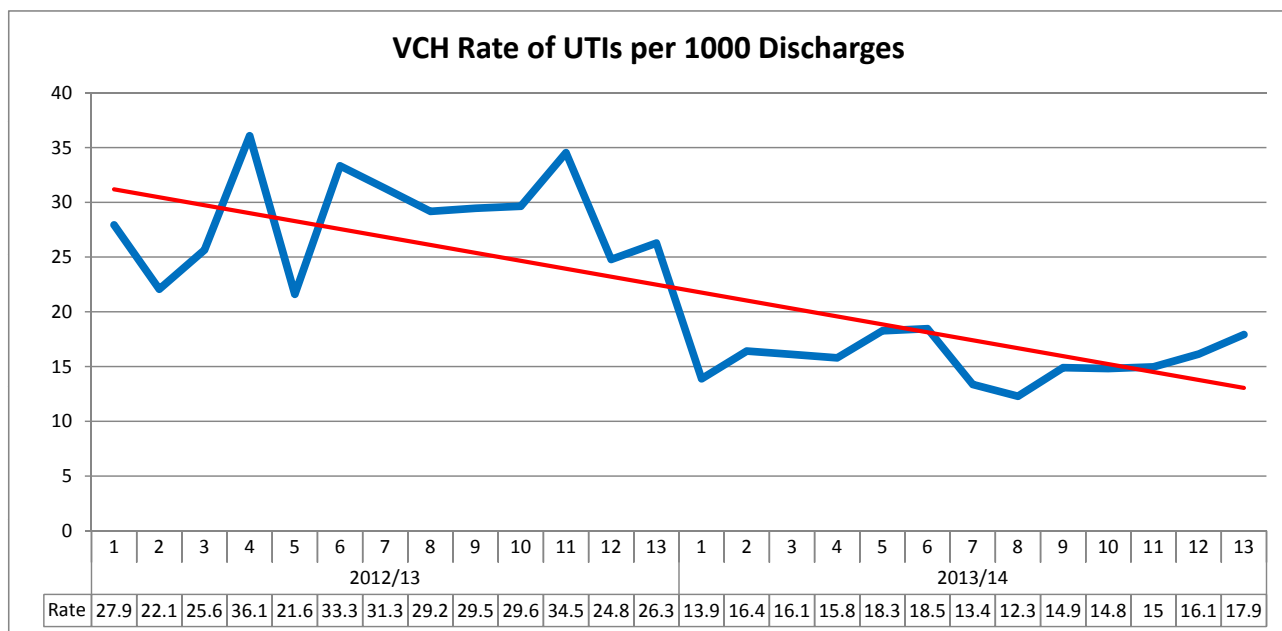
The CAUTI Team is working in collaboration with other quality improvement programs to leverage the skills and commitment to reduce the number of hospital acquired infections. One example is the development of the UTI algorithm by the anti-microbial stewardship program (ASPIRES). The UTI algorithm provides evidence based guidance to Nurses and Physicians regarding appropriate urine sampling and treatment of suspect UTI cases. Additionally, the CAUTI team is working closely with the 48/6 team to ensure alignment between these two important initiatives.

Data is critical in any effort to drive change at the frontline, which is why we are integrating outcome measures data from the National Surgical Quality Improvement Program (NSQIP), Canadian Institute for Health Information (CIHI) discharge abstract data and VCH urosepsis data. Additionally, clinicians are actively involved in the collection of process measures data through chart and observational audits to identify

unit based and organizational opportunities for improvement, building ownership at the unit level. Through regular sharing of data, individual units develop action plans and report their progress through regular monthly 'check-ins' and Quality Council reports.

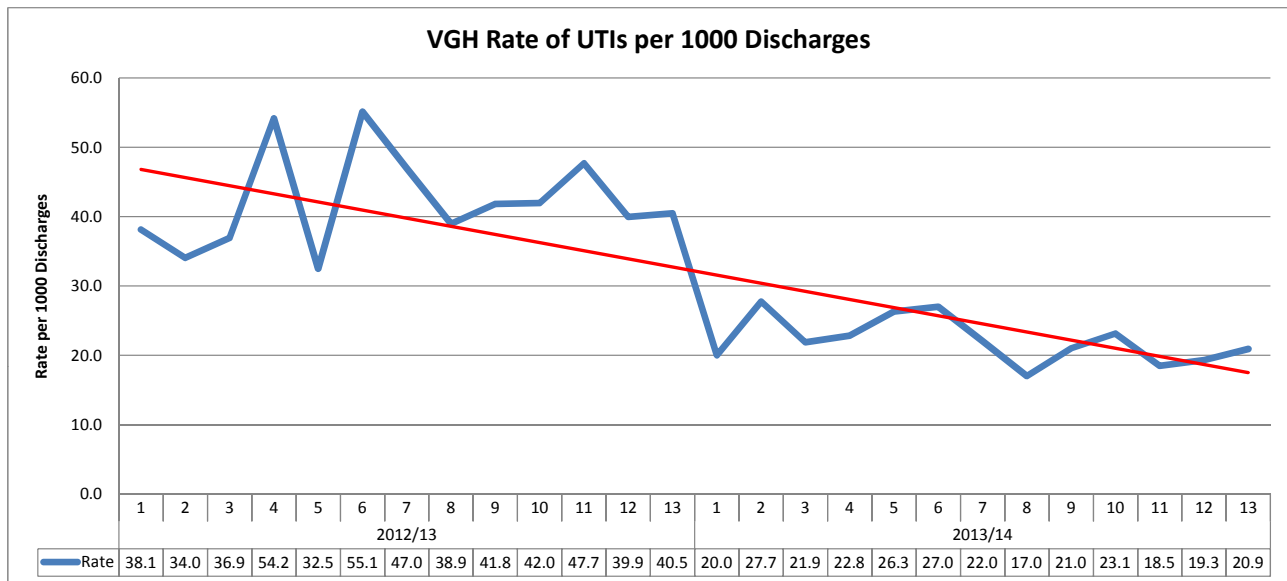
## How are we doing?

Through the outstanding effort of all involved, we have seen a significant reduction in UTI rates across VCH. VCH tracks UTI's as a proxy measure for the success of the CAUTI initiative. Initially the regional UTI rates were 31.2 cases per 1000 discharges, however VCH has been able to decrease this to 22.1 UTI cases per 1000 discharges over that past 2 years. The reduction has been driven largely by a significant drop in number of UTI's at Vancouver General Hospital from 44.4 to 29.3 UTI cases per 1000 discharges. As the CAUTI initiative is implemented across the region we anticipate further reductions in UTI's at Lions Gate Hospital, Richmond Hospital and Coastal rural hospitals.



**Vancouver Acute** has successfully implemented the CAUTI initiative over the past 2 years through a phased approach. As the work shifts toward sustainment VA has several activities underway. Units continue to work on their individual action plans developed. Units are utilizing LEAN breakthrough lanes to track UTI cases. Infection Control Practitioners are working closely with the units to support the on-going monitoring of

UTI cases. Units are presenting their progress and activity with the CAUTI project at the VA Quality Council. Clinicians continue to share successes and ideas to support each other through this change initiative. Vancouver Acute standardization of documentation related to catheter care included the tubes/lines/drains form and Special Care Nursing assessment form.



**Lions Gate Hospital** has completed baseline data collection and education of clinical staff with recent implementation of the CAUTI initiative on many units. LGH has recently implemented a revised tube/drain form to improve documentation. Additionally, the Lean team is supporting education around the breakthrough lanes to facilitate the collection of data by frontline staff. LHG has engaged the assistance of a Urologist to support unit education sessions on aseptic technique and catheter insertion. Coastal rural hospitals have collected baseline data and education has started on the clinical units.

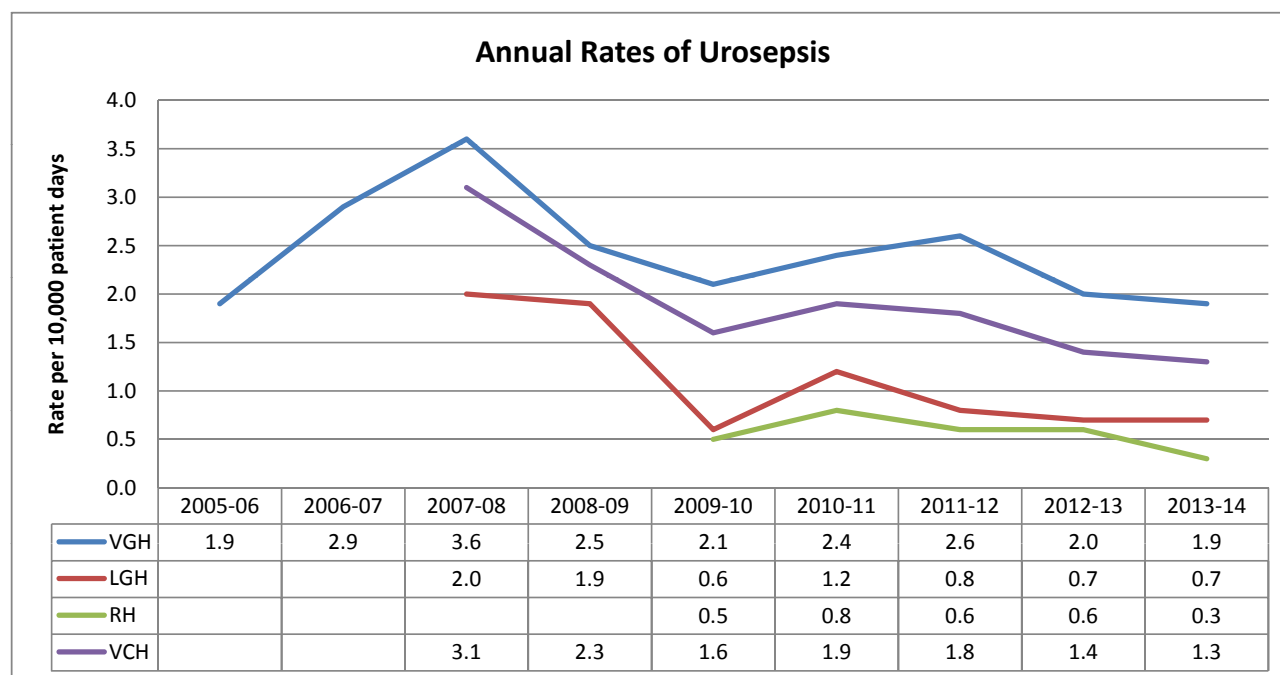
Richmond hospital has recently completed baseline data collection in the initial phases of CAUTI implementation. A local working group has been established to support the CAUTI implementation efforts on the clinical units.

## Urosepsis

One of the measures used to assess how we are doing in reducing CAUTIs is urosepsis. In fiscal year 2012/13, urinary tract infections leading to bacteremia was identified as a priority area.

### What is Urosepsis?

Urosepsis is a bloodstream infection that originates from a urinary tract infection and serves as another proxy measure of the success of VCH's CAUTI initiative. The graph below shows the annual rates of urosepsis since 2005/06. The results show that the rates have declined at VGH and have remained stable at both LGH and RH. The VCH rate is 1.4 (95% CI = 1.1 – 1.8).



### What is being measured?

The rate of blood stream infections with a urinary tract infection as the primary source (urosepsis) is being followed.



**Methodology: How was the data collected?**

The data are collected by Infection Control Practitioners using standardized definitions and surveillance protocols. VCH case definitions are provided in Appendix 1.

**How did we do compared to our 2012/13 Annual Target?**

The target for 2012/13 was to reduce our VCH urosepsis rate by 10% for a rate of 1.62 per 10,000 patient days. We achieved our target by reducing our rate to 1.4 (95% CI = 1.1 – 1.8) which represents a reduction of 22.2%.

**What is the Annual Target the organization seeks to reach?**

Our goal for 2014/15 is to reduce our 2013/14 rate by 10% for an annual regional target of 1.3 per 10,000 patient days.

## *An Innovative Approach to Reducing Healthcare Associated Infections Year 2 Summary*

A multidisciplinary team was convened, regionally, in April 2012, to address new strategies to reduce healthcare associated infections (particularly *Clostridium difficile*) and to optimize antimicrobial therapy. Two cornerstones, hand hygiene and standardized infection prevention protocols, have been in place for many years. Two new programs were created to complete this four cornerstone approach: An Antimicrobial Stewardship Program and an Environmental Cleanliness Program. The purpose of this report is to highlight the major achievements of the Environmental Program for the last year.

The Environmental Cleanliness Program is a multidisciplinary approach to prevent hospital acquired infections. In year two, the program is well established at Richmond Hospital (RH), Lions Gate Hospital (LGH) and Vancouver General Hospital (VGH). At VGH, this program continues to have strong linkages with the CDI Working Group. Key elements, now well established in the three sites, include: a sustainability program to maintain a clutter free environment, a mobile equipment cleaning and distribution program and the identification of unit champions to maintain a clean and tidy workplace. The importance of unit specific interventions and initiatives to reduce and prevent healthcare acquired infections are encouraged and supported.

### Key Accomplishments for Year 2

- The Equipment Cleaning Manual has been adapted by the three sites and has been shared with PHC and FHA. The manual outlines the roles and responsibilities for the cleaning of shared patient equipment. All equipment is cleaned between use, ensuring safety for our patients and staff.

#### MASTER EQUIPMENT CLEANING LIST

##### PRINCIPLES OF EQUIPMENT MANAGEMENT:

1. Dirty equipment will not be moved throughout the hospital.
2. Shared patient devices must be cleaned between use.
3. When certain pieces of equipment (stretchers and mobile equipment fleet) are cleaned, they will be tagged with a green "CLEAN" sticker.
4. Equipment going for repair to Biomed or Facilities/Maintenance/Operations must be cleaned and tagged with a green "CLEAN" sticker.
5. Each piece of equipment will have its own parking spot.

**Hospital Grade Surface Cleaner/Disinfectant:** A chemical agent that kills most disease producing micro organisms but not necessarily bacterial spores. Disinfectants are applied only to inanimate objects. Some products combine a cleaner with a disinfectant. Examples include Virex, Gen Wipes and Dettol 70 wipes.

**Neutral Cleaner:** An all purpose cleaner that is safe to use in the household. Neutral cleaner is an agent with surfactants and is not a disinfectant and does not require a DIN number. Examples are "RTU Citrus Cleaner" and "Neutral Cleaner".

##### LEGEND:

All Users = This item must be cleaned immediately after **YOU** have used it.  
FMO = Facilities/Maintenance/Operations  
OT/PT = Occupational Therapy/Physiotherapy

##### REMOVING "CLEAN" STICKERS:

Please remove green "CLEAN" stickers from equipment before patient use. For example, just before a commode is given to a patient, remove the "CLEAN" sticker.

##### ORDERING ADDITIONAL COPIES

PDF and Print Copies can be found at: <https://qa-print.vch.ca/> and entering in the number VCH-0291

Prepared by:  
Chris Lindell, Teresa Johnston, Mike Petrie, Simon Tse, Nancy Cho, Patti Erdosson,  
Jody Elliot, Tracy Chadwick, Sydney Scharf, Ken Pukanich

VCH-0291 | SEPTEMBER 2013

- In partnership with Portering and Environmental Services, A clean stretcher protocol is in place at all sites.



- In partnership with HSSBC, the Personal Sized Patient Care Product Initiative has been successfully introduced. The rationale for this change included: the promotion of best infection control practice, decreased waste, decreased cross contamination, and increased patient and staff satisfaction. Additionally, the project has been recognized as having a “green focus”.

		<b>Personal Sized Patient Care Products – VCH Initiative</b> <b>For Single Patient Use Only</b>			
<b>Gentle Rain Body Wash 50ml</b>  PS# 00099266	<b>Secura Moisturizing Cleanser 118ml</b>  PS# 00013669	<b>Secura Skin Protectant (Dimethicone) 114gm</b>  PS# 00090843	<b>Secura Skin Protectant (Zinc) 90gm</b>  PS#00013688	<b>Secura Professional Care Lotion 120ml</b>  PS# 00090842	
<b>Toothpaste with Fluoride 0.6 oz.</b>  PS# 00023179	<b>April Fresh Mouthwash - Alcohol Free 118ml</b>  PS# 00078634 Stocked item is smallest bottle on far right of picture	<b>Mouth Gel Moisturizer – Mint ½ oz.</b>  PS# 00052723	<b>Foam Shaving Cream 50ml</b>  PS# 00008374		

Jennifer Pitre, SCCC, March, 07 2014

Single patient use item implementation

- In partnership with BISS, there has been a 15% reduction in yellow gown inventory at all sites. Prior to this initiative, because linen carts were overstocked, gowns were falling on the floor. This necessitated the washing of gowns that had never been worn. This initiative has resulted in significant dollar savings.



Yellow gowns, before and after

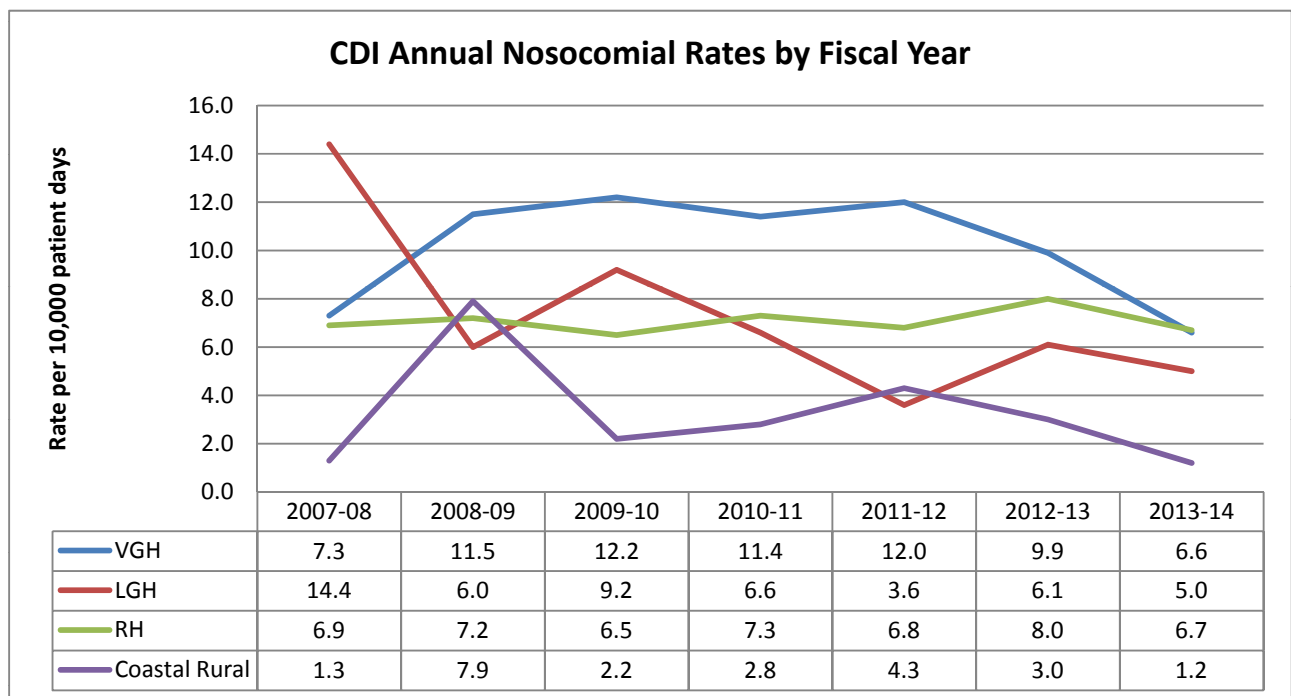
- Surplus inventory continues to be shared between sites; beds were moved from UBC to VGH to address a critical bed shortage. Mattresses have been moved from VGH to UBC.
- Green Means Clean Labeling of Mobile Equipment is fully operational.



Risk managed approach to VRE continues. Screening and isolation continues in high-risk areas (BMT, ICU, SOT, and BPTU) and has not created unintended consequences. Other benefits include significant cost savings and the absence of additional demands on resources for bed allocation.

## Results

As shown in the graph below, the decrease in hospital acquired CDI cases continues. The noted decline and reduction of CDI suggests that the combined strategies of the SPIRES (antimicrobial stewardship program) and the Environmental Cleaning Program continue to be successful.



## Next Steps

Next steps for sustainability include a coordinated schedule, in partnership with Environmental Services, to remove clutter from the clinical units, and continuing education.



## *Antimicrobial Stewardship Programme: Innovation, Research, Education, and Safety (ASPIRES)*

The Antimicrobial Stewardship Programme is a multidisciplinary collaboration: all the initiatives are accomplished with the support of our clinicians and their dedication to improving patient outcomes.



### **What is Antimicrobial Stewardship?**

Antimicrobial stewardship is the practice of using anti-infectives (such as antibiotics, antifungals, and antivirals) appropriately for the treatment of infections. This involves selecting the best anti-infective and using the right dose, route, frequency, and duration when treating patients.

### **What is the Antimicrobial Stewardship Programme (ASPIRES)?**





**ASPIRES** is the Antimicrobial Stewardship Programme in the Vancouver Coastal Health (VCH) Quality and Patient Safety Department, under the executive sponsorship of Dr. Patrick O'Connor (Vice-President, Medicine, Clinical Quality and Patient Safety), and Ms. Linda Dempster (Executive Director, Quality and Patient Safety). The Antimicrobial Stewardship programme is part of the Four Cornerstones; a regional team convened to implement new strategies to reduce healthcare-associated infections (particularly *Clostridium difficile* Infections (CDI)) and optimize anti-infective treatments.

ASPIRES started in November of 2012 at the three acute care facilities of VCH: Lions Gate Hospital (LGH), Richmond Hospital (RH), and Vancouver General Hospital (VGH). Additional information on the ASPIRES programme is available at the following intranet site: <http://vch-connect/programmes/qps/ASPIRES/Pages/default.aspx>

## **ASPIRES' Goals**

ASPIRES' overall goal is to improve patient care at our hospitals. We aim to achieve this goal through collaboration with healthcare providers to:

- Successfully treat infections;
- Reduce inappropriate antimicrobial use;
- Reduce adverse drug events and healthcare associated infections;
- Prevent antimicrobial resistance;
- Support sustainable healthcare.

## **ASPIRES' Main Initiatives**

Since its inception, ASPIRES has collaborated closely with physicians, pharmacists, nurses, and other healthcare professionals to promote appropriate antimicrobial use at VCH. ASPIRES' main initiatives include:

1. Prospective Audit and Feedback
2. Quality improvement projects and best clinical practice guidelines
3. Education on optimal prescribing of antimicrobials

## *1. Prospective Audit and Feedback*

Audit and Feedback is an evidence-based practice of reviewing a patient's anti-infective therapy with the prescriber to optimize treatment. This practice involves the selection of the most appropriate, narrowest antibiotic based on clinical status, indication, allergies, culture and susceptibility results, potential drug interactions and adverse effects, in compliance with clinical practice guidelines.

The Audit and Feedback clinical services and evaluation efforts are focused on:

- Narrowing the spectrum and optimizing the duration of broad-spectrum antimicrobial therapies to preserve the potency of these agents;
- Converting intravenous (IV) antibiotics to oral formulations when appropriate to prevent the complications associated with IV antibiotics;
- Providing education to prescribers on the clinical practice guidelines for the treatment of infections;
- Collecting and collating data on empiric treatments and ASPIRES interventions (process measures), as well as antimicrobial utilization (outcome measures), to provide feedback to physician services, evaluate the impact of the programme, and identify areas for improvement.

### **Process Measures**

- I. Number and type of recommendations made by the clinical team, categorized by drug, indication, and physician services;
- II. Number and proportion of recommendations accepted and implemented, categorized by physician services.

### **Outcome Measures**

- I. Total utilization of antibiotics at Audit and Feedback wards;
- II. Utilization of targeted broad-spectrum antibiotics at Audit and Feedback wards;
- III. Utilization of targeted IV antibiotics at Audit and Feedback wards.

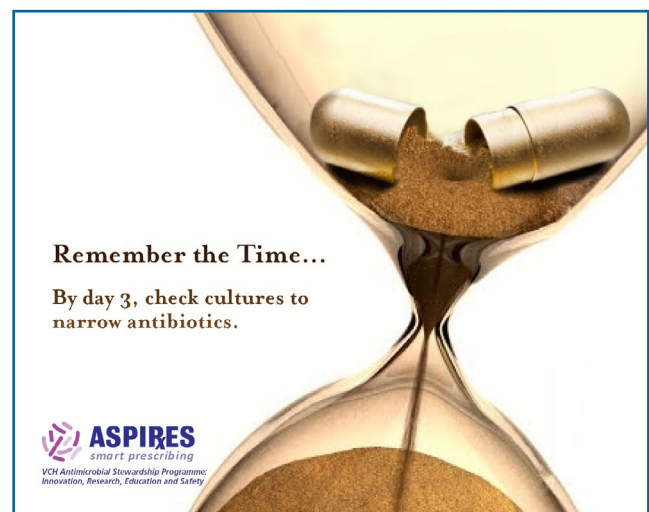
## Audit and Feedback Programme Enhancement: Electronic Patient Screening Tool

With the help of the IMITS Sunset team (Anita Leonhard and Rizza Santos), an electronic patient screening tool has been developed to automatically select patients who meet a set of carefully defined criteria for further review by SPIRES. This screening tool integrates patient diagnoses, medication profiles and laboratory test results into one comprehensive daily report that identifies patients requiring review of their therapies. The creation of this tool has significantly improved the efficiency of the Audit and Feedback process, allowing the programme to rapidly expand across VGH and RH. The reports are currently available for all nursing units at these two facilities.

## Audit and Feedback Roll-Out: Vancouver General Hospital

In fiscal year 2013/14, the SPIRES clinical team reviewed 794 VGH patient charts and suggested treatment optimization for 515 of these patients; approximately 77% of SPIRES treatment recommendations at VGH were implemented by the physicians.

The Prospective Audit and Feedback programme started on the Clinical Teaching Unit (CTU) wards at VGH in March of 2013 and expanded to Intensive Care, General and Vascular Surgeries, Hospitalist, and Leukemia/Bone Marrow Transplant units starting August of 2013. SPIRES clinical team at VGH (Drs. Jennifer Grant and Tim Lau) reviews the antibiotic profiles of patients on targeted antibiotics and makes recommendations to optimize therapy when needed. The following antibiotics have been targeted by SPIRES:



## **Broad-spectrum antibiotics targeted for narrowing of spectrum:**

Carbapenems, Ceftazidime, Daptomycin, Linezolid, Piperacillin-tazobactam, Tigecycline, and Vancomycin

**IV antibiotics with PO bioequivalence targeted for conversion:** Ciprofloxacin, Clindamycin, Moxifloxacin, Cotrimoxazole, and Metronidazole

ASPIRES continues to collect data systematically on each recommendation for quality assurance, as well as track antibiotic utilizations to evaluate the impact of Audit and Feedback.

In February of 2014, the ASPIRES team presented a storyboard poster on the one-year experiences and the outcomes of the “Prospective Audit and Feedback of Antimicrobial Prescriptions at VGH” at the Quality Forum, BC Patient Safety & Quality Council.

## **Process Measures Evaluation: VGH Audit and Feedback Recommendations and Up-Take**

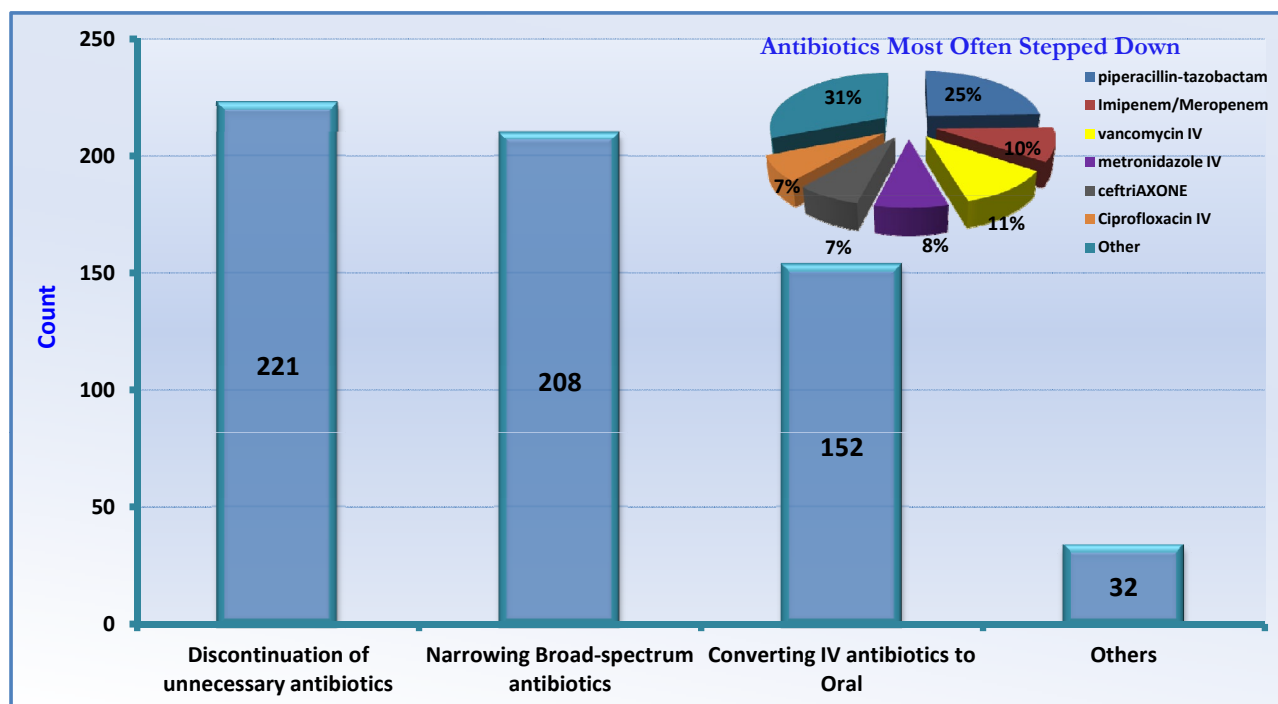
In fiscal year 2013/14, the ASPIRES clinical team at VGH reviewed 794 VGH patients on targeted broad-spectrum or IV antimicrobials and suggested treatment optimization for 515 of those patients. Further review of the cases indicate that 77% of ASPIRES treatment recommendations were accepted and implemented by the physicians (Table 1).

***Table 1. Audit and Feedback Treatment Optimizations at VGH;  
March 15, 2013 – March 31, 2014***

Measures	Number of Patients
Chart Audits	794
Total Number of Treatment Optimizations	515
Verbal Recommendations	87
Written Recommendations*	428*
	Percentage
Accepted and Implemented Recommendations (by MDs)	77%

\*In total, ASPIRES provided 613 written recommendation for these 428 patients

Audit and Feedback treatment recommendations mostly involved discontinuation of antibiotics (36%), narrowing of antibiotic spectrum (34%) or converting IV antibiotics (25%) to oral antibiotics. Other recommendations included shortening the duration of therapy or consulting infectious diseases services for more complex cases.



Types of Audit and Feedback Treatment Recommendations\* at VGH; March 15, 2013 – Mar 31, 2014  
 Note: \*Total number of patients receiving written recommendations: 428. Total number of written recommendations: 613

## Outcome Measures Evaluation: VGH Antibiotic Utilization

The overall utilization of antibiotics were reduced across ICU, Medical, and Surgical wards (Audit and Feedback wards) at VGH in fiscal year 2013/14 (Audit and Feedback start-up year) compared to the previous year (Table 2). This reduction translated to an estimated 2,980 avoided days of antibiotic therapy at these units, including 875 avoided days of broad-spectrum antibiotics and 1,281 avoided days of therapy with targeted IV antibiotics (see figures).

Antibiotic utilization, measured in defined daily dose (DDD) per 100 patient-days, is calculated at the Audit and Feedback wards to track the utilization trend overtime. The DDD is the assumed average adult maintenance dose per day for a drug used for its

main indication. The conversion of drug utilization amount to DDD units is performed to standardize utilization of different classes of antibiotics, allowing comparisons to be made across different drug classes or patient groups. The trends in antibiotic utilization is used to identify priority areas for ASPIRES' interventions and to evaluate ASPIRES' initiatives, such as the Audit and Feedback programme, by comparing utilization of targeted antibiotics pre- and post-interventions.

Overall, the antibiotic utilization per 100 patient days was lower in the Acute Care units with Audit and Feedback services at VGH in fiscal year 2013/14 (Audit and Feedback year) compared to the previous years (Table 2).

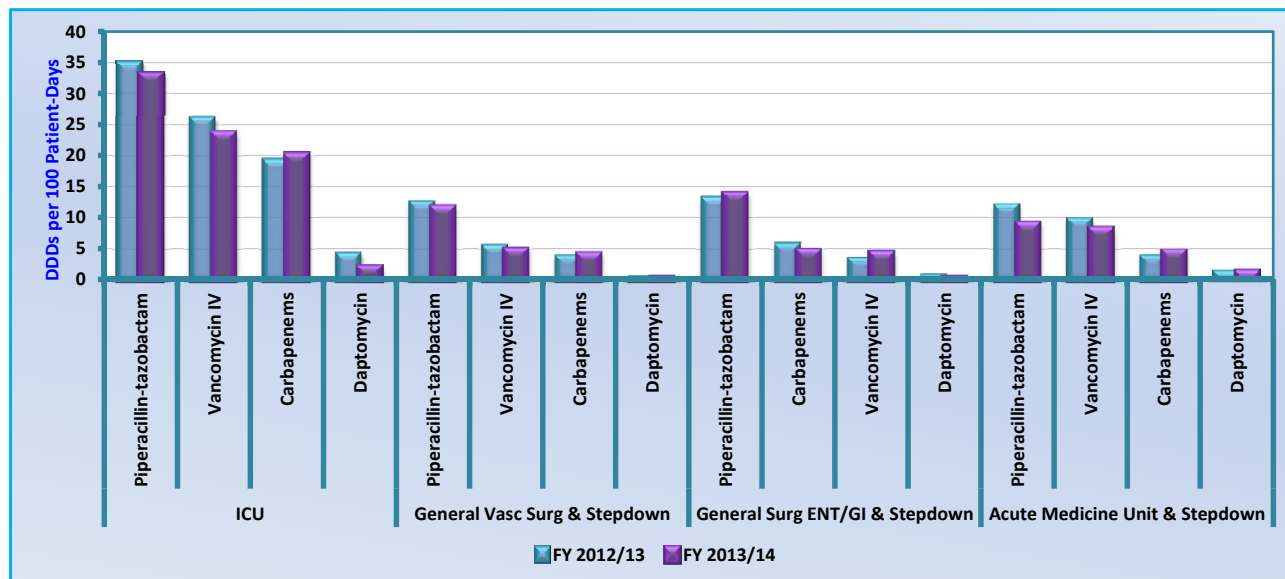
**Table 2. Standardized Antibiotic Utilization (DDD/100 patient-days) for Audit and Feedback Units at VGH\***

Nursing Units	Audit and Feedback			
	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14
ICU	141.8	153.9	164.3	147.9
Acute Medicine Unit & Step-Down	90.6	87.2	83.5	78.4
General Surgery & Step-Down	57.0	74.4	69.1	67.3
Vascular Surgery & Step-Down	54.0	64.4	61.2	60.5

\*Utilization does not include antibiotics dispensed from the ward-stocks/Omnnicell

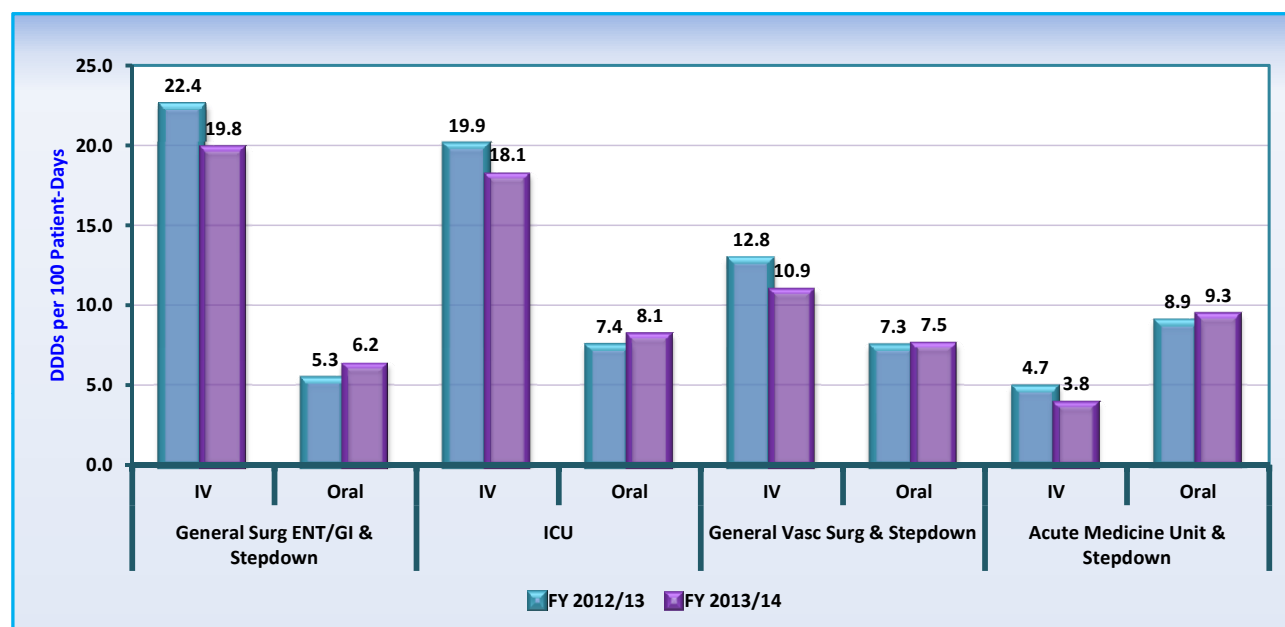
This reduction translates to an estimated 2,980 avoided days of antibiotic therapy in these units (as compared to the previous year), which includes 875 avoided days of therapy with broad-spectrum antibiotics. More specifically, the utilization of the broad-spectrum antibiotics (Piperacillin-tazobactam, Vancomycin, and Daptomycin) was lower at the Audit and Feedback units (Intensive Care, General Vascular Surgery, and Acute Medicine units) in FY 2013/14 compared to the previous year, while the utilization of Carbapenems had a slight increase of 1.1 DDDs/100 patient days in all these units combined. The following figure displays the utilization of these broad-spectrum antibiotics by targeted nursing wards.





Broad-Spectrum Antibiotic Utilization (DDD/100 patient-days) at Audit and Feedback Units, VGH

In the Audit and Feedback nursing units, antibiotic utilization was also reduced for targeted IV antibiotics with oral bio-equivalence. As expected, the reduction in IV use was marked by simultaneous increases in the utilization of the oral formulations of these drugs. The surgical, medical and intensive care units posted a combined 1,281 avoided days of targeted antibiotic IV therapy.



IV and Oral Antibiotics\* Utilization (DDD/100 patient-days) at Audit and Feedback Units, VGH

Note: \*Antibiotics included: Ciprofloxacin, Cotrimoxazole, Clindamycin, Linezolid, Metronidazole, and Moxifloxacin

## Audit and Feedback Roll-Out: Richmond Hospital

ASPIRES, in collaboration with the RH clinical team (Drs. Jerry Vortel, Sandra Chang, Jane de Lemos, and Rob McCollom), has developed a target list of antibiotics and patient selection criteria for Audit and Feedback services and an electronic patient screening report has been set up to identify patients for further review. The RH clinical team will officially start Prospective Audit and Feedback at RH in June of 2014, targeting acute care units at RH.

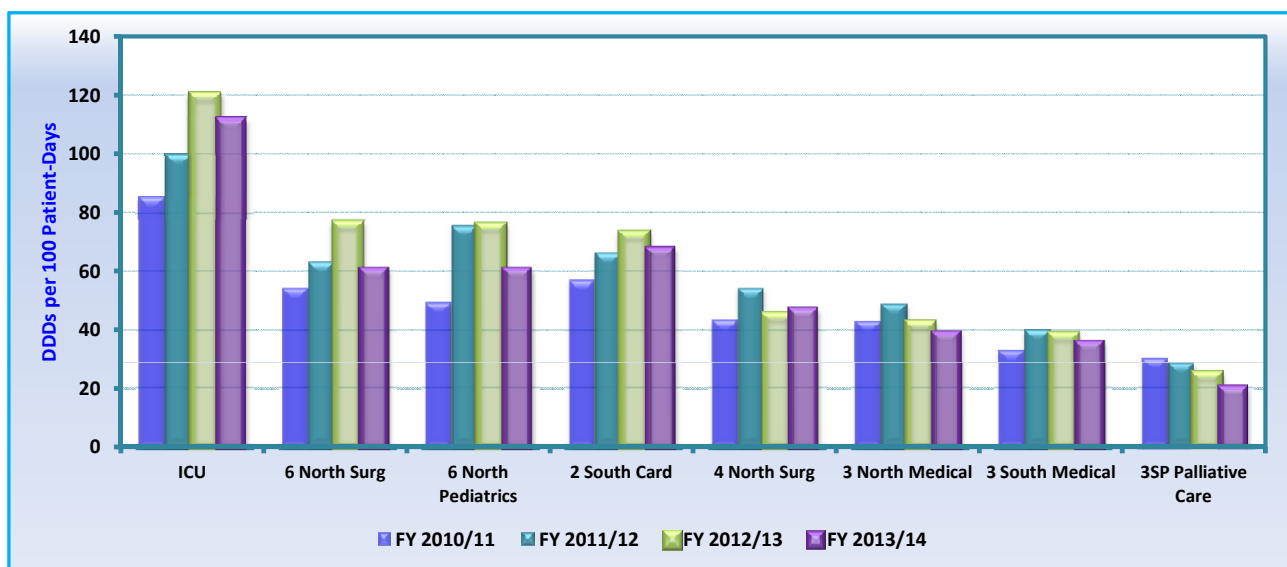
## Process Measures Evaluation: RH Audit and Feedback

### Recommendations and Up-Take

The RH clinical team will collect process measures data from their Audit and Feedback recommendations starting June 2014. Evaluation of the data will commence three months post programme start-up.

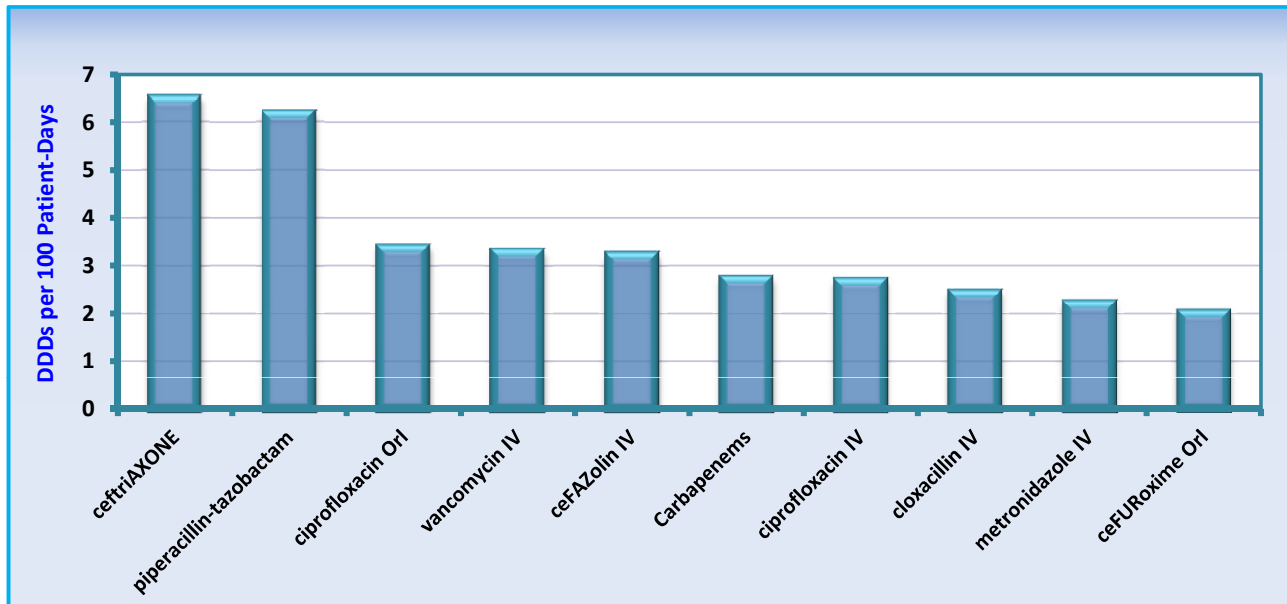
## Outcome Measures Evaluation: RH Antibiotic Utilization

The baseline antibiotic utilization by nursing unit is displayed for the past four years in Figure 4. Overall, the intensive care, surgical and medical units have had the highest consumption of antibiotics in the past four years, and Ceftriaxone and Piperacillin-tazobactam were the top two antibiotics used.



Standardized Antibiotic Utilization\* (DDD/100 patient-days), RH  
Note: \*Omniceil Not Included

ASPIRES will continue to track the utilization of antibiotics to evaluate the impact of Audit and Feedback as the programme expands at RH.



Broad-Spectrum Antibiotic Utilization (DDD/100 patient-days), RH  
Note: \*Acute wards included: R2S, R3N, R3S, R3SP, R6N, R6NP, RICU

## Audit and Feedback Roll-Out: Lions Gate Hospital

ASPIRES and LGH Pharmacy commenced Audit and Feedback services at LGH in October of 2013. The LGH clinical pharmacist team (Terri Betts, Isla Drummond, and Dr. Gabriel Loh) assess patients and make recommendations to optimize antibiotic therapies according to treatment guidelines. The ASPIRES physician reviews the complicated cases with LGH clinical pharmacists twice weekly over the phone, as currently the LGH Audit and Feedback does not have an infectious diseases physician onsite. To better facilitate the expansion and sustainment of Audit and Feedback at LGH, the ASPIRES clinical team at VGH will be providing weekly onsite consultations starting in June 2014 at LGH.

## Process Measures Evaluation: LGH Audit and Feedback Recommendations and Up-Take

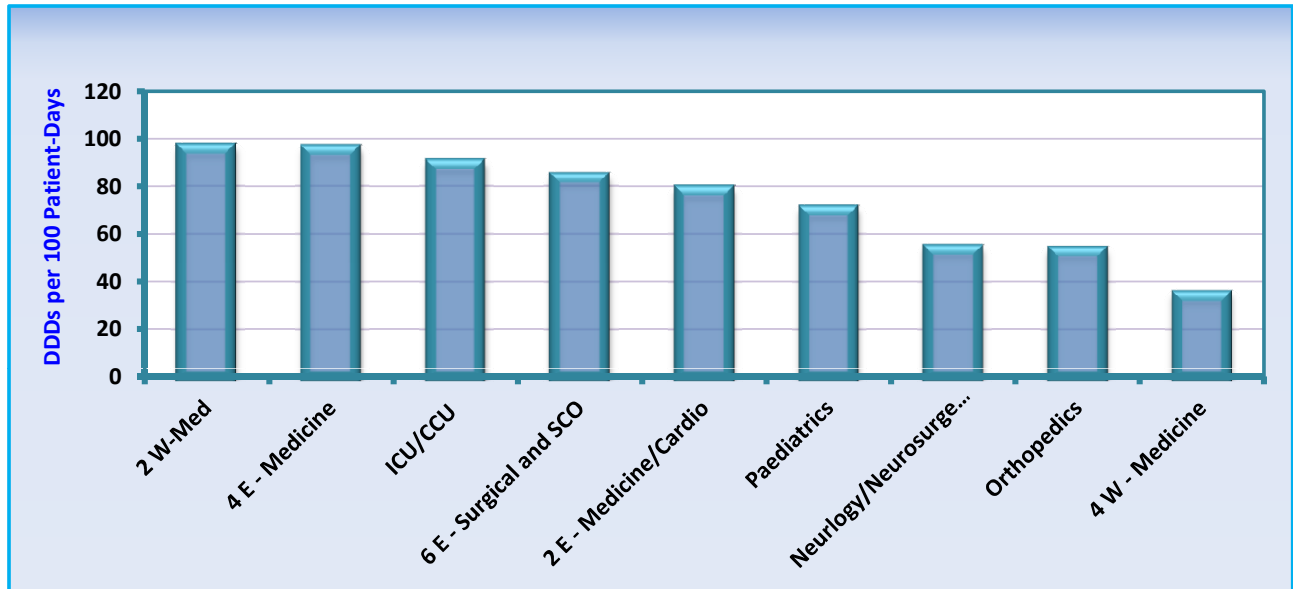
In fiscal year 2013/14, 97 LGH patients on target antibiotics were reviewed and recommendations were made for 57 of those patients. The uptake of recommendations at LGH has been 58%.

*Table 3. Audit and Feedback Treatment Optimization at LGH; October 1, 2013 – March 31, 2014*

Measures	Number of Patients
Total Number of Cases Reviewed	97
Total Number of Treatment Optimizations	57
	Percentages
Recommendations Accepted and Implemented (by MDs)	58%

## Outcome Measures Evaluation: LGH Antimicrobial Utilization

The following figure summarizes the antibiotic utilization in acute care units at LGH; medical, surgical and intensive care units had the highest consumption in FY 2012/13 and Cefazolin, Ceftriaxone, Cloxacillin, Piperacillin-tazobactam, and Moxifloxacin were the most purchased drugs (in DDDs) at LGH. Currently, ASPIRES is working with LGH to retrieve comprehensive antibiotic utilization data for FY 2013/14 to establish a baseline.



Standardized Antibiotics Utilization (DDD/100 patient-days) at Acute Care Units, LGH, FY 2012/13

## 2. Quality Improvement Projects and Best Clinical Practice Guidelines and Tools

The SPIRES' clinical team works with Infectious Diseases, Pharmacy, Medical Microbiology, and other stakeholder groups to identify key areas for improvement in the diagnostics and management of infections, with the aim to improve prescribing and treatment based on best practices.

Current clinical practice improvement initiatives are focused on the following priority areas:

### **Clostridium difficile Infection (CDI)**

The *C. difficile* Infection (CDI) quality assurance initiative is a regional programme that was developed as a collaborative effort between Pharmacy and Infection Control to ensure all CDI patients receive optimal treatment. Patients are required to be treated according to the evidence-based CDI Treatment Algorithm in the VCH CDI Management Policy. As part of a multi-disciplinary team, SPIRES with Medical Microbiology,

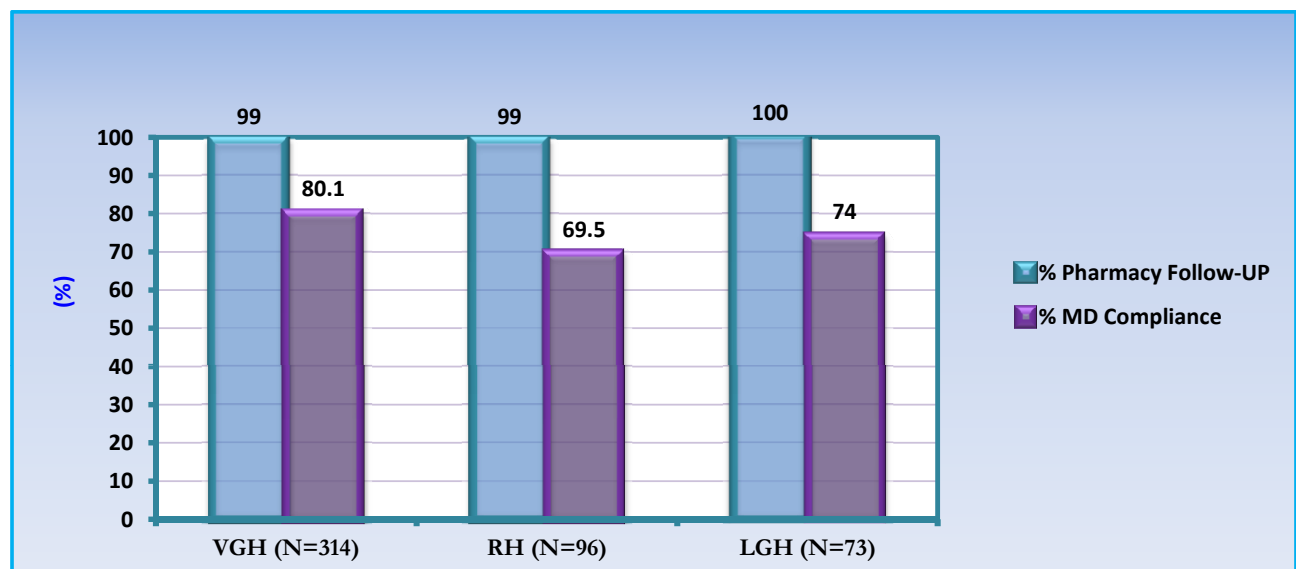
Infection Prevention and Control, Pharmacy, Infectious Diseases, and other stakeholders have updated the VCH Regional CDI Management Guidelines and Policy, which was approved by the Regional Pharmacy and Therapeutics Committee in March 2014.

According to this policy, all evaluable CDI patients are followed by clinical pharmacists at LGH, RH, and VGH who would assess patients for treatment appropriateness based on the guidelines and recommend changes to the prescribers, where appropriate, to optimize therapy. The target for Pharmacist Assessment (of evaluable CDI patients) is 100%.

## CDI Quality Assurance Evaluation

Since the launch of the CDI quality assurance initiative within the Four Cornerstones initiative in FY 2012/13, the proportion of CDI patients assessed by clinical pharmacists has increased from 80% to almost 99% at all three sites (Figure 7).

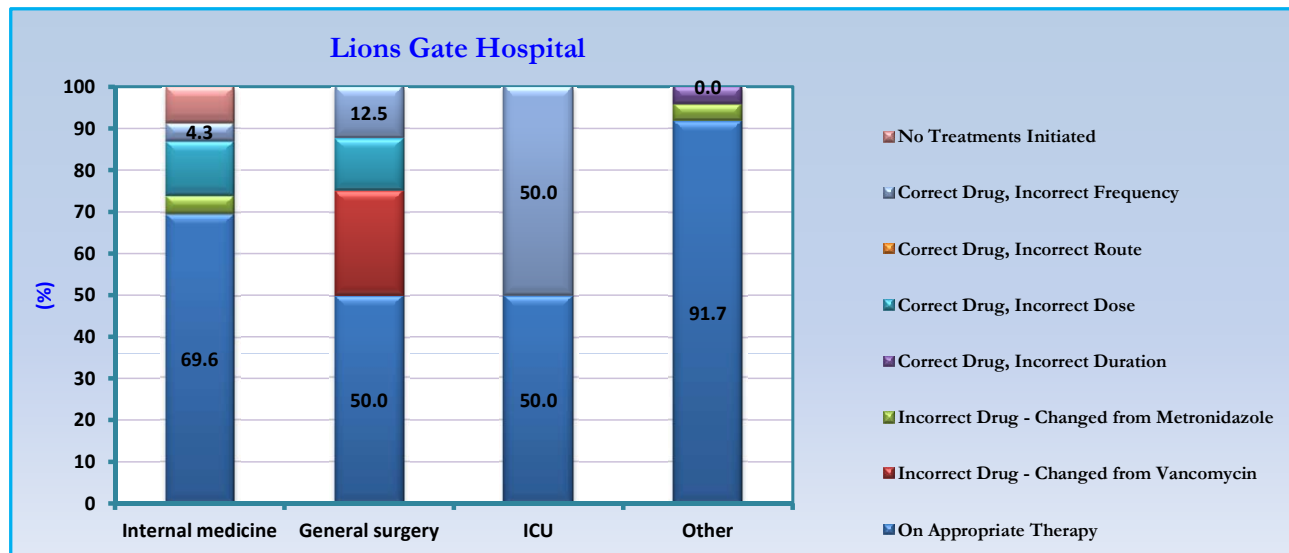
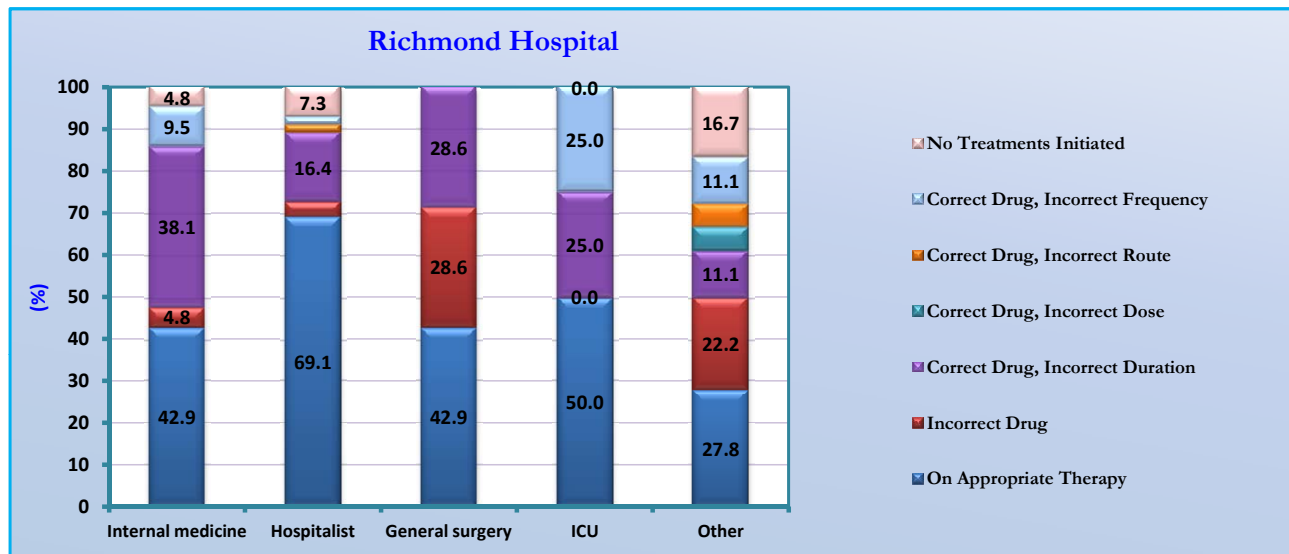
The proportion of CDI cases followed by a clinical pharmacist has been increasing since the initiative was launched; in FY 2013/14, 99% of CDI cases at LGH, RH, and VGH were followed up by clinical pharmacists to ensure optimal therapy (see figure below).

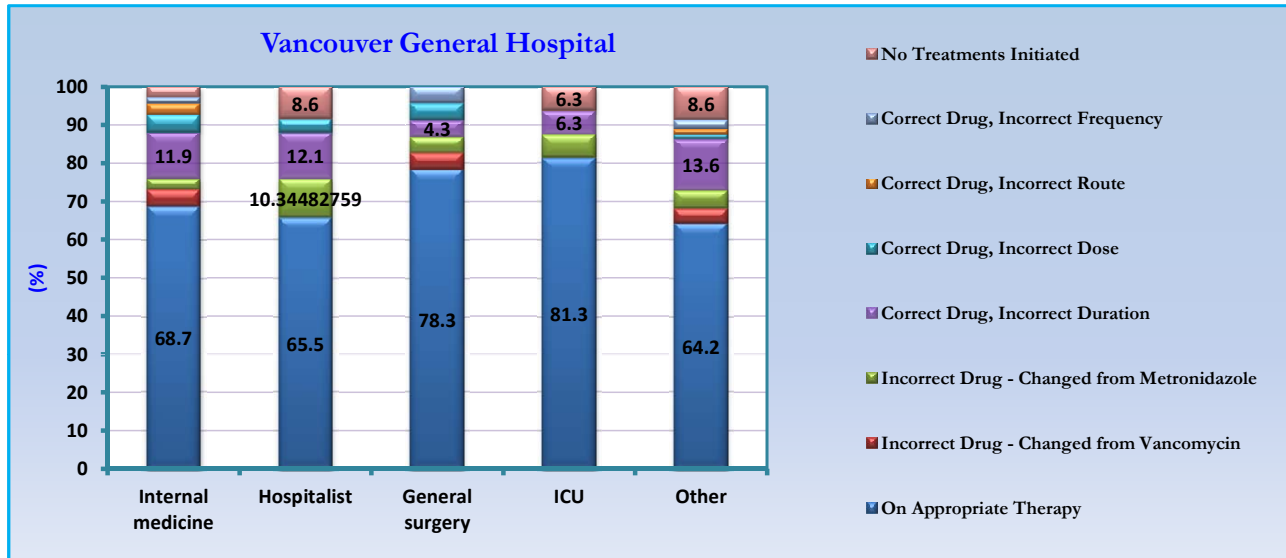


Proportion of CDI Cases Assessed by Clinical Pharmacists and Percentage of Cases with Complete MD Adherence to Clinical Guidelines, FY 2013/14



The complete adherence to CDI Management Policy by physicians was 78% at the three sites combined. At VGH, the most common deviation from complete adherence to treatment guidelines was tied with incorrect duration of empiric therapy; although 10-14 days is suggested as the optimum duration of therapy for CDI, most non-compliant cases involved shorter durations of therapy.





Percentage of MD Adherence to CDI Treatment Guidelines by Nursing Units, FY 2013/14

## Urinary Tract Infection (UTI)

In consultation with the Hospitalists, Medical Microbiology, Infectious Diseases, Geriatrics, Spine, Pharmacy and nursing groups at VGH, ASPIRES developed a Urinary Tract Infection (UTI) Management Algorithm and preprinted order which have been approved at LGH, RH, and VGH. The UTI Management Algorithm has been incorporated into the VCH Catheter-associated Urinary Tract Infection (CAUTI) initiative at VGH (led by Quality & Patient Safety and Professional Practice) to educate nurses on urinary catheter management and urine culture sampling. The CAUTI initiative has been expanded to LGH and will roll out at RH in 2014.

In February 2014, ASPIRES and Professional Practice jointly presented on “Management of Urinary Tract Infections through a Collaborative Approach with Antimicrobial Stewardship and Clinical Improvement Teams” at the Quality Forum 2014, BC Patient Safety & Quality Council, Vancouver.

At RH, the UTI Management Algorithm has been incorporated into Quality Action forms that are completed by clinical pharmacists when assessing patients. The algorithm serves as a guide to ensure that UTI diagnosis and treatments are optimized.

## **Community-Acquired Pneumonia (CAP)**

In a joint effort with the Emergency Department (ED), Infectious Diseases, Respiriology, Pharmacy and Medical Microbiology, SPIRES has developed Community-Acquired Pneumonia (CAP) Management Guidelines and pre-printed physician orders, which are being used in the ED to standardize CAP therapy at VGH, LGH, and RH. The CAP guidelines have been adopted by LGH, RH, and VGH, and have been integrated into the CAP pre-printed orders that will be used hospital-wide.

## **Surgical Prophylaxis Guidelines**

ASPIRES has collaborated with Providence Health Care (PHC) to develop a joint VCH-PHC regional Surgical Prophylaxis Guideline that standardizes antibiotic use based on best practices across the two health authorities. This guideline is being used as a resource in the development of pre-printed orders at LGH, RH, and VGH. The final document is currently being reviewed by the regional Pharmacy and Therapeutics Committee for approval.

## **Ventilator-Associated Pneumonia (VAP)**

ASPIRES and Critical Care Medicine have created a Ventilator-Associated Pneumonia (VAP) Diagnostic and Management Guideline, which will be used to standardize the diagnosis of VAP, optimize empiric antibiotics, and stream-line prolonged therapy. The VAP management tool has been adopted as a pre-printed order and will be used in the intensive care unit beginning in August of 2014. The utility of the VAP tool will be evaluated in a quality assurance project to determine its efficacy and safety.

## **Anti-infective Comparison and Common Infections Treatment Cards**

ASPIRES, Medical Microbiology, and Pharmacy have updated the Anti-infective Comparison Card, which provides a summary of the dosing regimens for anti-infectives on the VGH drug formulary and an antibiogram of common pathogens. This pocket reference is available to all prescribers and is also on the ASPIRES website. The Common Infections Treatment card has also been revised to include treatment guidelines for CDI, CAP, hospital-associated pneumonia, aspiration pneumonia, intra-

abdominal infections, meningitis, skin and soft tissue infections, and UTI. The Anti-infective Comparison and Common Infections Treatment Cards can be found on ASPIRES website: <http://vch-connect/programmes/qps/ASPIRES/clinicalresources/tools/Pages/default.aspx>

### 3. Education

ASPIRES engages in teaching health care providers the appropriate management of infectious diseases through educational sessions. So far, the ASPIRES education sessions have covered topics including appropriate treatments for gram positive and gram negative pathogens, antibiotic spectrums of coverage, optimal anti-infective dosing, bioequivalencies of IV and PO anti-infectives, correct sampling of urinary cultures, interpretation of culture results, and treatment of common infections.

#### **Upcoming Projects and Expansion Plans**

##### *Prospective Audit and Feedback*

In June 2014, prospective Audit and Feedback will officially commence at RH. The VGH ASPIRES clinical team will be providing on site consultations at LGH and work closely with the Departments of Medicine and Surgery to effectively promote Audit and Feedback services hospital-wide at LGH.

##### *Audit and Feedback Quality Improvement Project: Case Follow-Up and Semi-Structured Interviews*

Currently, ASPIRES is developing a quality improvement project with the aim to improve the Audit and Feedback process and to increase the acceptance rates of ASPIRES' recommendations.

Each Audit and Feedback recommendation made at VGH will be reviewed by an Infectious Diseases fellow at 48 hours and five days post-intervention to assess the acceptance rates of these recommendations. Furthermore, physicians and pharmacists involved in direct patient care will be surveyed through semi-structured interviews that will address (1) the reasons for non-acceptance of the recommendations and

(2) suggestions for further enhancement of the programme. The team is currently developing the methodology and data collection process; the project is scheduled to begin in June of 2014.

### *Reserved Antimicrobial Drugs (RAD) and Antifungal Pre-Printed Orders*

Quality and Patient Safety, SPIRES and Pharmacy have produced Reserved Antimicrobial Drugs (RAD) and Reserved Antifungal pre-printed orders that have been approved by the Vancouver Acute Pharmacy and Therapeutics and the Medical Advisory Committees, as an initiative to support responsible prescribing of broad-spectrum antibiotics and antifungals. Prescribers are required to complete these forms and specify the indication and rationale for ordering these agents, in compliance with provincially mandated restrictions. The intent is to make prescribers aware of the restricted indications and consider narrower spectrum agents prior to using these broader and more costly options. SPIRES and Pharmacy are currently planning the policy and procedures around the use of the RAD and Antifungal pre-printed orders.

#### **Evaluation Plan:**

SPIRES plans to evaluate the effectiveness of and compliance to the RAD PPOs by tracking the following measures at three months post-launch:

Process measures: Percentage of prescriptions of RAD antibiotics and antifungals that were ordered on a PPO;

Outcomes measures: Utilization of RAD antibiotics and antifungals pre- and post-PPO launch.

### *Best Clinical Practice Guidelines and Tools*

In addition to providing continued support for the current initiatives in promoting best treatment practices for CDI, CAP, VAP and UTI, SPIRES' upcoming projects include:

- **Febrile neutropenia:** SPIRES is collaborating with the Leukemia/Bone Marrow Transplant team to update the inpatient and outpatient febrile neutropenia pre-printed physician orders.

- **Sepsis treatment pathways:** ASPIRES is currently working with ED physicians and intensivists to update the empiric treatment pathways for sepsis.
- **VAP:** The utility of the VAP Management Guidelines and PPO will be evaluated in a quality assurance project to determine its efficacy and safety.
- **Skin and soft tissue infections management guidelines:** ASPIRES plans to create a best practice guideline to optimize the management of cellulitis and diabetic foot infections.
- **Beta-lactam cross-sensitivity guidelines:** As a collaborative project, Pharmacy, ASPIRES, and Immunology are working on a beta-lactam cross-sensitivity guidance document to assist clinicians in prescribing beta-lactam agents in patients with penicillin allergies.

## *Research and Evaluation*

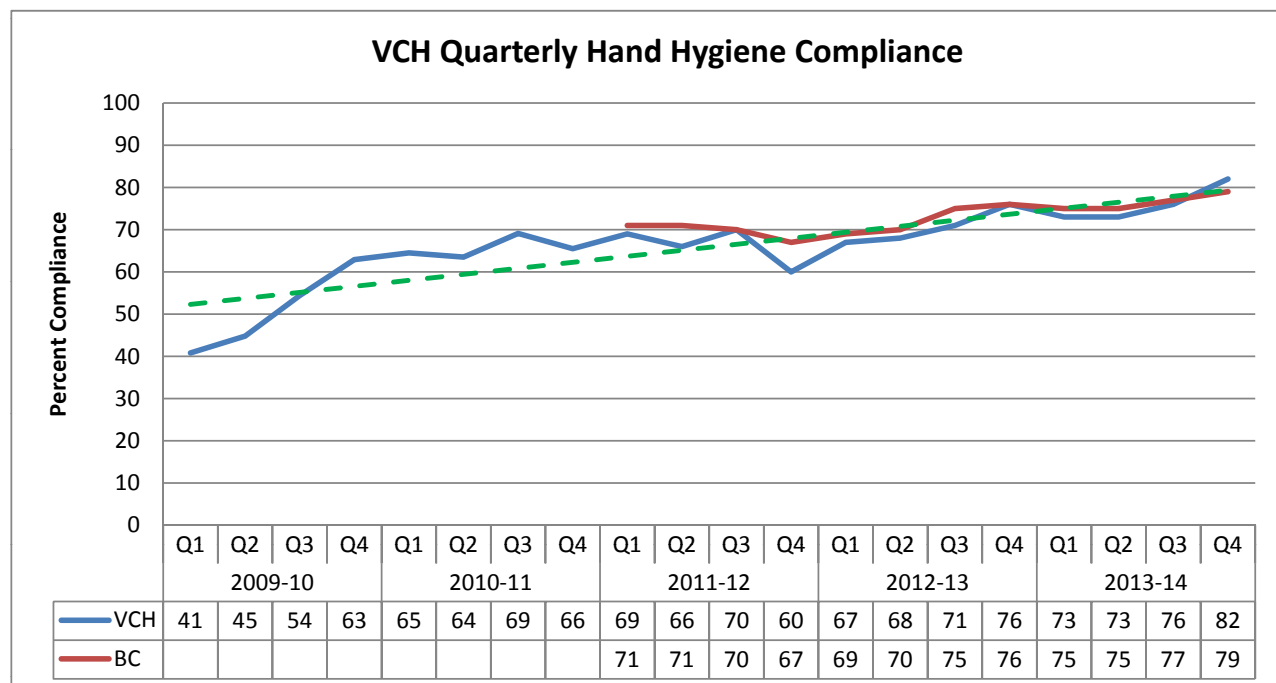
- **Audit and Feedback evaluation:** ASPIRES is planning to evaluate the impact of the Audit and Feedback programmes on targeted antibiotics using Time-Series analysis to determine the statistical significance of the reductions in antibiotic utilization on impacted wards.
- **CDI quality assurance:** ASPIRES is involved in a study with Pharmacy, Medical Microbiology, and Infectious Diseases to determine the significant risk factors for recurrent nosocomially-acquired CDI.
- **Leukemia/Bone Marrow research:** ASPIRES and Leukemia/Bone Marrow Transplant are collaborators in a University Health Network study assessing the impact of antimicrobial stewardship in hospitalized Bone Marrow Transplant patients.



## Hand Hygiene Compliance

### What is *hand hygiene*?

Hand hygiene includes washing your hands with soap and water and cleaning your hands with an alcohol based hand rub. In August 2009, VCH implemented a hand hygiene policy that requires all healthcare providers including physicians, contracted employees and students to perform hand hygiene before and after touching any patient and/or touching any object that comes in contact with the patient (i.e. the patient environment).



### What is the purpose of this indicator and why is it important?

The purpose of this indicator is to measure healthcare worker compliance with regional hand cleaning policies. Hand hygiene is universally accepted as the single most important method of infection prevention and control.

## **What is being measured?**

Hand hygiene compliance is measured using the Canadian Patient Safety Institute (CPSI) audit tool on the *4 Moments for Hand Hygiene*. The audit tool measures the percent of observed correct hand cleaning among healthcare workers. Hand hygiene audits are conducted monthly in VCH hospitals. The percent compliance is calculated by taking the total number of hand cleaning observations divided by the total number of opportunities for hand cleaning, multiplied by 100. In 2013/14 a total of 29,636 hand hygiene opportunities were observed by auditors.

## **Methodology: How is the data collected?**

Hand hygiene compliance is measured using the Canadian Patient Safety Institute audit tool. Each hospital ward/unit is audited at least three times a month for 15 minutes and a minimum of 48 observations. The data is collected by observers trained in performing hand hygiene audits. Inter-rater reliability (which measures whether auditors agree in their assessment) is assessed periodically to ensure that auditing is performed consistently.

## **How did we do compared to our 2013/14 Target?**

Our 2013/14 target was 100% in non-emergency situations. Our overall annual percentage compliance this fiscal year improved to 76% from 71% in 2012/13. The percent compliance increased from 73% in fiscal quarters one and two to 76% in quarter three and 82% in quarter four.

## **What is the 2014/15 Annual Target the organization seeks to reach?**

The annual target is 100% in non-emergency situations – a goal that will significantly reduce the transmission of infection.

## **Benchmark & Comparators: How does the rate compare to other areas?**

Provincial reporting on hand hygiene compliance started in 2011/12. Each Health Authority (HA) submits their hand hygiene data to the Provincial Infection Control Network (PICNet) on a quarterly basis for provincial reporting.

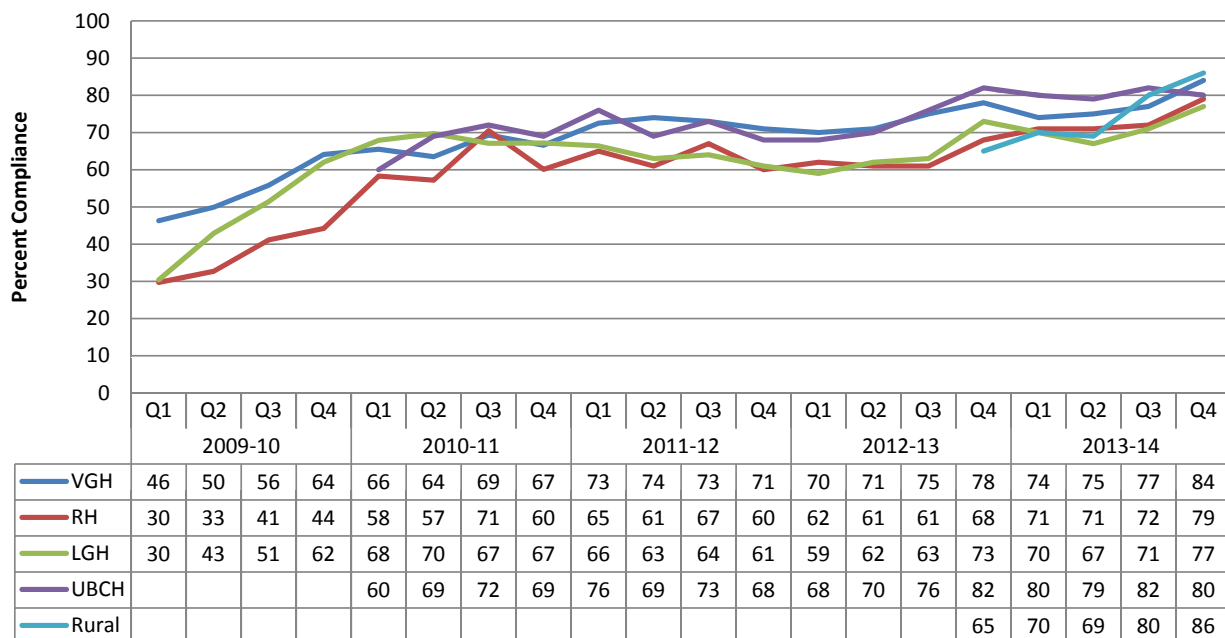
*The provincial percentage overall compliance for 2013/14 was 77% which is only one percent higher than for VCH (76%). In addition to looking at overall hand hygiene compliance, auditors differentiate hand cleaning opportunities on the basis of whether it occurred before or after patient contact. The percentage compliance before patient contact improved to 58% in 2013/14 compared to 50% in 2012/13 and also improved for after patient contact from 80% to 84% in 2013/14. The provincial percent compliance for before and after patient contact was 72% and 81%, respectively. We continue to work to improve hand hygiene compliance particularly before patient contact.*

Due to variation in auditing and methodology between health authorities and between facilities (i.e. auditing may be performed by auditors who work in the same unit or small facility as the healthcare providers they are observing (self-auditing) or may be performed by external auditors such as infection control practitioners (ICPs) or members of the healthcare quality department of the hospital), PICNet does not recommend making direct comparisons between health authorities and facilities.

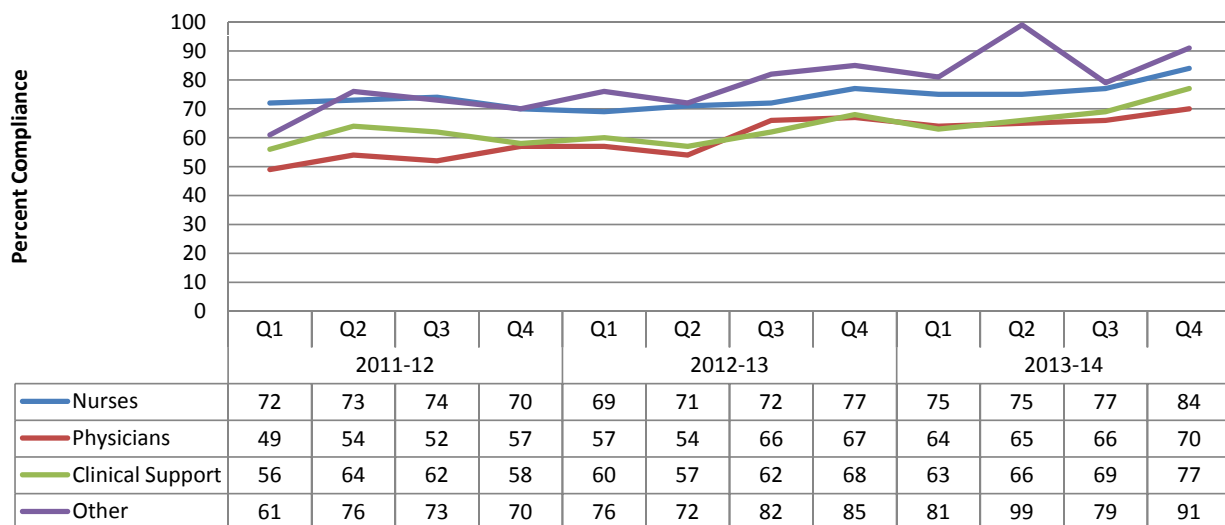
## **Trend: What does the data show?**

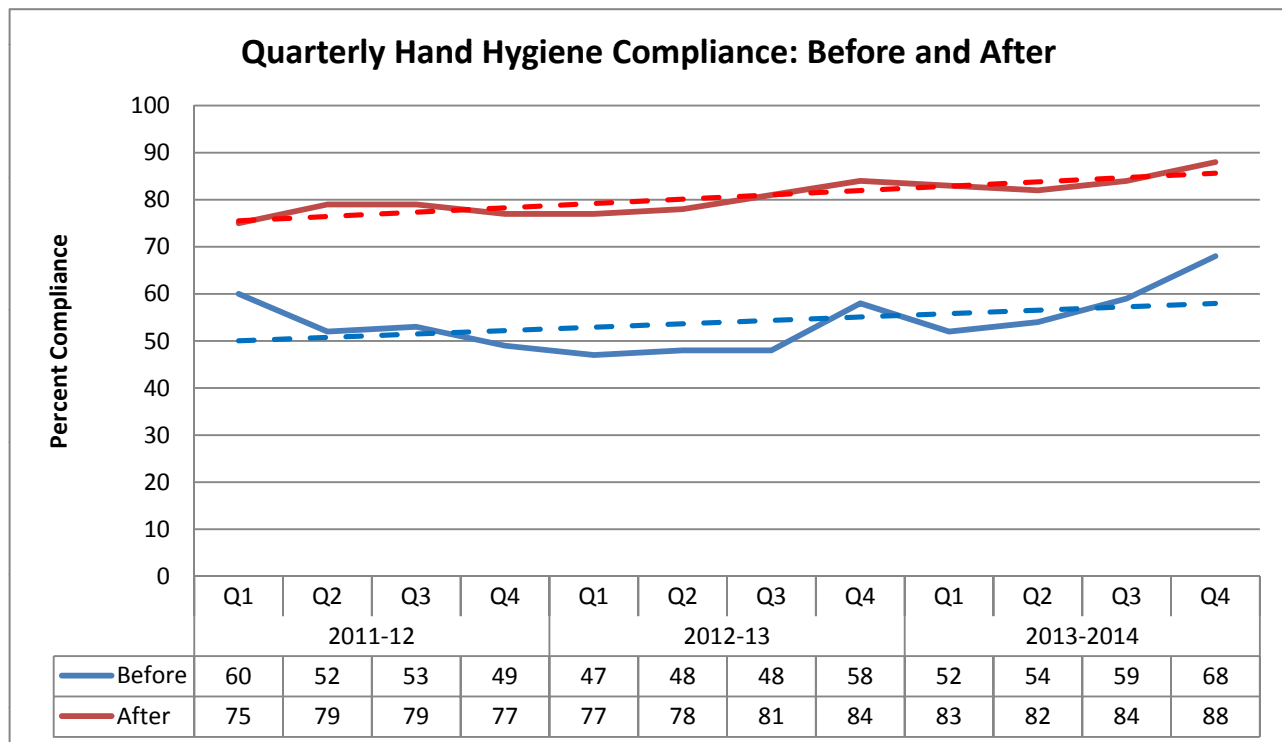
The results show that over the last fiscal year our quarterly hand hygiene compliance rates have been trending upwards after two years of stability. The increase in compliance is seen in all occupational groups. Despite this our VCH compliance is slightly below the provincial percentage compliance largely due to a lower compliance before patient care. The graph below shows the quarterly rates for our acute care hospitals.

Hand Hygiene: Percent Compliance by Site(s)



Quarterly Hand Hygiene Compliance by Occupational Group





What actions have been taken over the last year?

- HH audit team has phased out the BlackBerry app and now use a similar tool on a tablet.
- VCH is an active member of the Provincial Hand Hygiene Working Group.
- Hand hygiene education continues regionally at all new staff orientation sessions.
- Hand hygiene self-audits are ongoing at acute and LTC facilities.
- Auditors are providing in the moment feedback to staff as much as possible, both positive and negative.
- All staff must complete the on-line hand hygiene education module every 2 years.
- The “Caught Clean Handed” campaign has been fully rolled out with screensavers changing weekly and posters on units with “hand shaped” post-it notes to recognize staff practicing excellent hand hygiene.
- VCH participated in the Provincial Clean Shots Contest to mark World Hand Hygiene Day. Staff were encouraged to submit “selfies”, “friendies”, or “photo

bombs” promoting hand hygiene. VCH won for the Health Authority with the highest number of submissions and also for the “Most Creative” photo.

- The Clean Shots contest was submitted to the Canadian Patient Safety Institute’s “Stop Clean Your Hands Day: What’s Your Hand In it?” competition for anyone in Canada to showcase a project to improve hand hygiene. And WE WON!
- New hand hygiene stations were placed at high traffic entrances at VGH, compliance (tracked by “Clean Hands Count” TV in lobby) is up significantly for staff/visitors cleaning their hands upon entering and leaving the facility.



## What actions will be taken over the next fiscal year?

- Ongoing recruitment of Hand hygiene champions are trained in the audit process to give “instant feedback” to staff and use missed opportunities as a “teaching moment.”
- Lower performing units will be specifically targeted by hand hygiene auditors for in the feedback.
- Additional Hand Hygiene Stations to be rolled out at other sites.





## Clostridium difficile *Infections (CDI)* *Incidence Rate*

### **What is *Clostridium difficile* infection?**

*Clostridium difficile* is a bacterium that can cause infections of the gastrointestinal system. *Clostridium difficile* infection (CDI) happens when antibiotics kill the good bacteria in the gut and allow *Clostridium difficile* to grow and produce toxins that can damage the bowel. CDI can cause infections ranging from diarrhea (common) to rare but serious complications that require prolonged treatment with antibiotics and sometimes surgery. In extreme cases CDI can result in death. The elderly and immunocompromised are particularly at risk for these complications.

### **What is the purpose of this indicator and why is it important?**

This indicator measures the incidence of CDI infection among hospitalized patients. Measuring the incidence of CDI and the locations in facilities where it occurs, allows infection prevention and control (IPAC) to more effectively identify potential sources of the organism and target interventions.

### **What is being measured?**

This indicator measures the rate of new episodes of CDI identified in patients admitted to hospital and considered to be due to a stay within a VCH hospital.

The CDI rate is calculated by taking the total number of new cases of CDI acquired by patients as a result of their stay in a VCH hospital, divided by the number of inpatient days and multiplied by 10,000.

### **Methodology: How is the data collected?**

Data are collected by Infection Control Practitioners using provincial and national standardized definitions and surveillance protocols. (The provincial case definition is provided in Appendix 1.)

Importantly, VCH uses a molecular method (called PCR) to detect cases of CDI; this has increased our turnaround time for laboratory test results and our ability to detect *C.difficile* by approximately 35%.

## How did we do compared to our 2013/14 Annual Target?

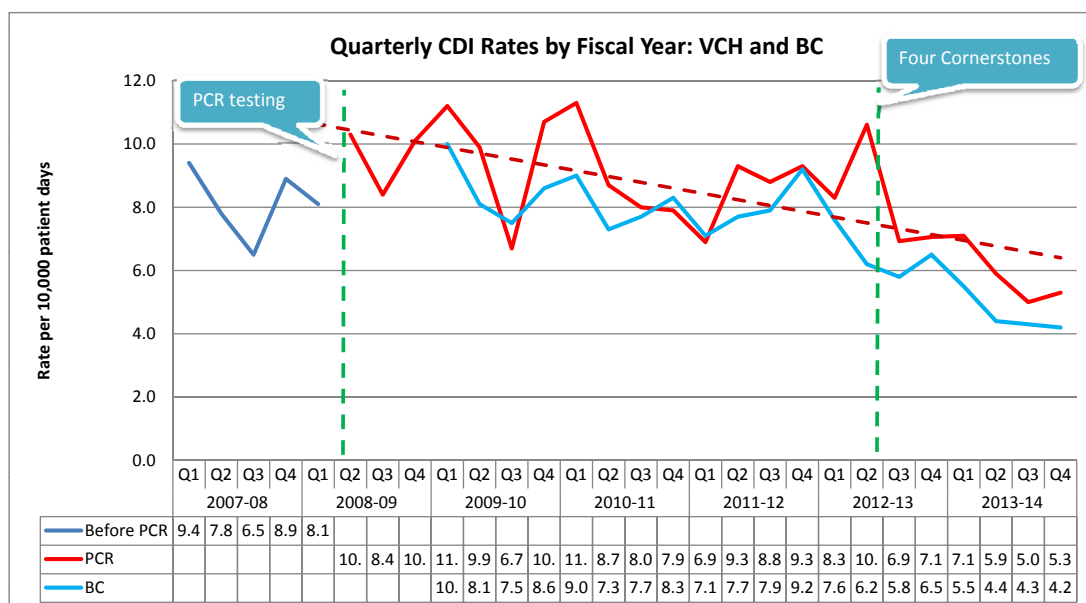
Our annual target for 2013/14 was to decrease our nosocomial CDI incidence rate by 10% for an annual regional rate of 6.5 cases per 10,000 inpatient days. *Our annual regional rate for 2013/14 was 5.8 (95% CI = 5.1 – 6.5) which is well below our target.*

## What is the 2014/15 Annual Target the organization seeks to reach?

Our goal for 2014/15 is to reduce our 2013/14 rate by 10% for an annual regional target of 5.22 per 10,000 inpatient days.

## Benchmark & Comparators: How does the rate compare to other areas?

The graph below shows the quarterly nosocomial rates for VCH and BC. Provincial surveillance for CDI began in British Columbia in 2008 though provincial rates for nosocomial infections are available only as of the 2009/10 fiscal year. The provincial CDI reports are available publicly on the following website: <http://www.picnetbc.ca/>.

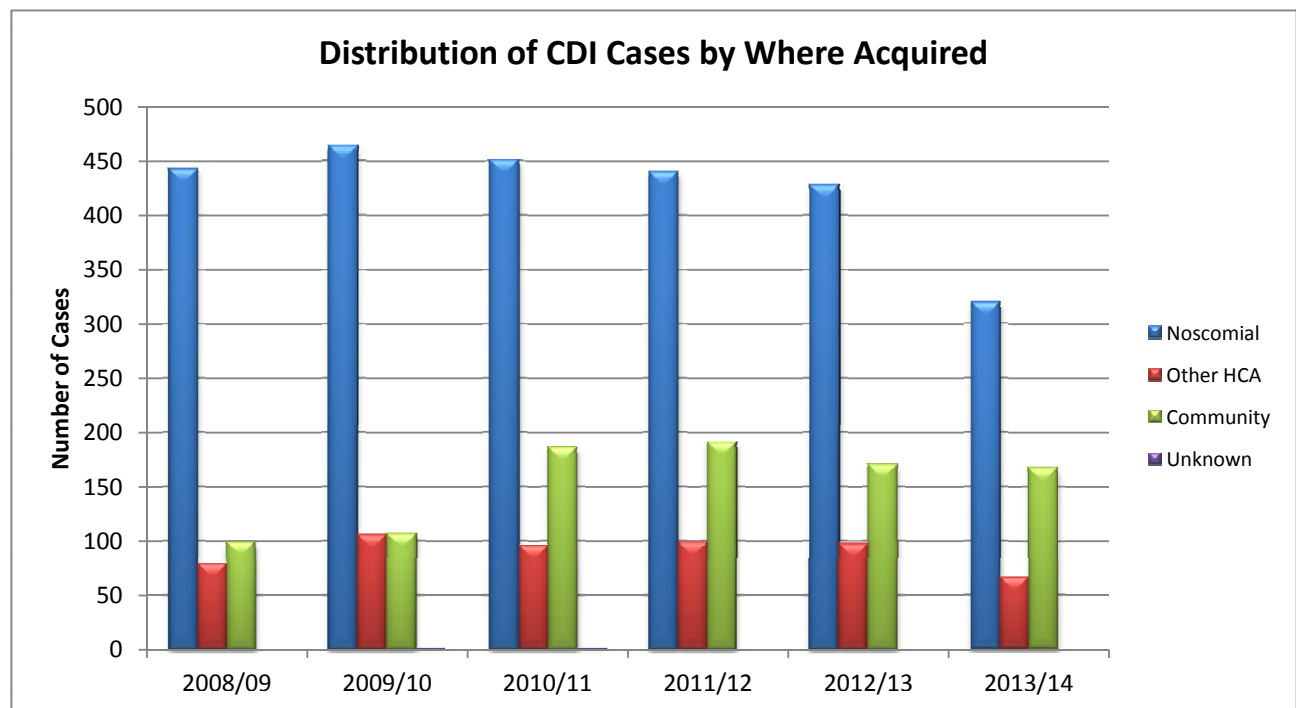


The dotted trendline shows that the rates for VCH continue to decline despite variation by fiscal quarter. The rates for VCH are higher than the provincial rates though this may be partly accounted for by the more sensitive molecular laboratory testing methods (i.e., PCR) used in VCH. This more sensitive laboratory testing has increased case detection by approximately 35%. This increase in case detection is consistent with what is reported in the research literature.

National surveillance data are available through the Canadian Nosocomial Infection Surveillance Program (CNISP) for 2013. The national incidence rate for nosocomial infections was 5.36 per 10,000 patient days.

## Trend: What does the data show?

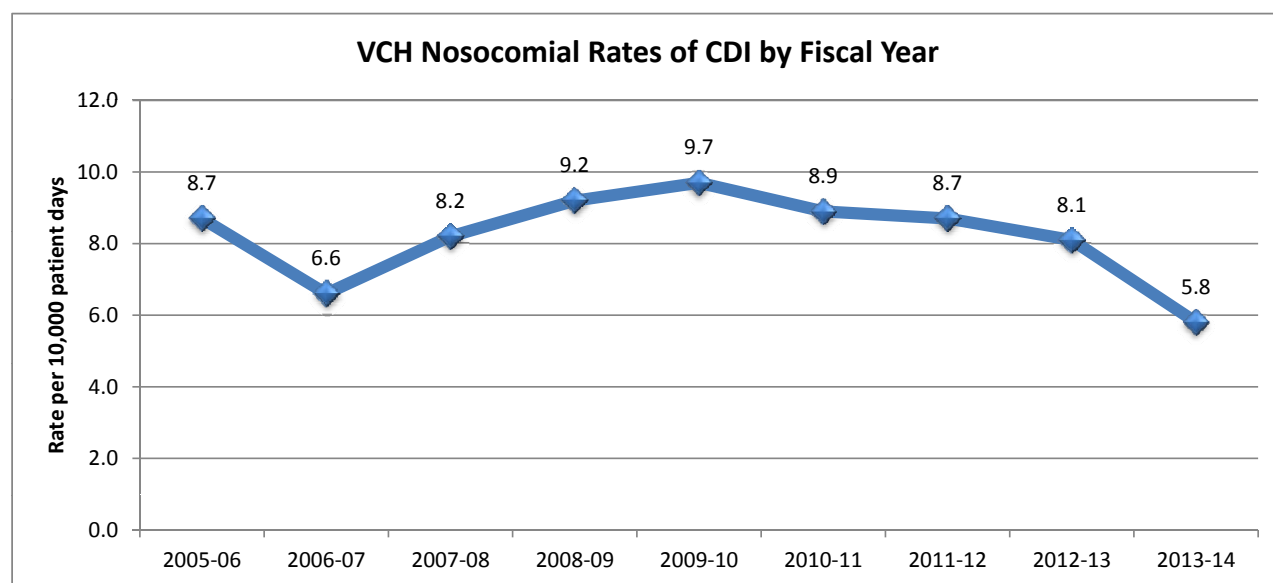
Over the 2013/14 fiscal year there was a total of 555 cases of CDI (including relapses (N = 84)) identified among admitted patients within VCH acute care facilities. Of these, 319 (57.5%) were acquired within a VCH acute care facility, 66 (11.9%) were healthcare associated from another health care facility, 167 (30.1%) were acquired in the community and three (0.5%) were of unknown origin.



The distribution of cases by where acquired for the last six fiscal years is displayed above. The graph shows that the number of Nosocomial cases (i.e., acquired within a VCH acute care facility) and Other HCA (i.e., other healthcare associated) have decreased substantially in 2013/14. In 2013/14 there were 319 Nosocomial cases compared to 427 in 2012/13 representing a decrease of 25.3% and for the same time period 66 Other HCA cases compared to 97 representing a 32.0% decrease.

The community acquired cases increased in 2010/11 and have remained relatively stable since then though their relative contribution to the total case count has increased due to overall declining numbers. In 2013/14 there were 167 community acquired cases compared to 170 in 2012/13 (1.8% decrease). The increase observed in 2010/11 is likely the result of a change in our surveillance definitions. In 2010/11 the provincial and national surveillance definitions for a healthcare associated case changed the time period for previous hospitalization from eight weeks to four weeks. Cases that had a hospitalization four to eight weeks prior to symptom onset previously categorized as healthcare associated are now categorized as community acquired.

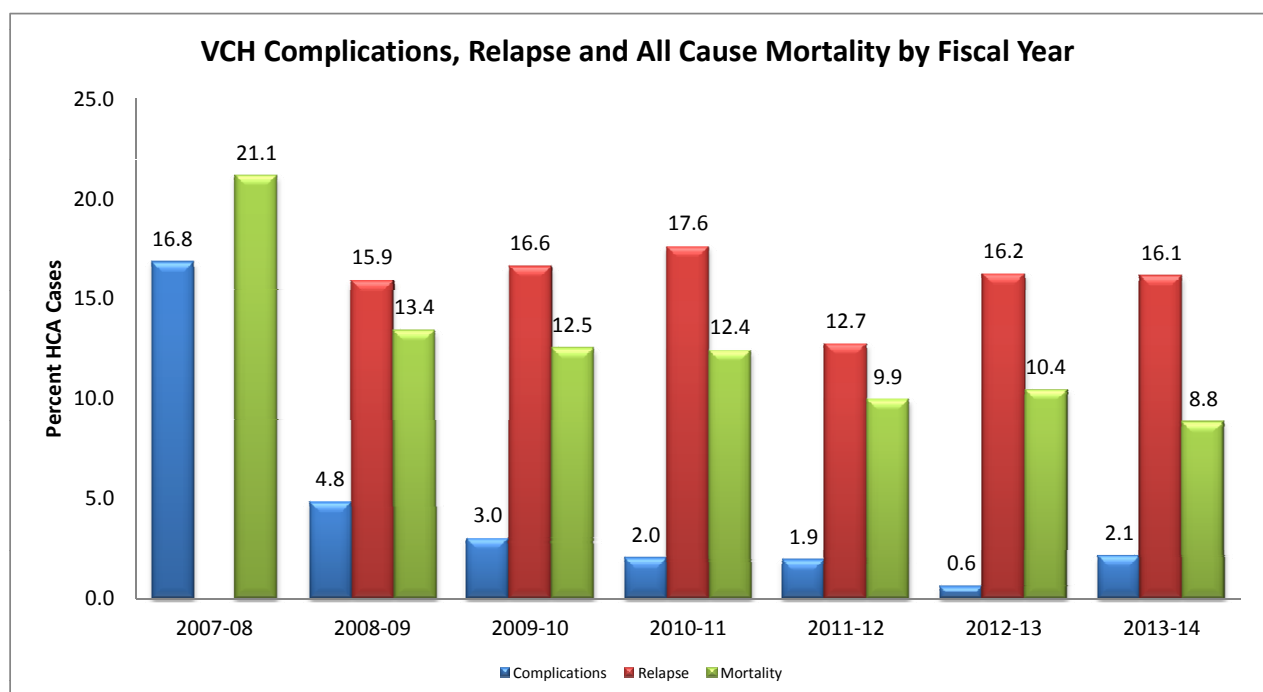
The graph below shows that the annual regional rate of nosocomial CDI within VCH acute care hospitals has decreased for the fourth consecutive year from a peak of 9.7 (95% CI = 8.8 – 10.7) in 2009/10 to 5.8 (95% CI = 5.1 – 6.5) in 2013/14. This reduction is statistically significant.



**Complications:** CDI patients are monitored for 30 days or up until discharge/transfer following diagnosis for complications (i.e., toxic megacolon, total or partial colectomy, bowel perforation, gastrointestinal bleed and secondary bacteremia).

The percentage of healthcare associated cases experiencing CDI-related complications increased in 2013/14 to 2.1% (95% CI = 1.1 – 4.0) from its lowest at 0.6% (95% CI = 0.2 – 1.7) in 2012/13. The increase is not statistically significant. Since the introduction of PCR technology in 2008/09 the percent of patient experiencing complications has declined dramatically. PCR laboratory testing has allowed cases to be detected sooner and more accurately. In addition, clinical treatment pathways and a partnership between Medical Microbiology and Pharmacy have ensured that patients receive the appropriate treatment in a more timely fashion - usually less than one day after the diagnosis is made.

**Relapses:** As with complications, CDI patients are monitored for 30 days or up until discharge/transfer following diagnosis for relapses. Relapses are defined as a recurrence of CDI-associated diarrhea within two to eight weeks from the date of CDI diagnosis. CDI-associated diarrhea less than two weeks from the previous episode is considered to be a continuation of the case and not a relapse. Some patients may experience multiple relapses.



The percentage of relapses among healthcare associated cases has remained unchanged at 16% from last fiscal year.

**All Cause Mortality:** Within VCH, 8.8% (95% CI = 6.4 – 12.1) of healthcare associated CDI cases died of any cause which is the lowest it has been since 2007/08.

## What actions have been taken over the last year?

A comprehensive infection prevention and control program (known as Four Cornerstones) with four key cornerstones: hand hygiene, standard protocols and guidelines for preventing and treating infections, antimicrobial stewardship and environmental and equipment cleaning as well as recommendation for purchase and building design was launched July 16, 2012.

The objectives of the Four Cornerstones program are to:

- Implement an environmental program to improve equipment and surface cleanliness;
- Establish a VCH Antimicrobial Stewardship Program to ensure appropriate, evidence-based antibiotic use;
- Improve patient outcome by preventing healthcare associated infection and the emergence of antimicrobial resistance;
- Implement a risk managed approach for the isolation of VRE patients.

The program has been implemented in a staged approach. Since the start of the program, CDI rates have declined at VGH with decreases in quarter four for RH. Follow up is ongoing to ensure that these decreases are sustained.

Clinical Pharmacists at VGH, RH and LGH assess treatment appropriateness for each evaluable inpatient with CDI and recommend changes to optimize treatment based on the VCH CDI Management Policy. Follow-up with physicians occur to encourage adherence to support this Policy. *The target for Pharmacy assessment is 100%.*



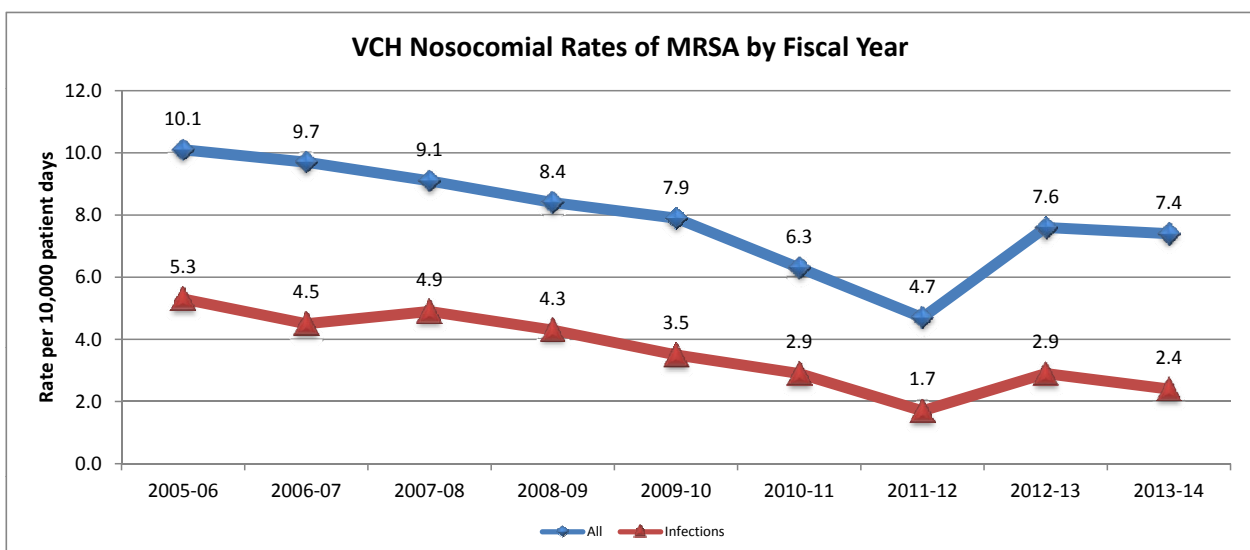
## Methicillin-resistant *Staphylococcus aureus* (MRSA) Incidence Rate

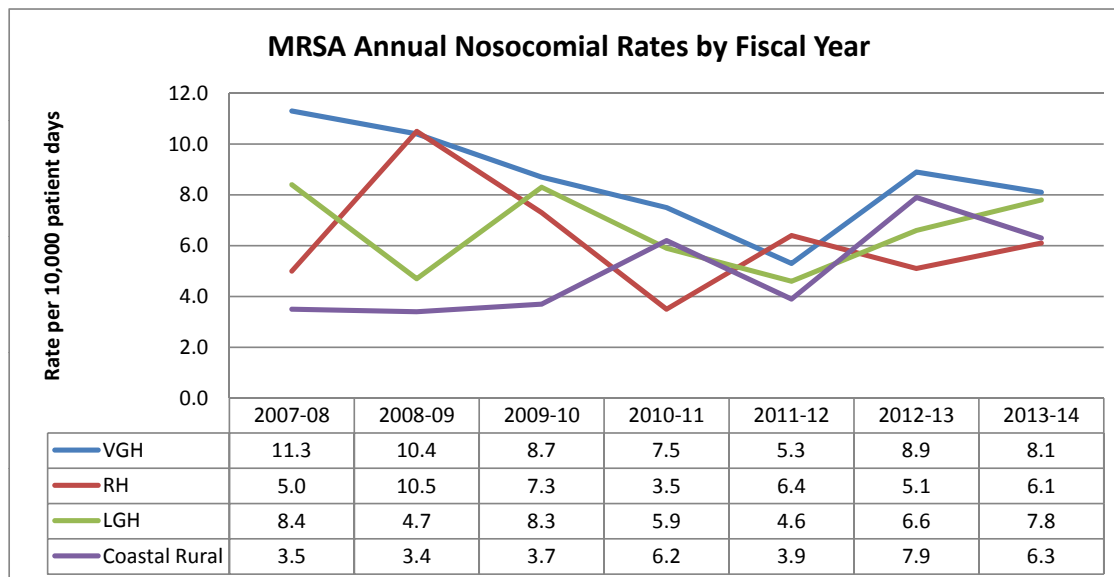
### What is MRSA?

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a strain of *Staphylococcus aureus* (*S. aureus*) bacterium that is resistant to a number of antibiotics. *S. aureus* normally lives on human skin and in the noses of about 25% of the general population (a process called colonization). However, *S. aureus* can cause skin infections such as boils and abscesses and more serious diseases such as bloodstream and respiratory infections.

Infections that occur in people who have been in hospital or who have had other healthcare encounters (e.g. dialysis treatment, residents of long term care facilities) are referred to as healthcare-associated MRSA (HA-MRSA). Risk factors for HA-MRSA infections include invasive procedures such as surgery, insertion of indwelling catheters or intravenous tubing. When the organism is acquired during a hospital stay it is called “nosocomial” MRSA to distinguish it from other healthcare encounters.

Another type of MRSA infection is associated with acquiring the organism in the community (CA-MRSA). Factors that have been associated with the spread of CA-MRSA include close skin-to-skin contact, openings in the skins such as abrasions, sharing of contaminated items, crowded living conditions and poor personal hygiene.





Note: Coastal Rural includes Squamish General, St. Mary's, Powell River General, Bella Coola General and RW Large Memorial hospitals.

## What is the purpose of this indicator and why is it important?

This indicator measures the incidence (new cases) of MRSA among hospitalized patients. Measuring the incidence of MRSA and the locations in facilities where it occurs allows infection prevention and control (IPAC) to more effectively identify potential sources of the organism and target interventions.

## What is being measured?

This indicator measures the rate of newly identified cases of MRSA among patients admitted to hospital and considered to be due to a stay within a VCH hospital.

The MRSA rate is calculated by taking the total number of newly identified MRSA cases acquired by patients as a result of their stay in a VCH hospital, divided by the number of inpatient days and multiplied by 10,000.

## Methodology: How was the data collected?

The data are collected by Infection Control Practitioners using provincial and national standardized definitions and surveillance protocols. Provincial surveillance for MRSA began in 2011/12. (The provincial case definitions are provided in Appendix 1.)

## How did we do compared to our 2013/14 Annual Target?

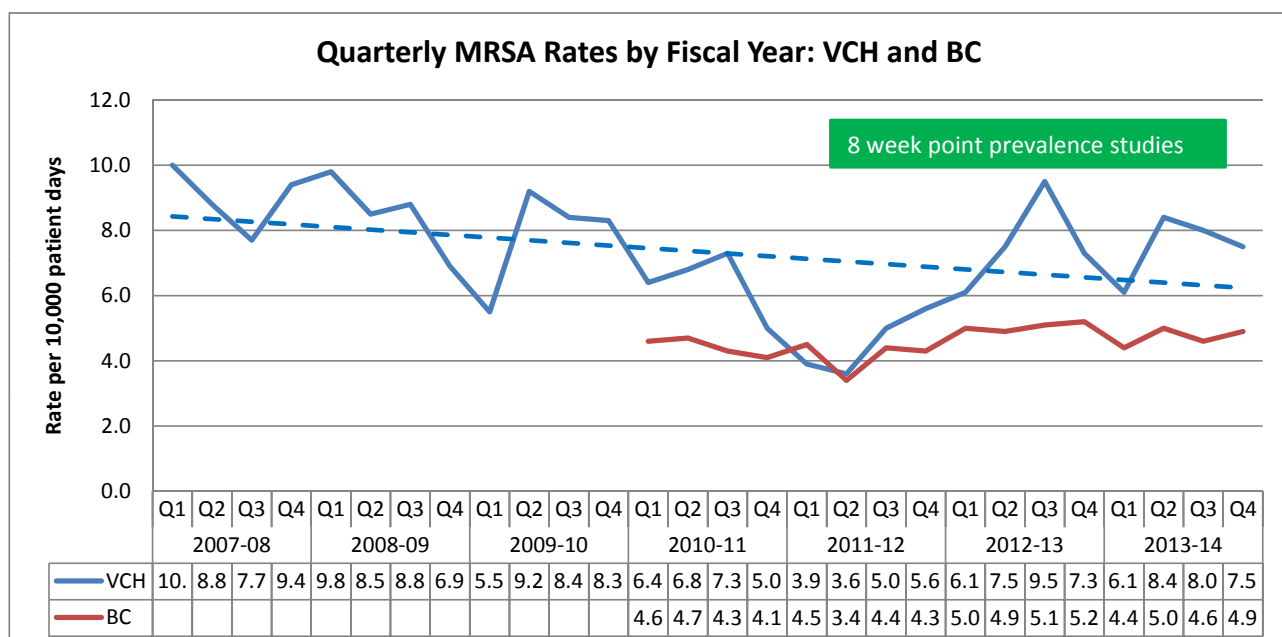
Our annual target for 2013/14 was to decrease our nosocomial MRSA incidence rate by 10% for an annual regional rate of 6.8 cases per 10,000 inpatient days. We achieved a rate of 7.4 (95% CI = 6.7 – 8.3) which is only slightly lower than our rate last year (7.6; 95% CI = 6.8 – 8.4) and higher than our performance target.

## What is the 2014/15 Annual Target the organization seeks to reach?

Our goal for 2014/15 is to reduce our 2013/14 rate by 12% for an annual regional target of 6.5 per 10,000 inpatient days.

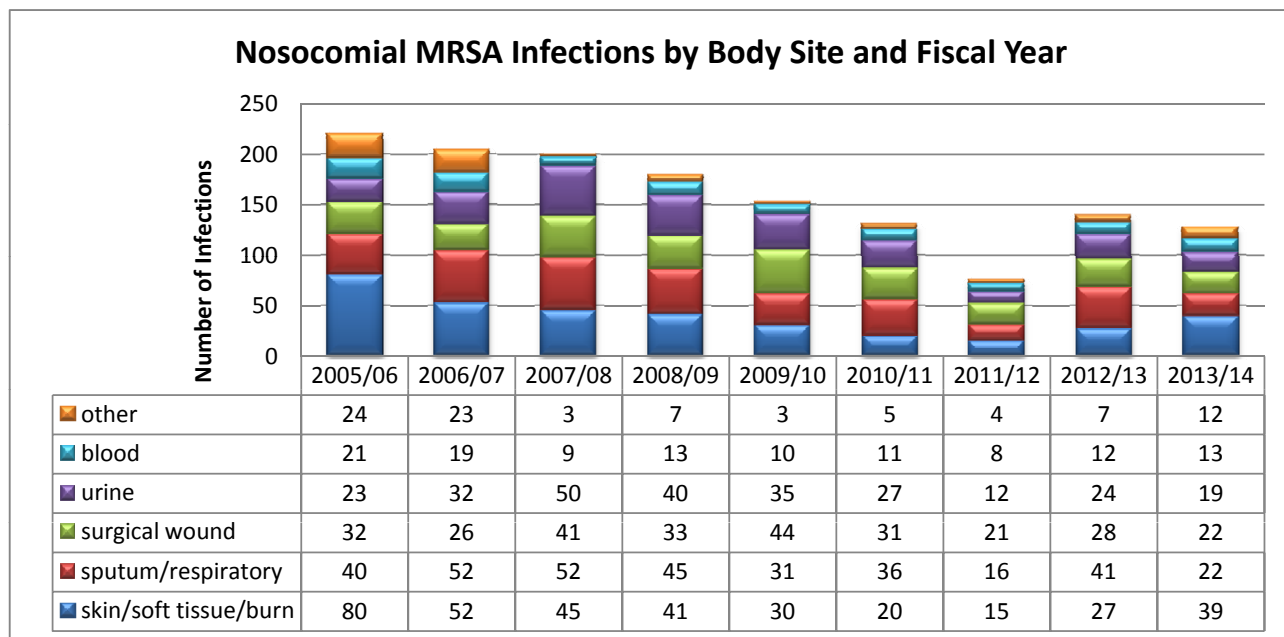
## Benchmark & Comparators: How does the rate compare to other areas?

The graph below shows the quarterly nosocomial rates for VCH and BC. Provincial surveillance for MRSA began in British Columbia in 2011/12 with Health Authorities submitting historical data for 2010/11. The provincial MRSA reports are available publicly on the following website: <http://www.picnetbc.ca/>.



The dotted trendline shows that the MRSA rates at VCH have been trending downwards, however, since Q3 of 2011/12 the rates have been trending upward.

In Q3 VGH conducted an 8-week MRSA point prevalence investigation on Acute Medicine with the aim to identify a source for the higher incidence of MRSA on this unit. Similar point prevalence investigations were conducted on units at both RH and LGH in Q4. The reduction in rates for Q3 and Q4 is noteworthy given these investigations as they involved screening all patients admitted to the unit and then weekly thereafter. The increased screening increased our case detection and consequently the number of cases.



The graph above shows the distribution of nosocomially acquired MRSA infections (not colonizations) by body site and fiscal year. Compared to last fiscal year we have observed a 45% decrease in sputum/respiratory infections and a 21% reduction in urine associated infections. Unfortunately, we saw a 44% increase in infections of the skin and soft tissue.

## Trend: What does the data show?

Over the 2013/14 fiscal year there was a total of 742 cases of MRSA identified among admitted patients within VCH acute care facilities. Of these 596 (80.3%) were healthcare associated, 118 (15.9%) were acquired in the community, and 28 (3.8%) were of unknown origin. Of the 596 healthcare associated cases, 354 (59.4%) were acquired within a VCH acute care facility, 203 (34.1%) were healthcare associated from another

health care facility, and 39 (6.5%) were associated with another healthcare exposure (e.g. outpatient treatment).

The regional annual nosocomial rate decreased slightly from last fiscal year (7.6 per 10,000 patient days; 95% CI = 6.8 – 8.4) to 7.4 (95% CI = 6.7 – 8.3). Similarly, the annual nosocomial infection rate decreased from 2.9 per 10,000 patient days (95% CI = 2.4 – 3.4) to 2.4 (95% CI = 2.0 – 2.9).

## **What actions have been taken over the last year?**

The iCOUGH program has been implemented in key clinical areas to address the transmission of MRSA in respiratory secretions. This appears to have been effective as we have seen a 45% decrease in sputum/respiratory associated MRSA infections. The CAUTI program has been very effective at reducing urinary tract infections at VGH and may have contributed to the 21% decrease we have observed in urine associated MRSA infections. The CAUTI program is being rolled out to our other sites so we hope to see further reductions.

In 2013/14 MRSA point prevalence investigations targeting units with a higher number of nosocomial MRSA were conducted at VGH, RH and LGH. The aim of the 8-week investigation was to identify potential sources for MRSA acquisition. The investigations were conducted at VGH in Quarter 3, and in Quarter 4 at RH and LGH. The point prevalence investigation involved screening all cases admitted to the unit and weekly thereafter to identify nosocomial cases to the unit that were further investigated in terms of epidemiological acquisition.

In addition to the enhanced screening of patients, hand hygiene and environmental/equipment cleanliness was assessed to identify potential sources of transmission. The methodology for this assessment included the following:

1. *Hand Hygiene Compliance Audits:* Review the existing regional HH audits and compare to hand culture plates.
2. *Anonymous Hand Culture Plates:* IPAC staff sampled HCWs hands using selective plates for gram positive organisms. Plates were numbered to ensure staff anonymity. Beta hemolytic colonies were gram stained and subcultured to MRSA

Chromagar. Positive colonies from the Chromagar had a gram stain, catalase and coagulase test performed to confirm the presence of MRSA.

3. *ATP (Adenosine triphosphate) luminescent swabs:* The level of protein present on both surfaces and equipment was assessed using ATP monitoring. A “pass” for ATP would be considered conservatively at less than 100 RLUs (Relative Light Units), but many clinicians advocate a reading of less than 200 RLUs which we have used here.
4. *MRSA surface and equipment cultures:* The methodology for hand culture plates was used to evaluate the presence of MRSA on surfaces and mobile equipment. Adjacent surfaces from the same items evaluated with ATP technology were sampled using RODAC plates. Colony counts were performed at 24 hours and a sweep subculture to Chromagar performed to look for MRSA. Several non-isolation rooms were also assessed with ATP swabs and culture swabs. These included the overbed table, the bed control buttons and the bathroom grab bar.

The results of the investigations were compiled into facility-specific reports and shared with unit staff and hospital leadership. IPAC recommended that unit-specific action plans based on the results of the individual investigations be developed in partnership with unit leadership, staff and other key stakeholders.

The reduction in MRSA rates for Q3 and Q4 is noteworthy given these investigations as they involved screening all patients admitted to the unit and then weekly thereafter. The increased screening increased our case detection and consequently the number of cases.

VCH has been working to increase the timeliness of collection of MRSA screening samples to reduce the risk of potential transmission of undetected MRSA to other patients and to improve the accuracy of our surveillance case classification. Patients that have a screening sample taken greater than 48 hours after admission to hospital which turns out to be positive for MRSA are classified as healthcare associated to the facility as per our surveillance definitions. It is possible that these patients may have entered the facility with the organism.



## MRSA and CDI in Residential Care

VCH has 16 directly-funded facilities that provide residential care to clients across the region. In total there are 1760 directly-funded residential care beds.

Facility	Location	Number Beds
Banfield Pavilion	Vancouver	156
Bella Coola General Hospital	Bella Coola	5
Cedarview Lodge	North Shore	89
Dogwood Lodge	Vancouver	113
Evergreen Extended Care	Powell River	74
Evergreen House	North Shore	288
George Pearson Centre	Vancouver	120
Hilltop House	Squamish	79
Kiwannis Care Centre	North Shore	192
Minoru Residence	Richmond	250
Olive Devaud Residence	Powell River	81
Purdy Pavilion	Vancouver	199
RW Large Memorial Hospital	Bella Bella	6
Shornecliffe	Sechelt	59
Totem Lodge	Sechelt	49

There is no standardized provincial or national surveillance for MRSA or CDI for residential care. The screening of residents is not routinely performed and cases are therefore identified through passive surveillance.

**MRSA:** There were a total of 58 cases of MRSA identified over 2013/14 compared to 49 in 2012/13, 33 in 2011/12 and 40 in 2010/11. Of the cases identified this fiscal year, 32 represented infections.

**CDI:** There were 27 episodes of CDI identified over the 2013/14 fiscal year compared to 34 in 2013/13, 19 in 2011/12 and 24 in 2010/11. Of the CDI episodes this year, 21 were new infections and 6 were relapses.

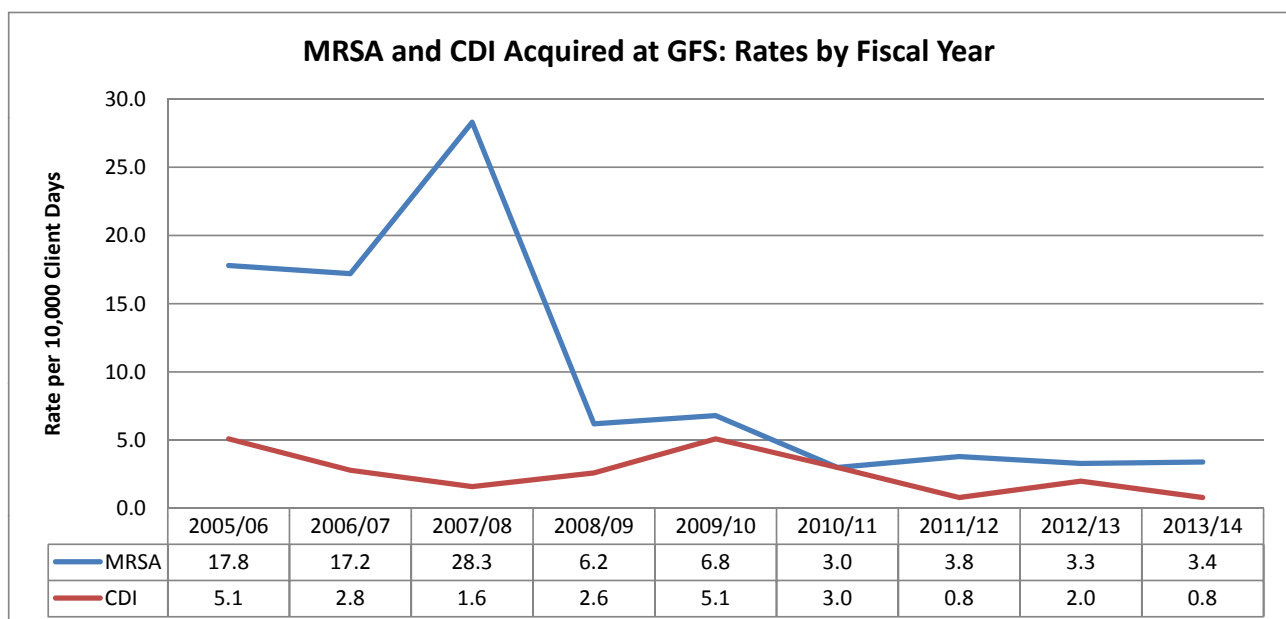
## GF Strong Rehabilitation Centre

GF Strong is British Columbia's largest rehabilitation Centre with 68 beds serving residents of BC and the Yukon. GF Strong provides inpatient, outpatient, outreach and clinical support services to clients in four unique programs: Acquired Brain Injury, Spinal Cord Injury, Arthritis and Neuromusculoskeletal, and Adolescent and Young Adult (with congenital disabilities).

There is no standardized provincial or national surveillance for MRSA and CDI at GF Strong. Screening of clients at the time of admission was initiated in October 2011. Clients are now screened for MRSA if they have been in any healthcare facility for 48 hours or longer in the last six months. As part of the VCH VRE risk managed approach, screening for VRE stopped in April 2013. Clients are also screened for resistant gram negative bacilli (GNB) if they stayed in a healthcare facility outside of Canada.

For 2013/14, there were eight cases of MRSA (4 infections & 4 colonizations) and two CDI cases (new infections) acquired at GF Strong compared to eight MRSA and five CDI in 2012/13. There have been no cases of GNB.

The graph below shows the rates for newly identified MRSA and CDI (including relapses) by fiscal year. Rates are reported as the number of cases per 10,000 client days.

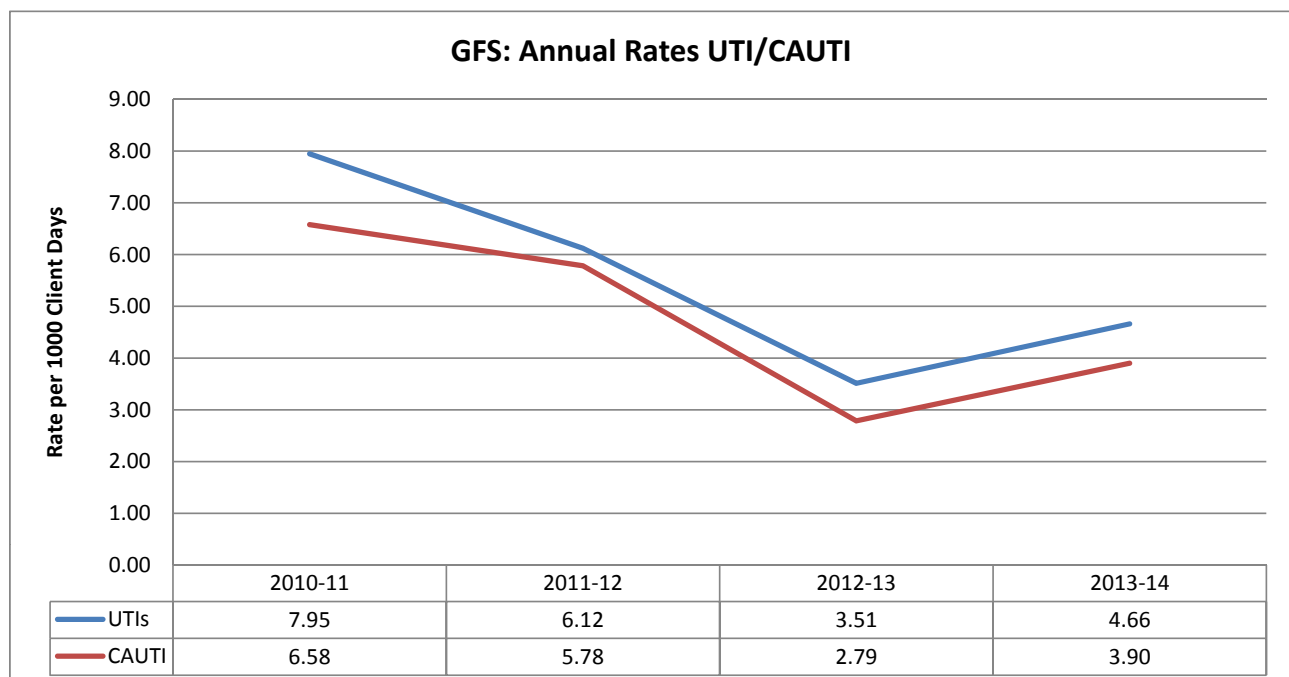


Surveillance for catheter-associated urinary tract infections (CAUTI) was initiated in April 2010 with a point prevalence study and then ongoing monthly surveillance. The graph below shows the crude rates per 1000 client days. There is currently no mechanism in place to capture catheter days to be able to provide a proper device-associated rate.

In 2013/14 a total of 111 episodes of urinary tract infection (UTI) were identified among clients of GF Strong compared to 87 the year prior representing a 27.6% increase in cases. The annual incidence rates was 4.66 per 1,000 client days (95% CI = 3.83 – 5.61) in 2013/14 compared to 3.51 in 2012/13 (95% CI = 2.81 – 4.33). The increase in rates is not statistically significant.

The majority of UTIs were catheter-associated (CAUTIs). In 2013/14 there were 93 CAUTIs compared to 69 in 2011/12 representing a 34.8% increase in cases. The annual incidence rate was 3.90 per 1,000 client days (95% CI = 3.15 – 4.78) in 2013/14 compared to 2.79 (95% CI = 2.17 – 3.53) in 2012/13. This increase in rates is not statistically significant.

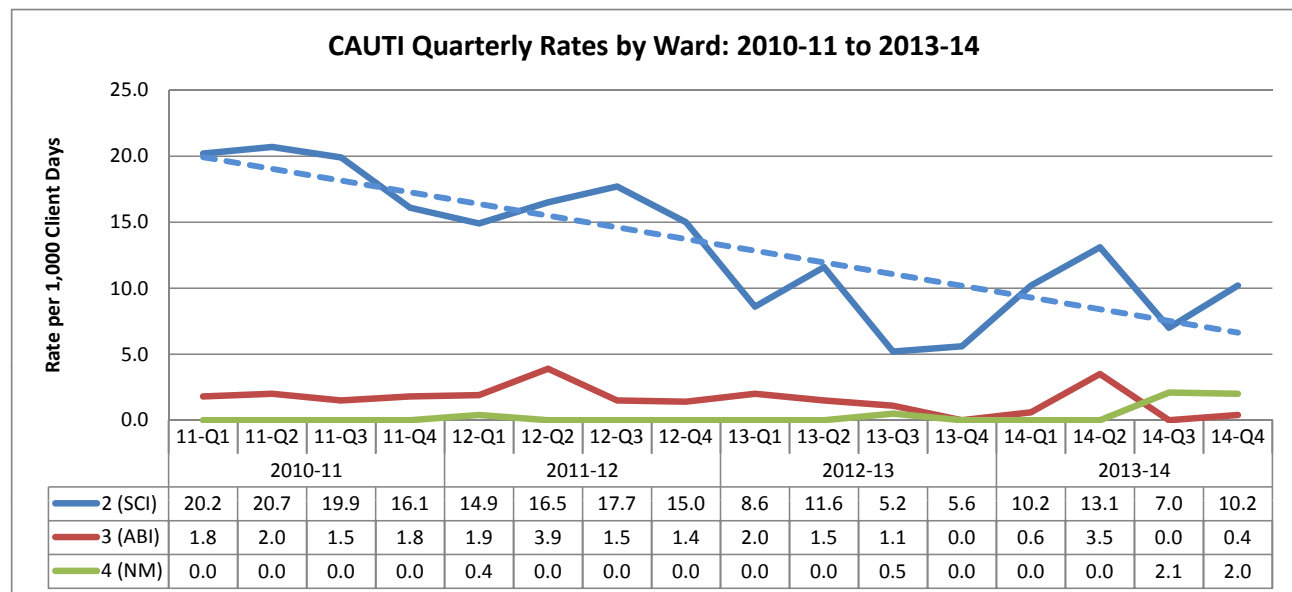
Overall UTI and CAUTI annual facility rates per 1,000 client days are shown below.



Rates are calculated for the specific client populations. Clients on the spinal cord injury ward (SCI) are much more likely to be catheterized for extended periods of time and consequently have a considerably higher risk of CAUTI than other clients who receive care at GF Strong.

In 2013/14 there were 78 UTIs acquired on the SCI ward compared to 65 in 2012/13 representing an increase of 20.0% in cases. Of the UTIs, 76 (97.4%) were CAUTI in 2013/14 compared to 59 (90.8%) in 2012/13 representing an increase of 22.4%.

The quarterly rates by ward are presented below. The results show that there is an overall downward trend in the rates for the SCI ward. The rates for the other two wards (Acute Brain Injury/Adolescent and Young Adult (ABI) and Neuromuscular/Arthritis (NM)) have remained consistently low.

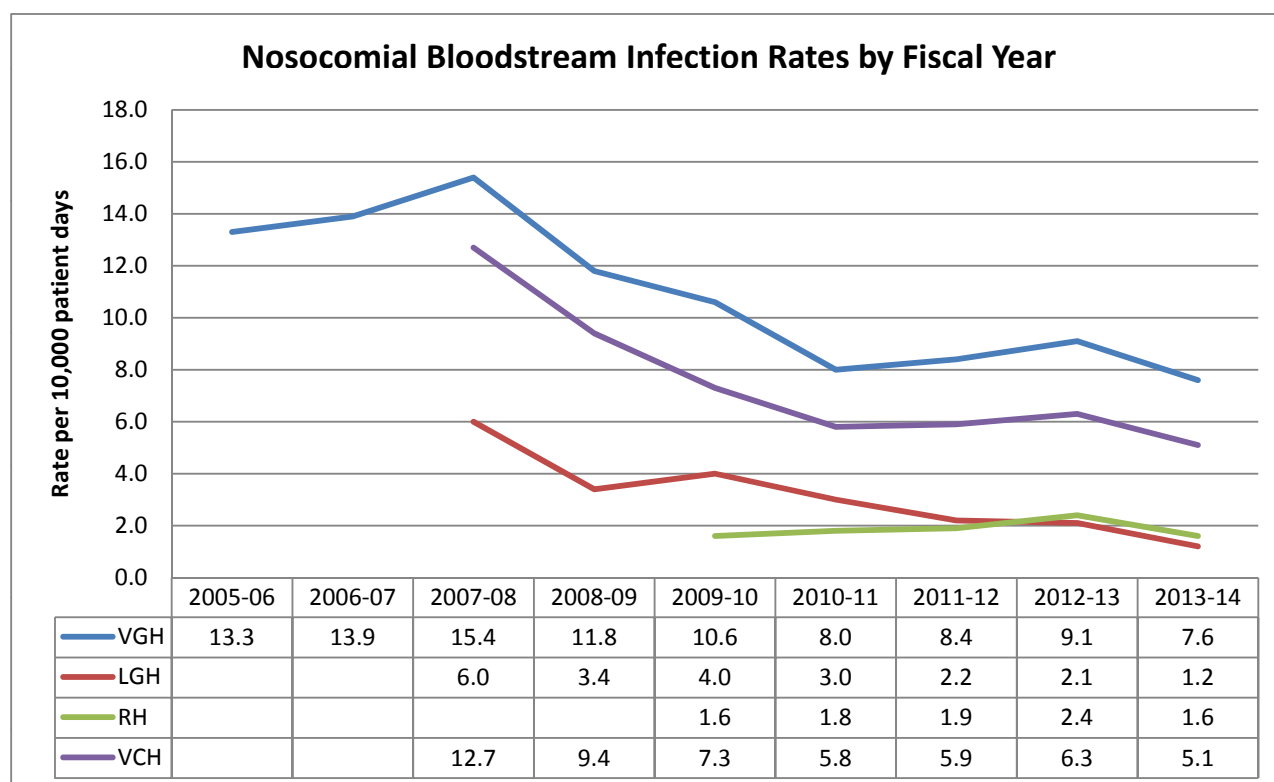


Regional initiatives to prevent CAUTI continue at GF Strong.

## Bloodstream Infection (BSI) Incidence Rate

### What is a *bloodstream infection*?

Bloodstream infections (BSI) occur when bacteria enter the bloodstream. Bacteria may enter the bloodstream through a wound, surgery, or other invasive procedures, or as a consequence of a pre-existing disease. Bloodstream infections can range from having transient infections that resolve on their own to infections that are life-threatening.

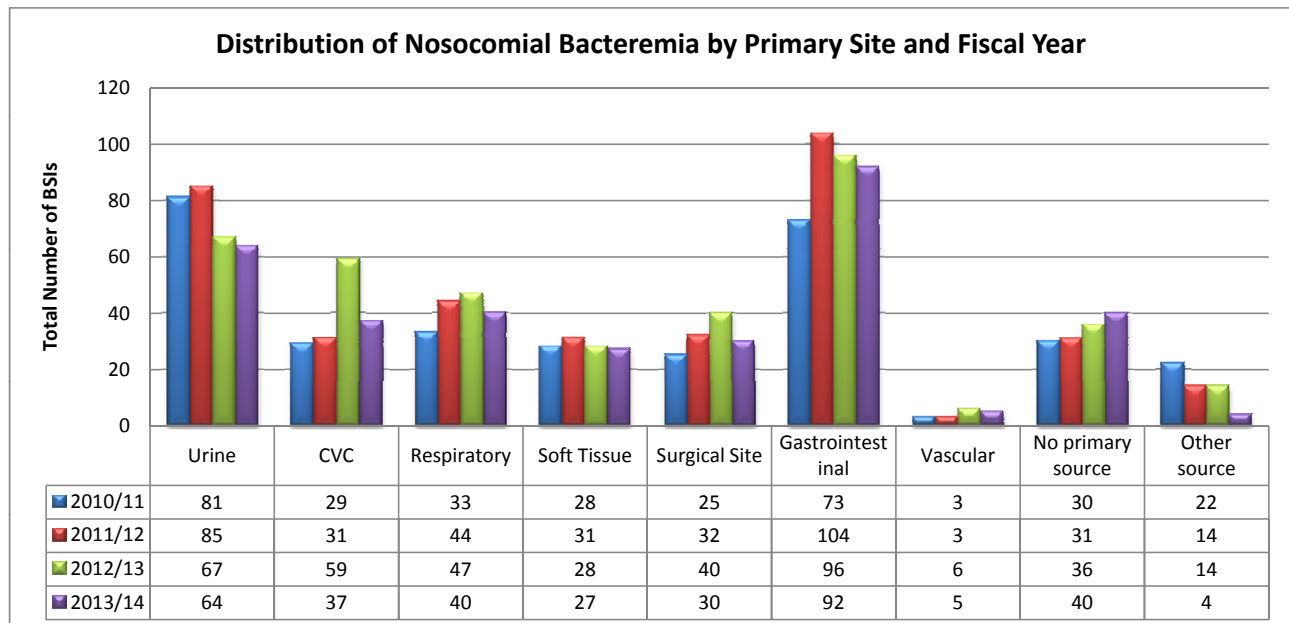


Note: RH started bacteremia surveillance in January 2010. The 2009/10 rate for RH is therefore based on three months of data (January – March, 2010).

### What is the purpose of this indicator and why is it important?

This indicator measures the incidence of hospital acquired bloodstream infections among hospitalized patients. Measuring the incidence of BSI, the source of the infection as well as the locations in facilities where it occurs allows infection prevention

and control (IPAC) to more effectively identify potential sources of the responsible organisms and target interventions accordingly.



## What is being measured?

This indicator measures the rate of bloodstream infections (BSI) among patients admitted to hospital and considered to be due to a stay within a VCH hospital. BSI surveillance is conducted at Vancouver General (VGH), Richmond (RH) and Lions Gate (LGH) hospitals. Richmond Hospital began performing BSI surveillance in January 2010.

The annual rate of BSI per 10,000 patient days, which is the number of episodes of BSI (excluding gastrointestinal sources\*) acquired by patients as a result of their stay in hospital, divided by the number of inpatient days multiplied by 10,000.

## Methodology: How was the data collected?

The data are collected by Infection Control Practitioners using standardized definitions and surveillance protocols. VCH case definitions are provided in Appendix 1.



## **How did we do compared to our 2013/14 Annual Target?**

Our annual target for 2013/14 was to decrease our nosocomial BSI incidence rate by 10% for an annual regional rate of 5.7 cases per 10,000 inpatient days. We achieved a rate of 5.1 (95% CI = 4.5 – 5.8) which is well below our target and represents a 19% reduction compared to last fiscal year where we had a rate 6.3.

## **What is the Annual Target the organization seeks to reach?**

Our goal for 2014/15 is to reduce our 2013/14 rate by 10% for an annual regional target of 4.6 per 10,000 inpatient days.

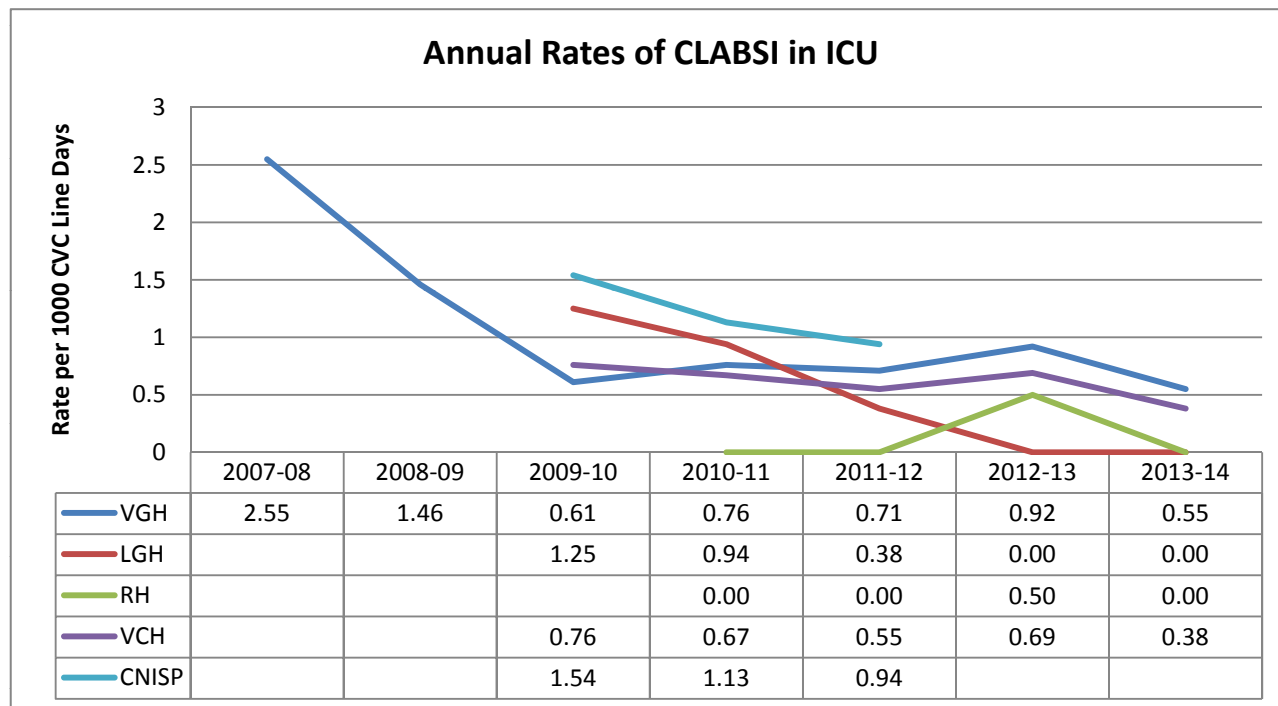
## **Benchmark & Comparators: How does the rate compare to other areas?**

There are no national benchmark data for the type of comprehensive blood stream surveillance that we perform. However, VCH participates in national (CNISP) surveillance for central line associated blood stream infections (CLABSI) among hospitalized patients in an intensive care unit (ICU).

There was a total of five CLABSI in ICU cases this fiscal year (all five acquired at VGH). The graph on the next page shows the annual rates for CLABSI in ICU for VGH, LGH, RH, and VCH (aggregate of three facilities) along with the CNISP national rates. Our rates have been consistently below the national rates and the lowest since initiation of the surveillance.

## **Trend: What does the data show?**

The focus of the bacteremia surveillance is on bacteremias acquired as a result of a healthcare encounter or hospital/healthcare facility stay. Cases acquired in the community are not included in our surveillance. For 2013/14 there were 604 healthcare-related cases of bacteremia identified in VCH of which 247 (41%) were nosocomial (excluding those from gastrointestinal sources). Bacteremias associated with gastrointestinal sources are excluded because they are often due to pre-existing disease such as inflammatory bowel disease and not the result of the patient's stay in hospital.



Note: Lions Gate and Richmond hospitals began comprehensive bacteremia surveillance in 2009/10 and 2010/11, respectively. National rates are based on the calendar year.

The regional annual rate of nosocomial BSI is lower in 2013/14 (5.1; 95% CI = 4.5 – 5.8) compared to last fiscal year (6.3; 95% CI = 5.6 – 7.1) though the difference is not statistically significant. There were no cases identified at either RH or LGH.

In 2013/14 we continued our focus on reducing the causes of urinary tract infections that lead to bacteremia. We have been successful in reducing our urosepsis rates. Please refer to the section of our report on catheter-associated UTIs (CAUTI) for the details.

## What actions have been taken over the last year?

Bacteremias are followed closely and trends monitored on the clinical units with immediate feedback to the staff as appropriate. A CLABSI program in ICU has been very effective. The focus for the next year will continue to be on causes of urinary tract infections leading to bacteremia.

## *Patients identified as having Mycobacterium tuberculosis*

### **What is *Mycobacterium tuberculosis*?**

Tuberculosis is a disease caused by the bacterium called *Mycobacterium tuberculosis* (MTB). The bacterium usually attacks the lungs. Tuberculosis is spread through the air from person to person.

### **What is the purpose of this indicator and why is it important?**

This indicator measures the number *M. tuberculosis* cases that required patient screening for potential exposure. Cases of tuberculosis that are not promptly identified can have a significant impact on the hospital resulting in the screening of many other patients. Hospitals need to ensure that they have mechanisms to promptly detect potential TB patients to avoid exposure to other patients and hospital staff.

### **What is being measured?**

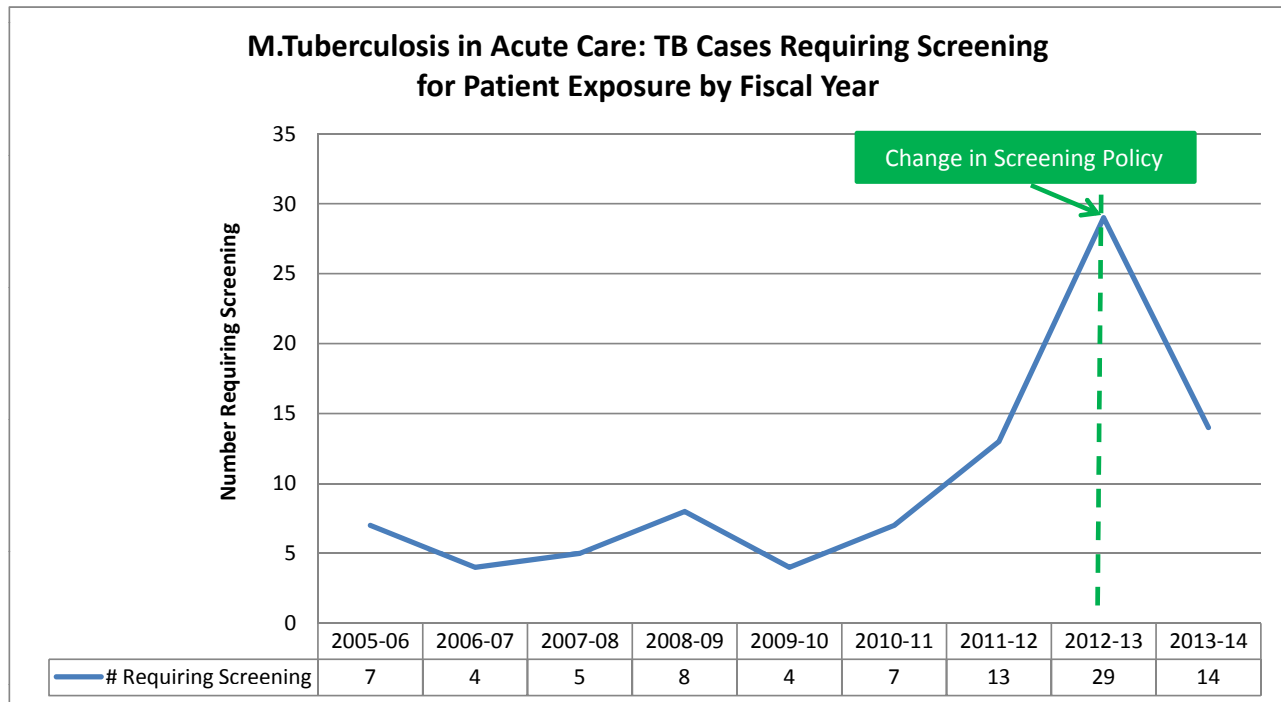
This indicator measures the number of cases of tuberculosis identified in hospital that required patient screening for exposure.

### **Methodology: How was the data collected?**

The data are collected by Infection Control Practitioners (see figure next page).

### **Trend: What does the data show?**

The data show that the number of cases of tuberculosis that required the screening of other patients for exposure declined from 29 cases in 2012/13 to 14 cases in 2013/14 representing a decrease of 51.7%. The decrease is especially notable given the previously observed increases following the change in the screening policy where we now screen patients exposed to TB cases that are smear negative but turn out to be culture positive. In the past fiscal year a total of 40 TB cases were identified within the hospital setting of which only 14 required the screening of other patients.



It is important to note however, that some cases of tuberculosis are identified in patients who have no apparent symptoms and therefore would not have met the criteria for enhanced precautions with the respiratory algorithm.

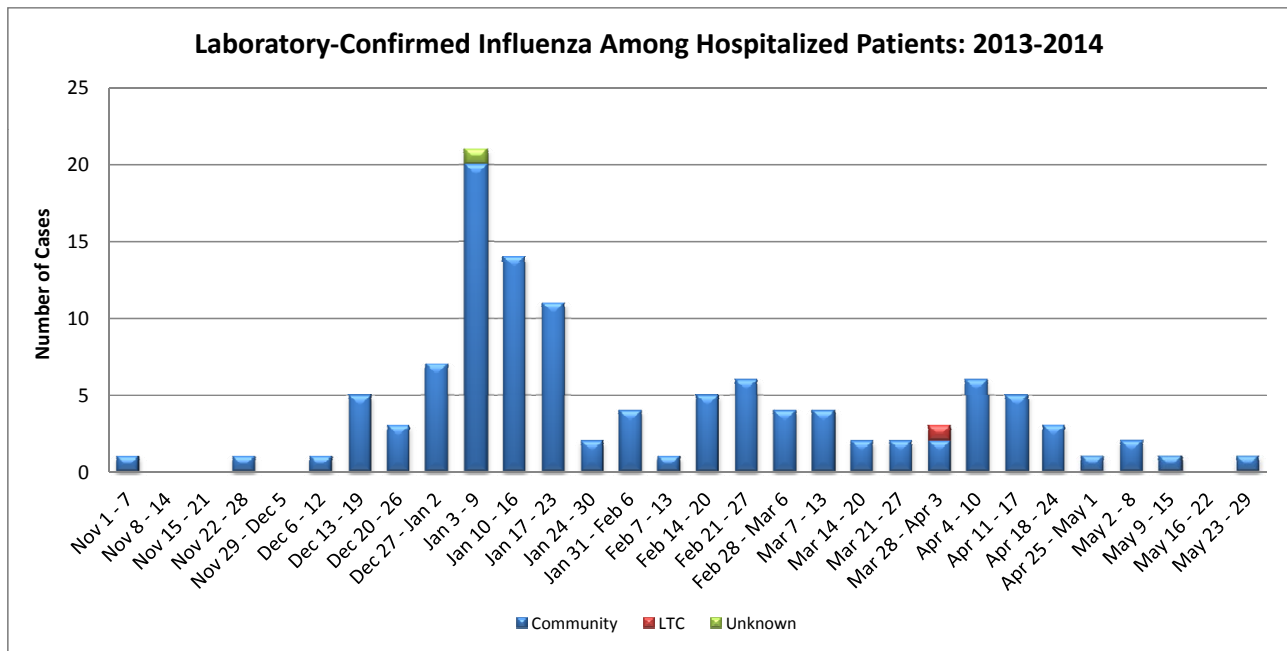
## What actions have been taken over the last year?

Infection Prevention and Control continues to reinforce the use of the respiratory algorithm to detect potential cases of communicable respiratory infections (e.g. TB, influenza) among patients visiting the Emergency Department. All patients admitted to hospital who fit the criteria for a possible communicable airborne infection are placed on Airborne Isolation Precautions and their electronic record “flagged” for surveillance and consistent door-to-door management for the protection of staff, visitors and other patients.

## Laboratory Confirmed Influenza

### What is Influenza?

Influenza (commonly referred to as the flu) is an infectious respiratory illness caused by influenza viruses. Influenza is transmitted through the air by coughs or sneezes which create aerosols containing the virus. Influenza can also be transmitted by direct contact with nasal secretions or contact with contaminated surfaces. Though frequently confused with the common cold, influenza is more severe and remains a significant cause of morbidity, mortality and hospital costs during influenza season.



### What is being measured?

This indicator measures the impact of influenza among hospitalized adults (i.e. 16 years old or greater) on VCH acute care facilities.

### Methodology: How was the data collected?

VCH performed surveillance for laboratory-confirmed influenza for the period of November 1, 2013 to May 31 2014. The data are collected by Infection Control

Practitioners following the national (Canadian Nosocomial Infection Surveillance Program) case definitions.

## **Trend: What does the data show?**

There were 82 cases of laboratory-confirmed influenza among hospitalized adults this last fiscal year. The vast majority of the cases were community-acquired (N = 114; 98.3%). One case was acquired in long term care and another was of unknown origin. The majority of cases were hospitalised at Vancouver General Hospital (N = 72; 62.1%) followed by Richmond Hospital (N = 24; 20.1%), Lions Gate Hospital and Squamish General Hospital with 6 cases each (5.1%), St. Mary's Hospital (N = 4; 3.4%), Powell River General Hospital (N = 3; 2.6%) and R.W. Large Memorial Hospital (N = 1; 0.9%).

## **What actions have been taken over the last year?**

**The Patient Vaccination Program at VGH and GF Strong:** The patient vaccination program is a joint program of Medical CTU's and Infection Control/Patient Safety, under the medical direction of Dr. Patrick Doyle. It provides Influenza and Pneumococcal vaccinations to patients. It is a model program that achieves compliance with hospital accreditation requirements, and with the Public Health Agency of Canada's recommendation to vaccinate people at high risk who are being discharged from hospital. The program has two components: a) wards that vaccinate their own patients, often in a blitz at the start of influenza season in November (Hemodialysis, STAT centre, GF Strong); and b) wards where the dedicated vaccine nurse provides service on an ongoing basis between November 1st and April 30th for patients prior to discharge.

**Healthcare Worker Flu Policy:** On December 1 2012 the provincial healthcare worker influenza control policy took effect. This policy covers all healthcare workers in publicly funded healthcare facilities including long term care facilities. The policy requires that healthcare workers get vaccinated against influenza or wear a surgical mask when in areas where patient contact may be expected. The policy is aimed at protecting patients and residents of long term care as well as reducing illness among healthcare workers.

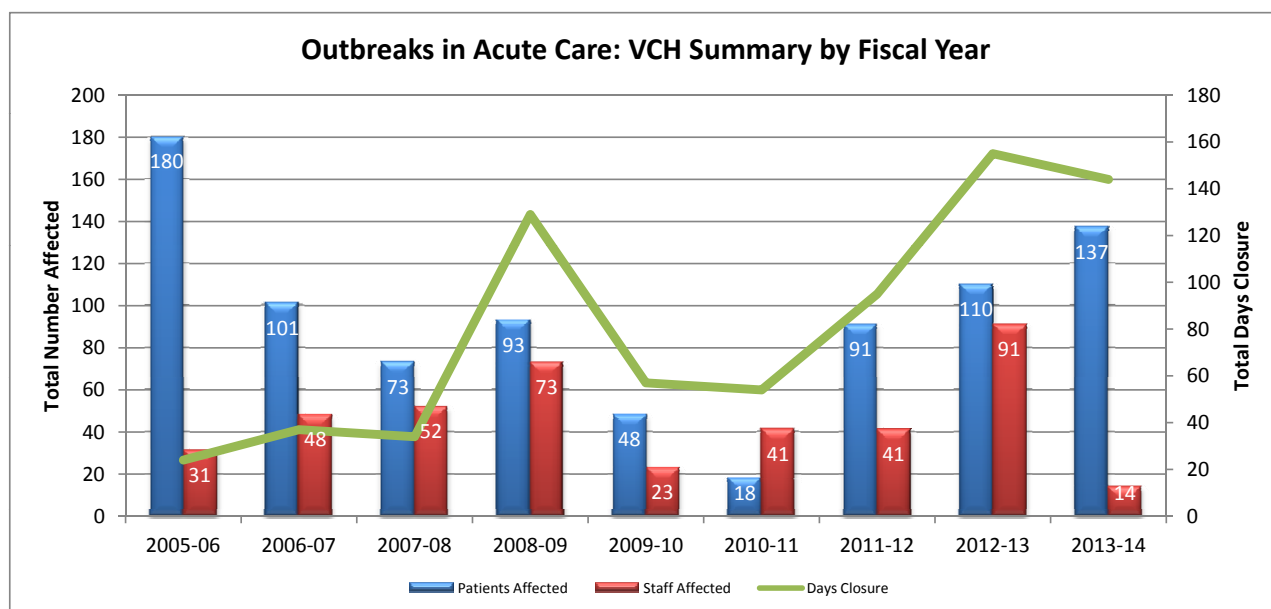


## Outbreak Management

This section summarizes the gastrointestinal and respiratory outbreaks that occurred during the 2013/14 fiscal year. Any comparison of results from year to year must consider the community prevalence of both gastrointestinal and respiratory communicable viruses.

In total there were nine outbreaks in acute care (9 gastrointestinal and 0 respiratory) and seven outbreaks in our directly funded long term care facilities (7 gastrointestinal and 0 respiratory). This compares to 17 in acute care (17 gastrointestinal and 0 respiratory) and 14 in long term care (13 gastrointestinal and 1 respiratory) in 2012/13.

The graph below shows the duration and number of staff and patients affected by outbreaks in VCH's acute care facilities over the last nine fiscal years. The results show an increase in the number of patients in the last three years. The number of staff affected in 2013/14 is the lowest it has been in the last nine years. The total days closure for 2013/14 was 144 compared to 155 last fiscal year.



There were 16 outbreaks this fiscal year involving both acute and long term care facilities of which all were gastrointestinal. A comparison of the viral gastrointestinal outbreaks for the last six fiscal years is provided in the table below.

## Comparison of Viral Gastrointestinal Outbreaks

Indicator	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
# Outbreaks	23	12	13	21	28	16
# Outbreaks LTC	12	4	8	8	11	7
# Outbreaks AC	11	8	5	13	17	9
Average total days closed	9.4	17.7	10.1	10.0	11.0	9.0
Average LTC days closed	10.5	41.3	12.3	13.3	13.8	10.3
Average AC days closed	8.3	7.1	10.8	7.8	9.1	8.0
Average # of patients/residents affected	11.8	8.8	7.7	12.4	9.5	8.6
Average # LTC residents affected	16.6	14.5	24.8	25.0	14.2	9.6
Average # AC patients affected	7.0	6.0	3.6	8.6	6.5	7.8
Average # staff affected	9.9	3.9	7.2	4.8	5.9	0.9
Average # LTC staff affected	14.2	6.0	8.4	8.4	6.6	0.6
Average # AC staff affected	5.5	2.9	8.2	4.1	5.4	1.1

\*Abbreviations: LTC (long term care) AC (acute care)

## *Antibiograms*

In general the susceptibility patterns are stable, and in most case if there is a change it is in the positive direction. This is particularly noted for Acinetobacter where we did not have the outbreak of the resistant strain as in 2008/09, and the improvement in susceptibility is quite dramatic.

## VGH/UBC Hospital Wide Antibigram, 2012 and 2013<sup>#</sup>

### Gram-Positive Organisms, % Susceptible

	MSSA		MRSA		S.epidermidis		S.pneumoniae		S. pyogenes (Gp A Strep)		E. faecalis		E. faecium*	
Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	1073	1058	505	513	436	396	114**	140	80	101	942	885	278	263
Cephalexin	100	100	0	0	30	28	-	-	100	100	0	0	0	0
Cefazolin	100	100	0	0	30	28	-	-	-	-	0	0	0	0
Cefotaxime	NT	NT	0	0	-	-	100	100	-	-	0	0	0	0
Clindamycin	84	84	43	40	39	40	-	-	80	76	0	0	0	0
Cloxacillin	100	100	0	0	30	28	-	-	-	-	0	0	0	0
Penicillin	24	25	0	0	4	6	100	100	100	100	99	100	17	17
SXT-TMP	96	96	92	94	42	32	-	-	-	-	0	0	0	0
Tetracycline***	96	96	88	88	88	92	68	57	-	-	21	25	58	45
Vancomycin	100	100	100	100	100	100	100	100	-	-	99	100	-	-
Moxifloxacin	-	-	-	-	-	-	99	100	-	-	-	-	-	-
Azithromycin	-	-	-	-	-	-	61	59	-	-	-	-	-	-
Ciprofloxacin	-	-	-	-	-	-	-	-	-	-	48	52	-*	-*
Clarithromycin	-	-	-	-	-	-	-	-	80	78	-	-	-	-
Nitrofurantoin (simple cystitis only)	-	-	-	-	-	-	-	-	-	-	98	99	-	-

<sup>#</sup>2012 represents fiscal year 2012/13; 2013 represents fiscal year 2013/14

\*E. faecium is not susceptible to carbapenem antibiotics, and generally is not susceptible to fluoroquinolones

\*\*Number revised from previously reported 70 isolates

\*\*\*Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

### Gram-Negative Organisms, % Susceptible

	E.coli		K.pneumoniae		E.cloacae		P.mirabilis		S.marcescens		Acinetobacter*		P.aeruginosa	
Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	3331	3370	743	752	329	319	386	394	144	132	127	142	434	459
Antibiotic														
Ampicillin	55	53	0	0	0	0	71	73	0	0	0	0	0	0
Cephalexin	80	80	88	85	0	0	4	26	0	0	0	0	0	0
Cefazolin	84	83	89	86	0	0	27	35	0	0	0	0	0	0
Cefotaxime	88	87	95	92	74	73	99	98	99	95	20	33	0	0
Ceftazidime	89	88	93	92	76	72	100	98	100	98	82	86	90	92
Ciprofloxacin	75	75	94	94	94	95	78	73	92	96	93	93	82	87
Gentamicin	89	89	97	96	96	97	93	92	97	95	85	91	93	97
Meropenem	100	100	100	98	99	100	100	100	99	98	96	96	91	94
Pip/tazo	98	98	96	95	80	78	100	99	99	96	84*	90*	96	97
SXT-TMP	76	73	91	88	90	88	79	77	99	99	94	93	0	0
Tetracycline**	71	70	83	83	88	90	0	0	0	0	91	87	0	0
Tobramycin	87	88	96	94	95	96	90	90	76	75	89	91	98	99
Nitrofurantoin (simple cystitis only)	97	98	43	46	29	24	0	0	0	0	0	0	0	0

\* Acinetobacter includes A. baumannii, A. calcoaceticus, A. haemolyticus, and other Acinetobacter species. In vitro susceptibility testing of Acinetobacter may over-estimate susceptibility to beta-lactam/beta-lactam inhibitor combinations

\*\*Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

Note: Antibigram susceptibility profiles based on fewer than 100 organisms are less reliable and may show large fluctuations

## VGH ICU Antibigram, 2012 and 2013<sup>#</sup>

### Gram-Positive Organisms, % Susceptible

	MSSA		MRSA		S.epidermidis		S.pneumoniae		E.faecalis		E.faecium*	
Fiscal Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	93	107	34	18	89	55	14	20	43	37	39	39
Antibiotics												
Cephalexin	100	100	0	0	31	13	-	-	0	0	0	0
Cefazolin	100	100	0	0	31	13	-	-	0	0	0	0
Cefotaxime	NT	NT	0	0	NT	NT	100	100	0	0	0	0
Clindamycin	83	86	41	39	43	32	-	-	0	0	0	0
Cloxacillin	100	100	0	0	31	14	-	-	0	0	0	0
Penicillin	22	21	0	0	3	3	100	100	95	100	8	21
SXT-TMP	98	97	80	93	48	26	-	-	0	0	0	0
Tetracycline**	97	97	80	61	92	95	69	47	16	29	51	46
Vancomycin	100	100	100	100	100	100	100	100	89	100	-	-
Moxifloxacin	-	-	-	-	-	-	99	100	-	-	-	-
Azithromycin	-	-	-	-	-	-	61	65	-	-	-	-
Ciprofloxacin	-	-	-	-	-	-	-	-	55	47	.*	.*
Clarithromycin	-	-	-	-	-	-	-	-	-	-	-	-

<sup>#</sup> 2012 represents fiscal year 2012/13; 2013 represents fiscal year 2013/14

\* E. faecium is not susceptible to carbapenem antibiotics, and generally is not susceptible to fluoroquinolones

\*\* Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

### Gram-Negative Organisms, % Susceptible

	E.coli		K.pneumoniae		E.cloacae		S.marcescens		Acinetobacter*		P.aeruginosa	
Fiscal Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	78	115	55	66	40	26	22	17	23	29	23	30
Antibiotic												
Ampicillin	45	37	0	0	0	0	0	0	0	0	0	0
Cephalexin	58	63	85	80	0	0	0	0	0	0	0	0
Cefazolin	63	65	87	80	0	0	0	0	0	0	0	0
Cefotaxime	78	72	96	88	73	65	100	100	13	24	0	0
Ceftazidime	81	74	96	88	75	69	100	100	91	86	87	93
Ciproflox	74	73	93	92	98	89	86	100	96	93	91	93
Gentamicin	82	87	98	92	98	93	91	94	87	93	91	100
Meropenem	100	100	100	94	100	100	100	100	95	93	91	97
Pip/tazo	97	94	95	91	80	69	91	100	91*	86*	96	100
SXT-TMP	72	67	93	91	98	89	95	100	100	93	0	0
Tetracycline**	93	72	80	82	68	77	0	0	96	86	0	0
Tobramycin	78	83	93	92	98	92	64	77	87	93	91	100

\* Acinetobacter includes A. baumannii, A. calcoaceticus, A. haemolyticus, and other Acinetobacter species. In vitro susceptibility testing of Acinetobacter may over-estimate susceptibility to beta-lactam/beta-lactam inhibitor combinations

\*\* Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

Note: Antibigram susceptibility profiles based on fewer than 100 organisms are less reliable and may show large fluctuations

## LGH Hospital Wide Antibigram, 2012 and 2013<sup>#</sup>

### Gram-Positive Organisms, % Susceptible

	MSSA		MRSA		S.epidermidis		S.pneumoniae		S.pyogenes (Gp A Strep)		E.faecalis		E.faecium*	
Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	396	377	118	154	59	40	91**	93	30	49	321	314	37	51
Antibiotics														
Cephalexin	100	100	0	0	36	14	-	-	100	100	0	0	0	0
Cefazolin	100	100	0	0	36	14	-	-	-	-	0	0	0	0
Cefotaxime	-	-	0	0	-	-	100	100	-	-	0	0	0	0
Clindamycin	84	86	63	58	47	69	-	-	80	82	0	0	0	0
Cloxacillin	100	100	0	0	36	22	-	-	-	-	0	0	0	0
Penicillin	25	25	0	0	7	2	100	100	100	100	100	100	17	16
SXT-TMP	95	98	91	96	67	49	-	-	-	-	0	0	0	0
Tetracycline***	96	96	93	91	63	88	80	77	-	-	23	29	75	63
Vancomycin	100	100	100	100	100	100	100	100	-	-	99	100	-	-
Moxifloxacin	-	-	-	-	-	-	93	100	-	-	-	-	-	-
Azithromycin	-	-	-	-	-	-	67	80	-	-	-	-	-	-
Ciprofloxacin	-	-	-	-	-	-	-	-	-	-	46	44	.*	.*
Clarithromycin	-	-	-	-	-	-	-	-	80	90	-	-	-	-
Nitrofurantoin	-	-	-	-	-	-	-	-	-	-	98	99	-	-

<sup>#</sup>2012 represents fiscal year 2012/13; 2013 represents fiscal year 2013/14

\*E. faecium is not susceptible to carbapenem antibiotics, and generally is not susceptible to fluoroquinolones

\*\*Number revised from previously reported 30 isolates

\*\*\*Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

### Gram-Negative Organisms, % Susceptible

	E.coli		K.pneumoniae		E.cloacae		P.mirabilis		S.marcescens		Acinetobacter*		Paeruginosa	
Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	1265	1389	223	260	61	60	129	152	29	25	14	23	139	146
Antibiotic														
Ampicillin	61	61	0	0	0	0	76	72	0	0	0	0	0	0
Cephalexin	84	87	94	93	0	0	8	27	0	0	0	0	0	0
Cefazolin	88	89	97	94	0	0	29	30	0	0	0	0	0	0
Cefotaxime	92	92	100	97	87	87	99	98	100	100	14	22	0	0
Ceftazidime	92	92	100	97	89	87	100	100	100	100	86	91	94	97
Ciproflox	80	78	98	97	97	95	81	76	93	100	100	96	84	94
Gentamicin	94	83	99	99	97	97	95	93	100	100	93	100	94	97
Imipenem	100	100	100	100	100	93	99	96	96	96	100	100	96	97
Meropenem	100	100	100	100	100	95	100	100	100	96	100	100	96	98
Pip/tazo	98	99	99	97	90	90	98	100	100	100	93*	96*	97	99
SXT-TMP	79	80	97	94	90	88	79	69	97	100	100	91	0	0
Tetracycline**	80	77	96	87	87	93	0	0	0	0	100	96	0	0
Tobramycin	92	92	100	99	97	93	93	92	69	92	93	91	96	99
Nitrofurantoin (simple cystitis only)	98	98	41	44	27	31	0	0	0	0	0	0	0	0

\* Acinetobacter includes A. baumannii, A. calcoaceticus, A. haemolyticus, and other Acinetobacter species. In vitro susceptibility testing of Acinetobacter species may over-estimate susceptibility to beta-lactam/beta-lactam inhibitor combinations

\*\*Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

Note: Antibigram susceptibility profiles based on fewer than 100 organisms are less reliable and may show large fluctuations



## RH Hospital Wide Antibigram, 2012 and 2013

### Gram-Positive Organisms, % Susceptible

	MSSA		MRSA		S.epidermidis		S.pneumoniae		S. pyogenes (Gp A Strep)		E.faecalis		E. faecium*	
Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	325	293	102	136	45	59	33**	36	23	27	214	172	39	51
Antibiotics														
Cephalexin	100	100	0	0	36	18	-	-	100	100	0	0	0	0
Cefazolin	100	100	0	0	36	18	-	-	-	-	0	0	0	0
Cefotaxime	-	-	0	0	-	-	100	100	-	-	0	0	0	0
Clindamycin	80	79	63	50	25	53	-	-	96	89	0	0	0	0
Cloxacillin	100	100	0	0	36	31	-	-	-	-	0	0	0	0
Penicillin	24	28	0	0	4	7	100	97	100	100	100	99	31	4
SXT-TMP	95	90	95	91	35	47	-	-	-	-	0	0	0	0
Tetracycline***	93	94	96	87	92	86	92	48	-	-	19	17	38	12
Vancomycin	100	100	100	100	100	100	100	100	-	-	100	98	-	-
Moxifloxacin	-	-	-	-	-	-	100	100	-	-	-	-	-	-
Azithromycin	-	-	-	-	-	-	75	48	-	-	-	-	-	-
Ciprofloxacin	-	-	-	-	-	-	-	-	-	-	53	51	.*	.*
Clarithromycin	-	-	-	-	-	-	-	-	91	93	-	-	-	-
Nitrofurantoin (simple cystitis only)	-	-	-	-	-	-	-	-	-	-	99	98	-	-

# 2012 represents fiscal year 2012/13; 2013 represents fiscal year 2013/14

\*E. faecium is not susceptible to carbapenem antibiotics, and generally is not susceptible to fluoroquinolones

\*\*Number revised from previously reported 24 isolates

\*\*\*Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

### Gram-Negative Organisms, % Susceptible

	E.coli		K.pneumoniae		E.cloacae		P.mirabilis		S.marcescens		Acinetobacter*		Paeruginosa	
Year	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
# Isolates	1004	1077	177	210	47	56	103	111	26	29	20	31	89	83
Antibiotic														
Ampicillin	51	55	0	0	0	0	84	72	0	0	0	0	0	0
Cephalexin	79	82	88	91	0	0	5	23	0	0	0	0	0	0
Cefazolin	82	85	91	91	0	0	32	36	0	0	0	0	0	0
Cefotaxime	86	87	94	94	77	73	98	96	100	100	26	23	0	0
Ceftazidime	87	88	93	94	79	75	100	98	100	100	65	77	94	96
Ciprofloxacin	73	77	94	95	96	93	78	74	92	100	100	94	91	89
Gentamicin	87	88	95	96	91	95	94	93	100	97	90	90	96	99
Imipenem	100	100	99	98	98	100	99	97	96	97	100	100	92	91
Pip/tazo	97	97	97	97	81	79	100	100	100	100	84*	94*	97	99
SXT-TMP	73	76	94	91	83	93	84	75	100	100	100	94	0	0
Tetracycline**	70	71	90	87	83	88	0	0	0	0	99	87	0	0
Tobramycin	85	87	94	95	91	95	93	90	69	90	95	94	96	99
Nitrofurantoin (simple cystitis only)	97	98	42	41	27	23	0	0	0	0	0	0	0	0

\* Acinetobacter includes A. baumannii, A. calcoaceticus, A. haemolyticus, and other Acinetobacter species. In vitro susceptibility testing of Acinetobacter species may over-estimate susceptibility to beta-lactam/beta-lactam inhibitor combinations

\*\*Isolates susceptible to tetracycline are also susceptible doxycycline; isolates resistant to tetracycline must be tested to determine doxycycline susceptibility

Note: Antibigram susceptibility profiles based on fewer than 100 organisms are less reliable and may show large fluctuations

## Appendix

### Terminology & Abbreviations

**Annual Target** - A goal that is set on a yearly basis.

**Benchmark** - A point of reference for judging value, quality, change, or the like; standard to which others can be compared.

**Clostridium difficile Infection (CDI)** also *C. difficile* – *C. difficile* is a germ that produces a toxin that can cause diarrhea and serious illness of the bowel. Generally, *C. difficile* does not cause problems in healthy people; however, CDI can be serious in people who are sick, elderly, or have weakened immune systems. In rare cases it can be fatal.

**CNISP** - Canadian Nosocomial Infection Surveillance Program

**Facility Type** - A healthcare facility categorized by the range of services offered.

**Hand Hygiene** - Preventing the spread of illness through washing hands with soap and water or cleaning hands with alcohol based hand-rubs.

**Healthcare Associated Infections (HAI)** also *Nosocomial Infections* - Infections patients get while staying in healthcare facility, which include germs from other patients, the environment, or staff. The germs cause illness in patients during or after their stay.

**Indicator** - A statistical measurement that shows how well something is working or operating.

**Limitations** - Limits or restrictions.

**Methicillin-resistant *Staphylococcus aureus* (MRSA)** - *Staphylococcus aureus* is a germ that is normally found on the skin and in the nose of healthy people. Some bacteria have become resistant to the medicines used to treat infections (antibiotics). MRSA is a type of *Staphylococcus aureus* that is resistant to most antibiotics, including the antibiotic called penicillin. *Staphylococcus aureus* can cause minor skin infections such as boils, or infections in a surgical incision site.

**Methodology** - The methods, principles, and rules used to for the activity or result.

**Responsible Organism** - The germ causing the infection.

**Source** - The person or thing that gave the information.

**Trend** - The general movement or direction of change.

**Vancomycin-resistant *Enterococci* (VRE)** - *Enterococci* are germs that are commonly found in the stomach and bowels of healthy people. Some bacteria have become resistant to the medicines used to treat infections (antibiotics). Vancomycin is an antibiotic used to treat serious infections. VRE is a type of *Enterococci* that has become resistant to Vancomycin. These germs rarely cause illness in healthy people. However, when VRE gets into open cuts and skin sores, they can cause infections. Occasionally, VRE can also cause more serious infections of the blood or other body tissues.

## *Case Definitions*

### *MRSA case definition (BC Provincial Infection Control Network (PICNet))*

- Laboratory identification of MRSA, including *Staphylococcus aureus* cultured from any specimen that tests oxacillin-resistant by standard susceptibility testing methods; or by a positive result for penicillin binding protein 2a (PBP2a); or molecular testing for *mecA*. May also include positive results of specimens tested by other validated polymerase chain reaction (PCR) tests for MRSA.

AND

- Must be a newly identified case of MRSA infection or colonization

AND

- Patient must be admitted to the reporting acute care facility

AND

- Patient has no known history of MRSA in any BC acute care facilities.

This includes:

- MRSA cases identified for the first time among the inpatients at the time of admission or during their hospitalization.
- MRSA cases newly identified among the patients in the emergency department who were then admitted to your acute care facility.
- MRSA cases newly identified as inpatients in an acute care facility, who have been documented previously with MRSA from an outpatient clinic (including ambulatory care) or long-term care, or from facilities outside of the province.

This DOES NOT include:

- MRSA cases previously identified by the reporting acute care facility or other BC acute care facilities

- MRSA cases identified in the emergency department or outpatient clinic who were not admitted to the reporting acute care facility
- Patients transferred from another acute care facility with MRSA which has already been documented by the transfer facility

## **Healthcare-associated case definition:**

There are two categories of classification for healthcare associated cases:

(1) healthcare-associated with current admission and (2) healthcare-associated with previous hospital encounter.

*Healthcare-associated – Current Admission:* An MRSA case identified > 48 hours after the patient was admitted to the reporting acute care facility.

*Healthcare-associated – Previous Hospital Encounter:* An MRSA case identified < 48 hours after the patient was admitted to the reporting acute care facility and one of the following:

- The patient was admitted for a period of at least overnight (or  $\geq 24$  hours) within the last 12 months
- The patient has an encounter with another healthcare facility, either as an inpatient (including acute care or long term care) or as an outpatient (e.g. dialysis, oncology) within the last 12 months
- Presence of indwelling catheters or other medical device at the time of admission, which was inserted by the reporting facility
- Documented history of weekly visits to an outpatient clinic (e.g. dialysis, oncology) located within the reporting facility within the last 12 months.

## *Clostridium difficile infection (BC Provincial Infection Control Network (PICNet))*

A diagnosis of CDI applies to a person with:

- Acute onset of diarrhea (diarrhea is defined as persistent liquid or loose stools three or more times per day for more than 24 hours or more frequently than is normal for the patient) or toxic megacolon without other known etiology

AND

- Laboratory confirmation of the presence of toxin A and/or B (positive toxin, or culture with evidence of toxin production, or detection of toxin genes)

OR

- Diagnosis of typical pseudo-membranes on sigmoidoscopy or colonoscopy

OR

- Histological/pathological diagnosis of CDI with or without diarrhea

A case is considered to be healthcare associated if the patient's symptoms occurred 72 hours or later post-admission or the patient's symptoms cause readmission in a patient who had been hospitalized in the previous two months of the current admission date, and who is not a resident in a chronic care hospital or nursing home.

## *Bloodstream Infections*

**Nosocomial Bacteraemia:** Bacteremic events occurring 48 hours or more after admission or within five days of discharge. This depends to some extent on the incubation period and individual patient factors. Thus, on occasion, Nosocomial infections may fall outside these time parameters. For example there are some instances when bacteremic events may be related to an invasive procedure (like emergency surgery or central line insertion) that has taken place within the first 48 hours of the hospital stay – these would be counted as a Nosocomial infection. Conversely a bacteraemia that was a complication or extension of a pre-existing condition on admission (e.g. bacteraemia following a community acquired pneumonia) is not a Nosocomial infection. Bacteremic events occurring in patients that meet the Health Canada definition for nosocomial surgical site infections are also included here if the bacteraemia is felt to be related to the surgical procedure.



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