CANADIAN VENOUS THROMBOEMBOLISM AUDIT

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VTE Audit provides national snapshot: 86 per cent of hospitalized patients receiving prophylaxis

Key Findings of the 2014 National VTE Prophylaxis Audit

Possible limitations of the VTE Audit

Strengths of the VTE Audit

Additional Resources

Appendix A: VTE Audit Day Call to Action flyer

Appendix B: VTE Audit Day Instructions

Appendix C: VTE Audit Day Data Collection Form

Appendix D: Safer Healthcare Now! Recommended Doses of Anticoagulant Prophylaxis
CANADIAN VENOUS THROMBOEMBOLISM AUDIT

NATIONAL SNAPSHOT 2014

The second Canadian Venous Thromboembolism (VTE) Audit was held during the month of October 2014, to establish a national perspective of thromboprophylaxis rates and raise awareness of appropriate VTE prophylaxis. The use of prophylaxis to prevent VTE has steadily increased over the past decade, with the recent audit determining that 86 per cent of the patients in Canadian hospitals who were included in the audit are receiving the appropriate prophylaxis to prevent deep vein thrombosis and pulmonary embolism.

In 2013, data was analyzed for 4,667 General Medicine and General Surgery patients from 118 sites in Canada, with 81 per cent receiving the appropriate prophylaxis.

The 2014 audit included data from 3,809 General Medicine and General Surgery patients from 110 sites across the country.

Overall, in the 2014 audit, thromboprophylaxis was administered to 92 per cent of General Surgery patients and 84 per cent of General Medicine patients.

Provincial participation for the 2014 audit was well-represented from coast-to-coast, with the exception of the Province of Newfoundland and Labrador, the Northwest Territories, Nunavut and the Yukon. The overall rate of thromboprophylaxis use varied from 70 to 96 per cent by province and between 55 and 100 per cent by region across the provinces.

The national VTE audit analyzed the impact of using preprinted paper or electronic order sets. Overall, order sets were used in 49% of the patients included in the audit (51% of General Medicine patients and 46% of General Surgery patients). Appropriate thromboprophylaxis was administered in 94 per cent of patients when order sets were used, compared to 78 per cent of patients when order sets were not used.

The audit also confirmed the type of prophylaxis used most often was low molecular weight heparin (LMWH) in 60 per cent of patients, followed by low dose heparin (LDH), which was ordered for 27 per cent of audit patients. Five per cent of patients used mechanical prophylaxis only. The type of prophylaxis used differed slightly depending on the patient group: for medical patients, LMWH (64 per cent) versus LDH (24 percent); and for surgical patients, LMWH (56 per cent) versus LDH (33 per cent).

For the 14 per cent of patients not receiving the appropriate prophylaxis, the reasons identified included: no prophylaxis ordered (in 73 per cent of these); delay in start (8 per cent); wrong dose (5 per cent); and modality varying from Safer Healthcare Now! recommendations (7 per cent).

“It is gratifying to see improvement in the use of thromboprophylaxis; however, of significant note is that 14 per cent of patients at risk for VTE did not receive the appropriate prophylaxis.”

Dr. Bill Geerts, VTE Lead - Safer Healthcare Now!
BACKGROUND

VTE comprises both deep vein thrombosis (DVT) and pulmonary embolism (PE). DVT occurs when an abnormal blood clot forms inside a vein deep in the leg, causing leg pain and swelling. A blood clot in a leg vein can grow, break off, and travel to the lungs, resulting in shortness of breath, chest pain, and, in some cases, death. A clot that travels to the lungs is called a pulmonary embolism.

Almost all hospitalized patients are at risk for VTE and most have multiple risk factors. VTE is one of the most common and preventable complications of hospitalization and is a Required Organizational Practice (ROP) of Accreditation Canada. The rate of asymptomatic, hospital-acquired VTE, if thromboprophylaxis is not used, is 10 to 40 per cent after general surgery and 40 to 60 per cent after hip surgery. The rate of symptomatic VTE is up to 5 per cent (or more) of medical and surgical patients if thromboprophylaxis is not used (Geerts et al., 2008).

Adverse consequences of hospital-acquired VTE include: symptomatic DVT and PE, fatal PE, prolonged hospital stay or readmission, harm of therapeutic anticoagulation, patient anxiety, additional costs to diagnose and treat, and long-term consequences such as post-thrombotic syndrome.

There is strong evidence that providing appropriate thromboprophylaxis to hospital patients at risk for VTE results in a significant reduction in clinically-relevant hospital-acquired VTE.

PURPOSE

The Canadian Venous Thromboembolism National Audit was held in conjunction with World Thrombosis Day (October 13, 2014) to increase awareness of VTE prophylaxis and to obtain an estimate of national VTE prophylaxis rates. Participation in the audit provided healthcare organizations access to the Patient Safety Metrics VTE Data Collection tool and additional resources available to support prevention of VTE.

PROCESS

The VTE Audit was designed to include patients from General Internal Medicine and General Surgery, with at least 20 patients from each group per centre included in the Audit.

The 2014 local audits were to be conducted on any day from October 1 to 15, and data could be submitted during the audit period and up to the end of October. Using the VTE Data Collection tool, teams audited patient charts to gather the following information:

1. Was a preprinted paper or electronic order set (including VTE prophylaxis) used on admission or after surgery?

2. What type of thromboprophylaxis was ordered for the patient?

3. Is the patient receiving appropriate thromboprophylaxis as defined in the Safer Healthcare Now! Getting Started Kit and the VTE Audit instructions?

4. If “yes”, to question 3, the audit was complete for that patient. If “no” to question 3, why was recommended thromboprophylaxis not used?

To support audit participants, a webinar was held on September 10, 2014 to provide more information about the audit and to answer questions. Participants were asked to register to participate in the audit so that follow-up support could be provided. See the Call to Action Flyer in Appendix A.

Instructions for completing the audit are found in Appendix B. A copy of the Data Collection Form is available in Appendix C. A summary if the Safer Healthcare Now! recommended doses of anticoagulant prophylaxis are outlined in Appendix D.

Once data was submitted to Patient Safety Metrics, results were tabulated and sent back to the participating organization within one hour. Results of individual hospitals/organizations are not shared publicly unless the organization provided explicit consent to do so. Local centre data could be compared to the aggregate national and provincial results. A post-audit discussion of the national results was presented during a webinar on November 13, 2014.

To learn more about the 2014 Venous Thromboembolism National Audit Day results:

Click here to watch a video presentation of the Audit results

Click here to upload the National VTE Audit results and provincial comparisons

“Depending on your systems, measuring is not that easy to do. The National VTE audit made it easy to evaluate your use of prophylaxis. We generated the paper, the assessment is done for you and the results are immediate.”

Patti Ferguson, Pharmacist
ENDORSEMENTS

An initiative of the Canadian Patient Safety Institute, the 2014 National VTE Audit Day was endorsed by:

- Alberta Health Services
- BC Patient Safety and Quality Council
- Canadian Medical Protective Association
- Canadian Nurses Association
- Manitoba Institute for Patient Safety
- Saskatchewan Ministry of Health
KEY FINDINGS

A. Audit Participation

Figure 1: 2014 Audit Participation by Province

![Bar chart showing audit participation by province in 2014 with 110 sites and 3,809 patients.]

Figure 2: Audit Participation by Province, 2013 and 2014

![Bar chart showing audit participation by province in 2013 and 2014 with data for each province.]
Figure 3: Audit Participation by Major Clinical Group, 2013 and 2014

2013 (n)=4,667  
2014 (n)=3,809

Figure 4: 2014 Audit Participation by Patient Subgroup

N=3,809

\(^4\) (n) = number of patients
B. Patients Receiving Appropriate Thromboprophylaxis

Figure 5: Patients Receiving Appropriate Thromboprophylaxis, 2014

Figure 6: Patients Receiving Appropriate Thromboprophylaxis by Province
Figure 7: Patients Receiving Appropriate Thromboprophylaxis by Health Regions

Figure 8: Patients Receiving Appropriate Thromboprophylaxis by Major Patient Group
Figure 9: Appropriate Thromboprophylaxis by Major Patient Group

Figure 10: Appropriate Thromboprophylaxis by Major Patient Group and Province
C. Type of Thromboprophylaxis Used

Figure 11: Type of Thromboprophylaxis Used, 2013 and 2014

Figure 12: Type of Thromboprophylaxis Used by Major Patient Group

<table>
<thead>
<tr>
<th>Patient group</th>
<th>Patients on TPX</th>
<th>LMWH</th>
<th>LDH</th>
<th>Mech Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen Medicine</td>
<td>1165</td>
<td>64%</td>
<td>24%</td>
<td>4%</td>
</tr>
<tr>
<td>Gen Surgery</td>
<td>758</td>
<td>55%</td>
<td>33%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Figure 13: Type of Thromboprophylaxis Used by Province

![Graph showing the types of thromboprophylaxis used by province.]

Figure 14: Type of Thromboprophylaxis Used by Province and Major Patient Group

![Graph showing the types of thromboprophylaxis used by province and major patient group.]

### General Medicine
- **LMWH**: Various provinces with different percentages.
- **Low dose Heparin**: Various provinces with different percentages.
- **Mechanical Only**: Various provinces with different percentages.
- **Other**: Various provinces with different percentages.
- **No Order**: Various provinces with different percentages.

### General Surgery
- **LMWH**: Various provinces with different percentages.
- **Low dose Heparin**: Various provinces with different percentages.
- **Mechanical Only**: Various provinces with different percentages.
- **Other**: Various provinces with different percentages.
- **No Order**: Various provinces with different percentages.
D. Reasons for Inappropriate Thromboprophylaxis

Figure 15: Causes of Inappropriate Thromboprophylaxis

<table>
<thead>
<tr>
<th>Reason</th>
<th>% of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No thromboprophylaxis</td>
<td>315</td>
</tr>
<tr>
<td>2. Mechanical alone without bleeding contraindication</td>
<td>17</td>
</tr>
<tr>
<td>3. Wrong Drug</td>
<td>8</td>
</tr>
<tr>
<td>4. Wrong Dose</td>
<td>24</td>
</tr>
<tr>
<td>5. Delay Starting (&gt;24hrs after surgery or &gt;24hrs after admission)</td>
<td>34</td>
</tr>
<tr>
<td>6. Insufficient duration</td>
<td>5</td>
</tr>
<tr>
<td>7. Following standards that are different from SHN</td>
<td>31</td>
</tr>
<tr>
<td>Not Specified</td>
<td>102</td>
</tr>
</tbody>
</table>

Figure 16: Causes of Inappropriate Thromboprophylaxis by Major Patient Group

<table>
<thead>
<tr>
<th>Reason</th>
<th>General Medicine</th>
<th>% of Patients</th>
<th>General Surgery</th>
<th>% of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No thromboprophylaxis</td>
<td>195</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Mechanical alone without bleeding contraindication</td>
<td>1</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Wrong Drug</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Wrong Dose</td>
<td>13</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Delay Starting (&gt;24hrs after surgery or &gt;24hrs after admission)</td>
<td>8</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Insufficient duration</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Following standards that are different from SHN</td>
<td>10</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>232</td>
<td>62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
E. Use of Order Sets

Figure 17: Use of Order Sets, 2013 and 2014

Figure 18: Use of Order Sets by Province
**Figure 19: Use of Order Sets by Major Patient Group**

<table>
<thead>
<tr>
<th>Order Set Used</th>
<th>Order Set Not Used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Medicine</strong></td>
<td><strong>General Surgery</strong></td>
</tr>
<tr>
<td>1.156</td>
<td>51%</td>
</tr>
<tr>
<td>1.119</td>
<td></td>
</tr>
<tr>
<td>435</td>
<td>46%</td>
</tr>
<tr>
<td>506</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 20: Use of Order Sets by Major Patient Groups and Province**

<table>
<thead>
<tr>
<th>Province</th>
<th>% of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Medicine</td>
</tr>
<tr>
<td>BC</td>
<td>62</td>
</tr>
<tr>
<td>AB</td>
<td>114</td>
</tr>
<tr>
<td>ON</td>
<td>187</td>
</tr>
<tr>
<td>QC</td>
<td>37</td>
</tr>
<tr>
<td>NB</td>
<td>3</td>
</tr>
<tr>
<td>NS</td>
<td>31</td>
</tr>
<tr>
<td>PE</td>
<td>1</td>
</tr>
</tbody>
</table>

*Total (n)*

|          | 143 | 186 | 466 | 106 | 27 | 59 | 1 | 62 | 114 | 187 | 37 | 3 | 31 | 1 |
Figure 21: Appropriate Thromboprophylaxis and Use of Order Sets, 2013 and 2014

Figure 22: Appropriate Thromboprophylaxis and Use of Order Sets by Major Patient Group
TEAM STORIES

PHARMACISTS CHAMPION NATIONAL VTE AUDIT

In their day-to-day work, hospital pharmacists assess the use of prophylaxis to prevent venous thromboembolism (VTE) as part of the basic pharmaceutical care for patients. With this approach, it was the pharmacists at Southlake Regional Health Centre in Newmarket, Ontario and six hospitals in Prince Edward Island who would take the lead in participating in the Canadian VTE audit held in October 2014.

Southlake Regional Health Centre was looking for a standard way to measure and a formalized approach to evaluating their use of thromboprophylaxis. Southlake has had a long journey to improve the use of prophylaxis to prevent VTE. They have put together a standard of care and focused on VTE as an ongoing quality improvement project. The biggest leap in improvement was noted when prophylaxis was incorporated into admission order sets.

“The national VTE audit is a fairly quick and relatively easy way to get a handle on how well you are doing,” says Patti Ferguson, Pharmacy Manager. “With VTE as one of the accreditation standards, everyone has a vested interest in knowing where they’re at. This is a great way to jump on board and ensure that you have the information that you need, while participating in a national audit.”

Ferguson says that filling out the audit forms took a little longer than expected, but it was a reasonable way to collect information. A brief meeting was held to ensure that everyone involved would be taking the same approach and the chart audits were conducted over one day, rather than several days.

“Depending on your systems, measuring success in VTE prophylaxis, or any other quality improvement project, is not that easy to do,” says Patti Ferguson. “The national VTE audit made it easy to evaluate your use of prophylaxis. We generated the paper, the assessment is done for you and the results are immediate.”

Southlake’s use of prophylaxis was in the 70 per cent range in the 2013 audit, increasing to 93 per cent for the 2014 audit. They are looking closely at their results, targeting areas where they need to improve and celebrating successes in areas that have excelled. A corporate overview of results has also been provided to the health centre’s Quality and Utilization Committee.

Queen Elizabeth Hospital in Charlottetown, Prince Edward Island was one of six hospitals across the province participating in the national VTE audit. This was the first time the audit was done provincially. Four pharmacists were involved in conducting the audit over a two week period. Initially, the team met by teleconference and then participated in the National VTE Audit webinar to get more information on data collection and have their questions answered about the audit.

“Taking part in the VTE webinar in advance helps to get information on collecting data and setting up forms,” says Beth Bradley, Pharmacist Clinical Coordinator. “It was great taking a team approach for the audit because we could fire questions back and forth amongst each other and bounce ideas off one another.”
Bradley says that the Patient Safety Metrics system used for the audit was very straightforward and easy to use. While information on how to conduct the audit was clear and easy to understand, there were many offers of assistance when she needed to help. She particularly liked the quick turnaround of results. Once submitted, results were available online within an hour.

Computerized physician order entry has been instituted across Prince Edward Island and power plans (electronic order sets) are a part of the system. Having VTE as an option on the power plans has gone a long way in encouraging physicians to consider VTE prophylaxis. The data is being disseminated to the various medical and surgical quality teams and shared with each of the institutions.

“The VTE audit was more work than I thought it would be, but the information is helpful and a reminder of the importance of VTE prophylaxis,” says Beth Bradley.

ENGAGING FRONTLINE STAFF IN AUDITING AT CAPITAL HEALTH

The National Venous Thromboembolism (VTE) audit came about at the right time for the Capital Health region in Nova Scotia. It had been about a year since new processes and policies on thromboprophylaxis had been rolled out, along with staff education on VTE.

“The VTE audit provided some concrete data on how well we were doing and served as a barometer to look at how we had progressed over the year and how we compared with the rest of the country,” says Jane Palmer, Quality Leader, Capital Health.

Jane Palmer took ownership to ensure that everything was in place to participate in the Canadian VTE Audit at Capital Health. She first provided an educational session for team clinical leaders during their monthly quality and patient safety forum. She introduced the topic, explained why it was important to participate, outlined some of the things that had been done over the year and emphasized the opportunity to measure progress.

The approach to auditing at Capital Health typically involves and gives ownership of doing the audit to the frontline staff, or frontline team. “Auditing raises awareness and learning and we feel that frontline staff should decide on who is best on their unit to do the audit,” says Jane Palmer.

For the VTE audit, 30 inpatient units were invited to participate with a commitment to share results of the audit back to them. Jane reinforced that VTE prophylaxis should be a standard of care on their unit and asked them to select between five to 10 charts to audit. About 60 per cent of the inpatient units submitted data; auditing of charts was most often done by the charge or staff nurse on the unit.
With improvement in the use of appropriate prophylaxis over last year from 65 per cent to 80 per cent, the results have been shared with the clinical teams and a core group will continue to analyze the data to look for opportunities for improvement.

“Our results show where we need to do some work in our organization,” says Jane Palmer. “Educating the patient about VTE prophylaxis and pre-printed order sets (PPOs) are two areas that we need to lend some focus. We had done some work on PPOs to prepare for accreditation, however, additional VTE PPOs were subsequently developed and we are now in the process of supporting teams for full implementation. A physician champion on the team helped to support the outcome actions around physician behaviour change in utilizing PPOs. We will now step back and refocus on where we need to do some follow-up with front-line teams to ensure any current gaps in VTE prophylaxis-related processes are addressed.

Capital Health has found that PPOs do increase the appropriate prophylaxis being used. They have developed a standard PPO for VTE that any service can use and try to embed VTE into current order sets wherever possible, recognizing that some areas do not use PPOs on a regular basis. They have also found that old PPOs are being circulated, and lack of uptake by physicians in indicating VTE prophylaxis on the standard physician order sheet.

“We participate in national audits such as this, to evaluate how we provide care,” says Jane Palmer. “We have seen a change in our culture around performance measurement in terms of auditing. It is often a manual process that takes a fair amount of energy and it has been a culture shift for staff to understand why auditing is important. Staff have an interest in how we measure compared to other organizations as we encourage use of benchmarking to guide improvement plans and strategies. Audits prove to be a good opportunity to get staff engaged.”

JEWISH GENERAL HOSPITAL: QUEBEC’S EXPERT IN THROMBOSIS PREVENTION

In 2005, the Jewish General Hospital (JGH) was one of the first hospitals in Canada to develop and implement a hospital-wide thromboprophylaxis policy, and in 2012 its Centre for Excellence in Thrombosis and Anticoagulation Care was inaugurated.

Various processes are in place to ensure preventative measures are appropriately prescribed and implemented. For instance, a clinical pharmacist participates in weekly rounds, helping healthcare teams verify that the appropriate prevention has been undertaken for all patients at risk for venous thromboembolism (VTE) and assess for contraindications.

The Jewish General Hospital has participated in the Safer Healthcare Now! Canadian Venous Thromboembolism Audits since their inception in 2009 and was keen to participate again in 2014. Co-Chairs – Jessica Emed, Clinical Nurse Specialist (Thrombosis) led the audit for medical units, and Hetal Patel, Nurse Educator (Surgery) was responsible for auditing surgical units. The
Co-Chairs worked through the audit process together to determine a system for hospital-wide audits, incorporating elements of the Safer Healthcare Now! process and adding a number of indicators they were interested in tracking with the assistance of the quality program.

“The VTE audit tool available through Patient Safety Metrics is very straightforward and easy to use,” says Chantal Bellerose, Quality Improvement Advisor and Accreditation Coordinator. “It includes all the relevant measures to audit and benchmark. The teams and leaders deserve sincere congratulations!”

For the October 2014 National VTE Audit, data was gathered on four units, two surgical and two medical, with overall results of appropriate prophylaxis being administered about 90 per cent of the time. The surgical units use pre-printed order sets, while at present, the medical units do not. The results indicated little difference in the administration of prophylaxis with, or without the use of order sets, however it is a priority to develop pre-printed order sets for the medical units to facilitate and optimize prophylaxis as much as possible.

Co-chairs Jessica Emed and Hetal Patel, with unwavering support and guidance from their medical lead Dr. Susan Kahn and the interdisciplinary team, have successfully showcased the importance of thrombosis prevention over many years. Since 2006, the month of March has been dedicated to deep vein thrombosis (DVT) prevention with education and awareness-building activities for both staff and patients.

“Due to the commendable efforts of this team, VTE is recognized as one of the Jewish General Hospital’s key quality indicators with results posted on the hospital’s Quality Indicators webpage,” states Markirit Armutlu, Quality Program Coordinator. “Participation in the VTE National audits and support from Safer Healthcare Now! over the years have helped further energize and sustain the continuous quality improvement activities of the JGH’s VTE – Thrombosis Prevention Team.”

“Before participating in these audits, we had certain assumptions on how well we were doing,” says Jessica Emed. “Throughout the years we have been able to shed light on where the gaps are and have made improvements. We have been able to increase awareness and create a lot of engagement and energy into the prevention of VTE.”

Last year, the JGH standardized the timing for prophylaxis, and administration at 6:00 pm daily was expanded from a few high-user units, to units across the hospital. “By standardizing administration to later in the day, we did not have to hold the dosage all day while waiting for a procedure that was tentatively scheduled or risked being cancelled,” says Jessica Emed. “As a result we were able to give timely prophylaxis later in the day. As well, we did not have to cancel as many surgical procedures due to prophylaxis having been given earlier in the day. There is always flexibility in the process, however, recognizing that patients come out of surgery at different times during the day. If a nurse adjusts the timing of the first dose in relation to surgery, it is noted on the patient’s medication administration record.”
The JGH policies on the administration of prophylaxis are continually reviewed to ensure they are current. The Jewish General is now re-examining the use of mechanical prophylaxis to ensure it is consistent and evidence-based.

“With every audit we do, we find new information,” says Jessica Emed. “Whether it is confirming that we are doing things right, or finding areas where we need to tighten the screws and aim for better results, our goal is to provide the structure and help our people to work together to improve care for our patients.”

The JGH was awarded the Safer Healthcare Now! Hospital Award for VTE prevention in 2010. In partnership with Sanofi Canada, the JGH created the Centre for Excellence in Thrombosis and Anticoagulation Care in 2012, with a mandate to provide leadership and guidance to other healthcare institutions in Quebec. The JGH received an Exemplary Standing Accreditation decision in 2012-2013.

_DVT Awareness Month_ (Left to right): Charlotte Guzman, Clinical Research Assistant; Margaret Beddaoui, Clinical Research Coordinator; Caitlin Wharin, Clinical Research Assistant; Jessica Emed, Clinical Nurse Specialist; Maureen Morganstein, Administrative Assistant; Tibor Schuster, Post-doctoral Fellow; Jacqueline Cohen, Research Assistant and PhD student; and Dr. Susan Kahn, Director of the Thrombosis Program
PATIENT SAFETY METRICS TOOL HELPS TO FACILITATE QUARTERLY VTE PROPHYLAXIS AUDITS IN ALBERTA

Alberta Health Services (AHS) has adopted the Patient Safety Metrics tool to facilitate quarterly audits on use of prophylaxis to prevent venous thromboembolism (VTE) in hospitalized patients. In the past 24 months, AHS has completed more than 7,500 audits, reviewing about 10 to 20 charts at rural sites and 60 charts at urban sites each quarter. A goal was set to achieve a VTE prophylaxis compliance rate greater than 85 per cent by March 31, 2015. Currently, VTE prophylaxis rates are in the 80 per cent range at AHS sites recently audited.

“The Patient Safety Metrics tool is easy to use and provides the right reports that allows you to do the comparisons that you need to do,” says Dr. Elizabeth MacKay, Medical Leader, Provincial VTE Prophylaxis Accreditation Working Group. “The ability to compare your results to national groups provides information that is invaluable.”

AHS has developed a province-wide approach to preventing venous thromboembolism in hospitalized patients. In 2012, a multi-disciplinary group of healthcare practitioners, including representatives from accreditation, quality, risk management, physicians and pharmacists from zones across the province joined together to develop a VTE policy and guidelines. Leads from each area then identified an individual to audit charts on a quarterly basis. Educational sessions were held to touch all groups and tools were posted to the website to support the auditing process. Reports are developed in a quality and safety measurement format and distributed so that each area can see their progress.

Order sets and pocket tools have been developed and embedded into AHS systems. With auditing and feedback and the use of the order sets, the percentage of patients receiving appropriate prophylaxis increased from a baseline of less than 50 per cent at rural sites to over 80 per cent among 85 per cent of the sites that took part in audits during the last year. The VTE team is now looking at order set usage and content to help them focus on pockets that still need improvement.

Throughout the initiative, AHS has had the support of both accreditation and quality teams to help facilitate the audit. During the Canadian VTE audit in October 2014, a blast was made across urban centres to capture sites that were transitioning to a new accreditation cycle. Having access to electronic health records and electronic order sets in the Calgary zone was an enabler in doing a virtual audit to gather data, without having to delve into medical charts for supporting information. The teams are able to look at variation in the use of prophylaxis in all populations and identify areas of specific need.
“To get change to occur it has to be focused,” says Dr. MacKay. “VTE does not belong to one group and one individual cannot do this work on their own. The multi-disciplinary approach helps to align your work and remove silos. Having VTE as a provincial mandate and aligning it with accreditation has allowed us to take this to a level we would not have achieved otherwise.”

AHS is now looking beyond the general medicine and general surgery focus to include critical care, cancer care, arthroplasty and transplant to leverage all areas that have the most to gain by examining the variation in use of VTE prophylaxis in these higher risk groups who are to be included in the next AHS accreditation cycle.

**VTE Audit Provides National Snapshot: 86 Per Cent of Hospitalized Patients Receiving Prophylaxis**

*Safer Healthcare Now! online news article (December 10, 2014)*

The use of prophylaxis to prevent venous thromboembolism (VTE) has steadily increased over the past decade, with a recent audit determining that 86 per cent of General Medicine and General Surgery patients whose thromboprophylaxis was assessed in 110 Canadian hospitals received appropriate prophylaxis to prevent deep vein thrombosis (DVT) and pulmonary embolism (PE). The Canadian Venous Thromboembolism (VTE) Audit was held during October 2014 to establish a national perspective of VTE thromboprophylaxis rates and raise awareness of appropriate VTE prophylaxis.

“There was broad representation from across the country to obtain a national snapshot of prophylaxis use,” says Dr. Bill Geerts, National Lead for the *Safer Healthcare Now! Venous Thromboembolism* intervention. “It is gratifying to see improvement in the use of thromboprophylaxis; however of significant note is that 14 per cent of patients at risk for VTE did not receive the appropriate prophylaxis. Furthermore, we need to be aware that higher-performing hospitals may have participated in the audit while centres that had a lesser commitment to VTE prophylaxis may not have participated. We, therefore, consider the audit to likely represent “best case scenario” data.”

The national VTE audit included data from 3,809 general medicine and general surgery patients from 110 sites across the country. In 2013, data was analyzed for 4,667 general medicine and general surgery patients from 118 sites in Canada, with 81 per cent receiving the appropriate prophylaxis.

Southlake Regional Health Centre in Newmarket, Ontario had the pharmacist group collect data for the VTE audit at their site. “The process was embedded into the pharmacist’s work and we selected one day to input data using the Patient Safety Metrics tool,” says Patti Ferguson, Pharmacy Manager. “Our results were impressive with 94 percent appropriateness. This is an improvement for us and I would attribute much of that improvement to our robust implementation of standardized order sets”

The national VTE audit analyzed the impact of using order sets, finding that appropriate thromboprophylaxis was administered in 94 per cent of patients when order sets were used, compared to 78 per cent of patients when order sets were not used. Order sets were used in
51 per cent of general medicine patients and 46 per cent of general surgery patients. “The use of prophylaxis is solidly entrenched in evidence and relatively simple to administer,” says Dr. Geerts. “If you embed safety principles into order sets, it makes the whole process so much simpler to administer and so much more likely that appropriate thromboprophylaxis will be provided to patients consistently.”

The audit also assessed the type of thromboprophylaxis used: LMWH was used in 60% of patients, followed by low dose heparin (LDH), which was ordered for 27 per cent of the patients included in the audit. Reasons for not using thromboprophylaxis when indicated included: no thromboprophylaxis ordered (73 per cent), delay in start (8 per cent), wrong dose (6 per cent), and modality variation from the Safer Healthcare Now! recommendation (7 per cent).

Click here to download the VTE Audit results and provincial comparisons. For more information on the VTE Audit, visit www.saferhealthcarenow.ca
KEY FINDINGS OF THE 2014 NATIONAL VTE PROPHYLAXIS AUDIT

- Participation: 110 centres in nine provinces submitted thromboprophylaxis data on 3,809 General Medicine or General Surgery patients

- Overall, appropriate thromboprophylaxis was provided to 86 per cent of patients (General Surgery 92 per cent, General Medicine 84 per cent). In 2013, the overall appropriate thromboprophylaxis rate was 81 per cent

- Rates of appropriate thromboprophylaxis varied by province from 70% to 95% and varied among health regions from 55 per cent to 100 per cent

- Methods of thromboprophylaxis: LMWH (60 per cent), LDH (27 per cent), mechanical (5 per cent). LMWH was used slightly more often in General Medicine than in General Surgery patients

- Order set use: overall, 49 per cent of the patients in the audit had their thromboprophylaxis included in an admission or postoperative order set

- If an order set was used, 94 per cent of patients received appropriate thromboprophylaxis while only 78 per cent of patients managed without an order set received appropriate thromboprophylaxis

POSSIBLE LIMITATIONS OF THE VTE AUDIT

- Some regions were not represented (Newfoundland and Labrador, Northwest Territories, Yukon, Nunavut)

- Potential participation bias:
  - Participating centres may not be representative of all Canadian hospitals (“good centre bias”)
  - Participating centres may have selected nursing units with high rates of thromboprophylaxis use (“good unit bias”)

- Single-day, snapshot audit

- The audit assessed only General Medicine and General Surgery patients, not all hospitalized patients

- Data on a small proportion of patients, who were not General Medicine or General Surgery, was submitted

- The audit assessed the presence of an order for thromboprophylaxis rather than thromboprophylaxis administered

- Appropriate dosing of anticoagulant thromboprophylaxis, based on patient weight and renal function, was not assessed

- Duration of thromboprophylaxis was not assessed
Strengths of the VTE Audit

- Large number of centres (110) submitted data for a large number of patients (3,809) centres in nine provinces, including Quebec, submitted data
- Two patient groups were selected to include as many hospitals as possible and to standardize data collection
- Appropriate thromboprophylaxis was defined for data abstractors and based on Safer Healthcare Now recommended options
- Clear, simple instructions were provided to guide the local data abstraction process
- Simplified data abstraction and submission
- The specific methods of thromboprophylaxis were assessed
- Reasons for patients not receiving appropriate thromboprophylaxis were assessed
- The impact of order set use on appropriate thromboprophylaxis was assessed
- Rapid turn-around of results
- Ability of centres to compare their results to the rates from other centres

Additional Resources

To learn more about VTE Audit Day, visit www.saferhealthcarenow.ca

The Venous Thromboembolism Getting Started Kit can be viewed and/or downloaded from http://www.saferhealthcarenow.ca/EN/Interventions/vte/Documents/VTE%20Getting%20Started%20Kit.pdf

Examples of Preprinted Order Sets, Pocket Cards outlining the four-step process and recommended appropriate thromboprophylaxis, and other resources are available at: http://www.saferhealthcarenow.ca/EN/Interventions/vte/Pages/resources.aspx
APPENDIX A

VTE Audit Day Call to Action Flyer

Safer healthcare now! Reducing Harm | Improving Healthcare | Protecting Canadians

Call to action

Canadian Venous Thromboembolism (VTE) Audit - October 1st to 15th, 2014

Safer Healthcare Now!, a program of the Canadian Patient Safety Institute, invites you to participate in the Canadian VTE Audit, designed to establish a national perspective of VTE thromboprophylaxis rates and raise awareness of appropriate VTE prophylaxis.

VTE is one of the most common and preventable complications of hospitalization and is a Required Organizational Practice (ROP) of Accreditation Canada.

By participating in the national audit day you will be a part of a movement aimed at preventing deep vein thrombosis (DVT) and pulmonary embolism (PE) in hospital patients.

For more information about the Canadian VTE Audit, join our free information call:

- Sept 10th, 2014,
- Toll-Free Dial In: 1-877-668-4490
- Event Number: 961 698 677
- Time:
  - 9:00 a.m. - 10:00 a.m. PDT
  - 10:00 a.m. - 11:00 a.m. MDT
  - 11:00 a.m. - 12:00 p.m. CDT
  - 12:00 p.m. - 1:00 p.m. EDT
  - 1:00 p.m. - 2:00 p.m. ADT
  - 1:30 p.m. - 2:30 p.m. HDT

Register for the audit at www.saferhealthcarenow.ca

www.saferhealthcarenow.ca  cpsicsp

July 2014
APPENDIX B

VTE AUDIT DAY INSTRUCTIONS

(Click on the image below to open the document)

Welcome to the Canadian VTE Audit:

Thank you for participating in the Safer Healthcare Now! Canadian VTE audit. By participating in this Audit, you are helping to improve the delivery of safe and effective care for patients at your institution and across the nation.

The purpose of the audit is to:

a. Increase awareness around VTE prophylaxis in preparation for the first World Thrombosis Day (October 13, 2014)
b. Obtain an estimate of national VTE prophylaxis rates
c. Improve experience with the VTE Data Collection Tool and other tools available to support prevention of VTE

The Canadian VTE Audit is simple and quick to complete (we estimate 60 minutes).

Results of individual hospitals/organizations will not be shared publicly unless that organization has provided explicit consent to do so. Without express written consent all data submitted to the “Canadian VTE Audit” will be presented in aggregate form only.

This work book provides instructions on how to participate and tools to assist you in your data collection.

<table>
<thead>
<tr>
<th>Sheet number</th>
<th>Sheet name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Instructions for determining the patients to include in the audit</td>
</tr>
<tr>
<td>2</td>
<td>Steps for conducting the audit</td>
</tr>
<tr>
<td>3</td>
<td>Instructions for accessing your VTE Data (Audit) Collection Form: 3 Options</td>
</tr>
<tr>
<td>4</td>
<td>Tips for completing the SHN Data Collection Forms and sample image of the VTE Data Collection Form</td>
</tr>
</tbody>
</table>

www.saferhealthcarenow.ca
# APPENDIX C

## VTE Audit Day Data Collection Form

[VTE Audit Day Data Collection Form](image)

<table>
<thead>
<tr>
<th>Patient #</th>
<th>Preprinted order used on admission or after surgery</th>
<th>Type of thromboprophylaxis</th>
<th>Receiving appropriate thromboprophylaxis</th>
<th>Reason recommended thromboprophylaxis not used</th>
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<tr>
<td>1</td>
<td>Yes</td>
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<td>Yes</td>
<td>No</td>
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<td>10</td>
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<td>Yes</td>
<td>No</td>
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**Contact Name and Phone Number (include area code):**

**FAX Form in FINE Resolution to 1-877-685-9850**

For more information: 416-946-3103 or metrics@safecarenow.ca

Access your data at https://hsc.rand.ac/auditmetrics

**DATE:**

<table>
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<th>JAN</th>
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<th>MAY</th>
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<th>AUG</th>
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<th>OCT</th>
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</tr>
</tbody>
</table>

**Intervention:** VTE - Venous Thromboembolism Prevention

**Organization:** 106 Mile District General Hospital

**Unit:** East Wing

**Patient Sample:** Hip Fracture Surgery

**Age Group:** 65 years of age or over

**Patient Type:** In Patient

**Type of thromboprophylaxis**

1. Mechanical Only
2. Heparin
3. Dalteparin (Fragmin TM)
4. Enoxaparin (Lovenox TM)
5. Nadroparin (Fraxiparine TM)
6. Thromb (Innohep TM)
7. Fondaparinux (Arixtra TM)
8. Warfarin
9. Dabigatran (Pradax TM)
10. Rivaroxaban (Xarelto TM)

**Reason recommended thromboprophylaxis not used**

1. No thromboprophylaxis
2. Mechanical alone without bleeding contraindication
3. Wrong Drug
4. Wrong Dose
5. Delay Starting (>24hrs after surgery or >24hrs after admit)
6. Insufficient duration
7. Following standards that are different from SHN
**APPENDIX D**

**SAFER HEALTHCARE NOW! RECOMMENDED DOSES OF ANTICOAGULANT PROPHYLAXIS**

<table>
<thead>
<tr>
<th>Low Molecular Weight Heparin (LMWH)</th>
<th>dalteparin (Fragmin&lt;sup&gt;®&lt;/sup&gt;)</th>
<th>5,000 units subcutaneously once daily</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>enoxaparin (Lovenox&lt;sup&gt;®&lt;/sup&gt;)</td>
<td>40 mg subcutaneously once daily OR 30 mg subcutaneously twice daily</td>
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<tr>
<td></td>
<td>tinzaparin (Innohep&lt;sup&gt;®&lt;/sup&gt;)</td>
<td>4,500 units subcutaneously once daily</td>
</tr>
<tr>
<td>Heparin</td>
<td></td>
<td>5,000 units subcutaneously every 12 hours OR every 8 hours</td>
</tr>
<tr>
<td>Fondaparinux (Arixtra&lt;sup&gt;®&lt;/sup&gt;)</td>
<td></td>
<td>2.5 mg subcutaneously once daily</td>
</tr>
<tr>
<td>Rivaroxaban (Xarelto&lt;sup&gt;®&lt;/sup&gt;)</td>
<td>Hip or knee replacement only</td>
<td>10 mg by mouth once daily</td>
</tr>
<tr>
<td>Dabigatran (Pradaxa&lt;sup&gt;®&lt;/sup&gt;)</td>
<td>Hip or knee replacement only</td>
<td>220 mg by mouth once daily (150 mg if age &gt;75 or CrCl 30-50 ml/min)</td>
</tr>
<tr>
<td>Apixaban (Eliquis&lt;sup&gt;®&lt;/sup&gt;)</td>
<td>Hip or knee replacement only</td>
<td>2.5 mg by mouth twice daily</td>
</tr>
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</table>

*recommended dose may be altered by renal dysfunction, low body weight, obesity*

[Click here](#) to download a pocket card on thromboprophylaxis