Transfusion Safety in Practice

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CANADA
• Nurses and Physicians at the bedside
• Blood Bank Medical Laboratory Technologists (MLT)
• Transfusion Medicine Physician
• Patient Blood Management Coordinator
• Transfusion Safety Officer/Nurse (TSO)
Objectives

- Explain the historical background for hemovigilance and the development of the TSO role in Canada
- Discuss how to train someone for the TSO role
- Illustrate how the TSO Role promotes transfusion safety and quality
• **1325 bed hospital – 3 sites**
  ◦ Teaching hospital affiliated with University of Toronto faculty of medicine
  ◦ Adult and newborns

• **1.2 million patient visits per year**
  ◦ Largest Trauma Centre in Canada
  ◦ Largest Maternity Hospital

• **Strong focus on cancer, cardiac and vascular disease, image guided brain therapies**

• **11,000 staff, physicians, volunteers, students**
  ◦ 3500 Nurses
  ◦ Transfusion Safety Nurse since 2000
  ◦ Transfusion Error Surveillance System Analyst
  ◦ Patient Blood Management Coordinator(s) since 2002
• 1980s - Tainted blood tragedy
  ◦ Over 30,000 cases of transfusion transmitted Hepatitis C and HIV
  ◦ Loss of confidence in the blood system
    • Canadian Red Cross

• Krever Inquiry (1993-97) - 50 Recommendation Report
  ◦ Compensation for victims
  ◦ Precautionary measures
    • Before definitive scientific proof of harm
  ◦ Governance
    • Reformed blood system at arm’s length from governmental funders
    • Canadian Blood Services and Héma-Québec
  ◦ Public Health recommendation
    • Active surveillance of transfusion related events
      ◦ Provincial Blood Offices – Ministry of Health
      ◦ TSO (Transfusion Safety Officer) role created

• 20 years later
  ◦ Restored public confidence in blood safety
1999 Health Ministry of Québec implemented TSO positions in 20 hospitals identified as Designated Transfusion Centres

- Clinical TSO (Nurse) and Technical TSO (medical laboratory technologist- MLT)
- Working together to ensure surveillance of all transfusion events – Blood Transfusion Laboratory and Clinical areas
- Formal training in transfusion practices and reactions

Slowly TSO positions began to be created across Canada but usually funded by individual hospitals

- At Sunnybrook – 2000

Provincial Blood Offices have begun incorporating a Transfusion Safety Nurse/Officer as part of their team
• MLT
  ◦ Experience with all blood products
  ◦ Understanding of technical aspects of storage, testing and issuing of blood products
  ◦ Awareness of indications for appropriate use
  ◦ Knowledge of accreditation standards and regulatory requirements
  ◦ Existing relationship with hospital Blood Transfusion Laboratory and blood supplier
  ◦ Limited knowledge of clinical aspects of patient care, clinical documentation and transfusion practice

• Nurse
  ◦ Expertise in patient care and clinical areas
  ◦ Knowledge of bedside transfusion practice
  ◦ Understanding of competing pressures at the bedside
  ◦ Better able to instruct in a format most helpful to nurses
  ◦ Existing relationship with nursing and medical staff

TSO - Nurse or MLT
- **International**
  - **USA** - South Texas 2 day training course
    - [southtexasblood.org](http://southtexasblood.org)
  - **Australia** - BloodSafe eLearning
    - [bloodsafelearning.org.au](http://bloodsafelearning.org.au)
  - Graduate Certificate in Transfusion Practice

- **Canadian**
  - CSTM website
    - [transfusion.ca](http://transfusion.ca)
  - **Ontario**
    - [transfusionontario.org](http://transfusionontario.org)
    - TSO Resource Manual
    - Bloody Easy Lite eLearning
    - Bloody Easy 4, Coagulation Simplified handbooks
<table>
<thead>
<tr>
<th>Training Methods Experienced by Respondents</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial training in nursing or laboratory science PLUS years of experience in transfusion service/blood management</td>
<td>65%</td>
<td>62</td>
</tr>
<tr>
<td>Formal TSO orientation program</td>
<td>8%</td>
<td>8</td>
</tr>
<tr>
<td>Attendance at national meetings such as AABB, SABM</td>
<td>40%</td>
<td>38</td>
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<tr>
<td>Networking with other TSO/blood management managers</td>
<td>53%</td>
<td>50</td>
</tr>
<tr>
<td>Other (eg, self-study, on-the-job training)</td>
<td>22%</td>
<td>21</td>
</tr>
</tbody>
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AABB Press, 2013
TSO Role

What I do + ...
Investigation of reactions, incidents and near misses
Quality improvement
Active surveillance of:
- Patient identification
- Appropriate orders
- Sample labeling practices
- Blood administration
Education and training
Creation of resource material for clinicians
Patient blood management
Participation in transfusion safety initiatives

Improve transfusion safety outside of the laboratory
Transfusion Reactions

Investigation
- Assess signs and symptoms, timing, underlying condition
- Review with Transfusion Medicine physician
- Classify
  - Reaction type or unrelated
  - Severity
  - Imputability
  - Outcome
- Report result to clinicians and document
- Recommendations for future transfusions

Reporting
- Blood supplier if product quality/efficacy in question
- Governmental hemovigilance programs
- Hospital database
  - Present at Transfusion Committee
  - Useful for education
Error and Incident Investigation

- **Investigation**
  - Errors and incidents related to transfusion practice
  - Root cause analysis
    - What the heck happened?
    - Why did it happen?
    - What can we do to prevent it from happening again?

- **Reporting**
  - Make recommendations
  - Hospital risk management
    - Incident/Error reporting
  - Transfusion Committee, assess for trends
  - Governmental authorities as required
Effect of a TSO on Error Reporting

- Bar graph showing errors reported from 2008 to 2016.
- Pie chart showing 2008-2015 harm (n=37 events), with 1 in 769 reported events.

Legend for the pie chart:
- TACO - unnecessary transfusion
- TACO - wrong rate/no diuretics
- Reaction - unnecessary transfusion
- Undertransfusion - shock/bleed
- Reaction - no PBM offered
- Miscellaneous
• Ensure compliance with Standards and Blood Regulations
  ◦ Clinical areas outside Blood Bank
  ◦ Personnel training
  ◦ Consent, Order, Sampling, Transport, Transfusion
  ◦ Equipment – tubing, infusion devices, warmers
  ◦ Adverse reactions

• Serve on Transfusion Committee and others requiring transfusion medicine input
  ◦ IV pump selection
  ◦ Consent policy
  ◦ Massive transfusion

• Participation in inspection or accreditation
- Audits – bedside and retrospective
  - Transfusion practice
  - Consent
  - Documentation
  - Audits as an opportunity for teaching
- Data analysis
  - Reporting of results to benchmark and improve practice
- Annual summary to Nursing and Medical Leadership and Risk Management
Audit Summary

2016 - QUALITY TRANSFUSION AUDIT RESULTS

Please post for all staff to review

53 audits were conducted last year with an average score of 96%, again an improvement from last year!
- 31 audits (58%) had a perfect score – a ten percent increase from last year!!
  - Congratulations to C2, TMC, ED and Blood Bank for the most perfect audits
  - Other PCUs with perfect audits are B4, D2, D5, D6 and RTBC
- Only 2 audits had a score of 85% or less - this is down from 8 last year!

Serious Errors: 6 TESS (Transfusion Errors Surveillance System) events were reported and again an improvement from 10 last year;

1 case – Transfusion order outside of hospital transfusion guidelines
2 cases – Blood not checked properly prior to transfusion
  - Once away from the patient’s bedside and once against an armband on the bed

Greatly improved
- Appropriate transfusion orders – This is the most improved category!
  - Good work ordering physicians and NPs
  - In the spirit of Choosing Wisely “Why give 2 when 1 will do?”
- Decrease of 40% in the number of serious errors
• Participate in development of Clinical P&P
  ◦ Transfusion policy
    • General and for unique areas (dialysis, NICU)
  ◦ Product monographs
  ◦ Reaction management
  ◦ Transfusion consent
  ◦ Use of infusion devices and blood warmers
  ◦ Pre-transfusion blood sample collection

• Periodic review and revisions
  ◦ Stakeholder consultation
  ◦ Approval process
  ◦ Posting and advertising
• Orientation of newly hired staff
• Training of staff for specialized areas/scenarios
  ◦ ICU, NICU, Massive Transfusion protocol
• Develop and maintain a formal competency training program
  ◦ eLearning module
  ◦ Live sessions
• Training with new blood products, processes and equipment

Education and Training
• For Nurses and Physicians:
  ◦ Reaction investigation guidelines
  ◦ Guidelines for special patient populations
  ◦ Product monographs

• For Patients:
  ◦ Information pamphlets
  ◦ Post transfusion reaction discharge instructions

• Posted on Blood Bank intranet page

Resource Material
Blood & Tissue Bank

Click below for information on all products issued from the Blood & Tissue Bank:

Monographs - Blood & Tissue Products

Patient Information

Transport during Transfusion

NEW: Transfusion using Sapphire® IV Pump

Blood Conservation

Transfusion Guidelines

Reactions

Policies & Standards

Upcoming Inservices - no inservices scheduled

Contact Us

Transfusion Medicine Committee Terms of Reference
- An evidence based, multidisciplinary approach to optimizing the care of patients who might need transfusion.
  - Treat anemia (iron deficiency, chronic disease)
  - Minimize blood loss (pre/intra/post-op strategies)
  - Appropriate use of blood

- Benefits include
  - Decreased transfusion rates, hospital length of stay
  - Increased patient satisfaction

- TSO may be involved in establishment of a PBM program
Blood Components
Issued for Transfusion

37% decrease
Initiatives to Improve Transfusion Safety

- Implementation of changes in processes to improve transfusion safety
  - Blood group check
    - Trying to prevent wrong blood to patient
  - Barcode technology
    - Sample labeling
    - Checking blood
  - Massive Transfusion
    - Nursing module
• Resource for clinical staff
  ◦ How do I...
• Liaison between clinical staff and laboratory staff
  ◦ Monkey in the middle
• Working with interdisciplinary team
  ◦ Nurses, Doctors, Risk Management, Porters...
• Network with other TSOs
  ◦ Resource
  ◦ We learn from each other
Further Reading

- **CSTM Blog**
  - transfusion.ca

- **AABB** *Advancing Transfusion and Cellular Therapies Worldwide*
  - aabb.org/programs/publications
  - Role of TSO and Patient Blood Management Coordinators
Hospital-based transfusion error tracking from 2005 to 2010: identifying the key errors threatening patient transfusion safety

Carolyn Maskens, Helen Downie, Alison Wendt, Ana Lima, Lisa Merkley, Yulia Lin, and Joannie Callum


How do we utilize a transfusion safety officer?
Dunbar NM, Szczepiorkowski ZM.

The Transfusion Safety Officer is an integral part of the team that promotes quality and safety in transfusion practice.

Key components of the role:
- Investigation of transfusion reactions and errors
  - Active surveillance of transfusion related events as mandated by Krever Commission
- Promotion of quality and best practices in bedside transfusion practice
TSO in her spare time...
Thank you for your attention