Coaching Transfusion Prescribers to Choose Wisely

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RCPA Pathology Update 2019 - Friday, February 22 @ 1445
@dryulialin
Disclosures

• Research:
  – Novartis, Octapharma, Canadian Blood Services

• Consulting:
  – Amgen, Pfizer
Objectives

At the end of the presentation, attendees will:

• Be convinced that coaching the prescriber is essential to high quality transfusion care

• Explore some coaching strategies: teaching, disseminating transfusion education, changing transfusion practice

• List ways to determine if coaching was successful
“Coach”

• Coaching = process to transport people from where they are to where they want to be
• Specific task or objective
• Get better
• Teach, observe, feedback

“Coaching”. Wikipedia Feb 2019
End Goal? High Quality Transfusion

- The right sample
- The right test result
- The right equipment
- The right bag
- The right patient
- The right donor...
We need to coach prescribers to make the Right Decision to Transfuse
A MULTICENTER, RANDOMIZED, CONTROLLED CLINICAL TRIAL OF TRANSFUSION REQUIREMENTS IN CRITICAL CARE

PAUL C. HÉBERT, M.D., GEORGE WELLS, PH.D., MORRIS A. BLAJCHMAN, M.D., JOHN MARSHALL, M.D., CLAUDIO MARTIN, M.D., GIUSEPPE PAGLIARELLO, M.D., MARTIN TWEEDDALE, M.D., PH.D., IRWIN SCHWEITZER, M.Sc., ELIZABETH YETISIR, M.Sc., AND THE TRANSFUSION REQUIREMENTS IN CRITICAL CARE INVESTIGATORS FOR THE CANADIAN CRITICAL CARE TRIALS GROUP*
Choosing Wisely statements support...

- American Society of Anesthesiologists
- Australian and New Zealand College of Anaesthetists
- Canadian Society of Internal Medicine
- Critical Care Societies
- College of Intensive Care Medicine of Australia and New Zealand
- Society of Hospital Medicine
- American College of Ob & Gyne
- Canadian Society of Palliative Care Physicians
- Royal Australasian College of Surgeons
- American Academy of Family Physicians
- American Society of Hematology
- Canadian Society of Hematology
- American Association of Blood Banks (AABB)
- Canadian Society for Transfusion Medicine

Not an easy task!

Different experiences
Different pace
Different contexts
Different styles
An approach...

- Decide what knowledge needs to be conveyed or what practice needs to be changed
- Think about how to convey that information effectively
- Know your audience and adapt to context
- Measure so you know where you’re starting from and where you want to go
Knowledge Creation

- Monitor knowledge use
- Evaluate outcomes
- Sustain knowledge use

Action Cycle (Application)

- Identify problem
- Identify, review, select knowledge
- Adapt knowledge to local context
- Assess barriers to knowledge use
- Select, tailor, implement interventions
Coaching Transfusion Prescribers

• Trainee Stage: Knowledge
  – Development of TM education
  – Delivery and Evaluation

• Continuing Education: Ongoing guidance
  – Measuring transfusion practice
Development of TM education

• Global call for increased transfusion education but how best to do this?
• Focus groups (N=53) with junior doctors (77%) and health care professionals in the UK
• Focus group (N=52) with junior doctors in 6 hospitals to guide development of tools

Graham JE et al. Transfusion Med 2017;27:96-104
Flores, Saxon et al. Vox Sang 2018 May 8 epub
Views of Current TM education

• Undergraduate: unmemorable, lectures with vast quantity of theory and acronyms
• After graduation: learning with orientation; cascade training
• E-learning and online learning held in low esteem
  – Inflexible to knowledge and experience of learning
  – Generic feedback rather than responding to students’ questions and desire to learn
  – Viewed as a clicking exercise

Graham JE et al. Transfusion Med 2017;27:96-104
How should it be delivered?

- Relevant and practical
- Final year of med school or early in postgrad training
- Delivered **face to face** by good educators
- Preferred:
  - Small groups based on real life scenarios
  - Simulation to “practice”
  - Just in time education: lanyard cards, print (vs. online)

Graham JE et al. Transfusion Med 2017;27:96-104
Flores, Saxon et al. Vox Sang 2018 May 8 epub
What should TM education cover?

- Practical transfusion
  - When to prescribe blood and in what amounts?
  - How quickly to administer? Diuretics? Special requirements? How to assess response to transfusion?
  - How to provide informed consent including alternatives?
  - How to manage transfusion reactions?

Graham JE et al. Transfusion Med 2017;27:96-104
Flores, Saxon et al. Vox Sang 2018 May 8 epub
Coaching Transfusion Prescribers

- Trainee Stage
  - Development of TM education
  - Delivery and Evaluation
- Continuing Education
  - Measuring transfusion practice
Simulation

- 70 medical students at the University of Minnesota

- Scenarios: acute hemolytic transfusion reaction, massive hemorrhage in different clinical settings

Morgan et al. Transfusion 2015;55:919-25
Simulation

pretest ( ) and posttest ( ) for medical students

P<0.001

Morgan et al. Transfusion 2015;55:919-25
Simulation

- Challenges
  - Time commitment
  - Financial cost
Simulation

- Designed alternative curriculum the following year
  - Hybrid group: pretest, didactic session and posttest online; 1 hour in person simulation
  - Online only: all sessions online including a recorded simulation session
Simulation

Knowledge

Score

Satisfaction

Medical Student Survey Score

Fig 2. Absolute score on pre- and posttests for Simulation, Hybrid, and Online-only groups. Absolute scores for Simulation (n = 104), Hybrid (n = 71) and Online-only groups (n = 101) are present for pre- and posttest. *P = .0003 vs Simulation group pretest. *P = .004 vs Hybrid group posttest. **P = .03 vs Online only group posttest.

Fig 5. Medical student survey results. Results of the medical student satisfaction survey are presented for Simulation (n = 104), Hybrid (n = 71), and Online-only groups (n = 101). *P < .0001 vs Online-only group. **P < .001 vs Online-only group.
TM education for Surgical trainees

- Educational modules developed on RCPSC objectives
  - Surgical Trainee Module: indications, informed consent and management of transfusion reactions
  - General Surgery Module: massive transfusion, informed consent and perioperative management of anticoagulation
- Module
  - Pre-readings; 1 hr didactic session; then small group case-based discussions co-facilitated by a surgeon and TM expert

Champion et al. Transfusion 2017;57:965-970
Evaluation

- Pre-module
- Post-module
- Retention: 3-6 mo later

- Q1: single unit RBC transfusion
- Q2: sickle cell disease
Transfusion Camp

Transfusion Camp

- Longitudinal TM curriculum (5 full day sessions)
- To provide essentials of TM for non-hematology specialty postgraduate trainees (residents)

<table>
<thead>
<tr>
<th>Day</th>
<th>Month</th>
<th>Session</th>
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</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>July</td>
<td>Precamp test &amp; Indications for blood components</td>
</tr>
<tr>
<td>Day 2</td>
<td>Sept</td>
<td>Transfusion reactions</td>
</tr>
<tr>
<td>Day 3</td>
<td>Jan</td>
<td>Special situations: Maternal, Perioperative bleeding assessment, Sickle cell disease</td>
</tr>
<tr>
<td>Day 4</td>
<td>April</td>
<td>Perioperative patient blood management, complex hemostasis</td>
</tr>
<tr>
<td>Day 5</td>
<td>June</td>
<td>Trauma, massive hemorrhage protocols &amp; Postcamp test</td>
</tr>
</tbody>
</table>
Typical Day at Transfusion Camp

<table>
<thead>
<tr>
<th>Start time</th>
<th>Name</th>
<th>Session Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td>Dr. Yulia Lin</td>
<td>Pre-Course Exam (30 minutes)</td>
</tr>
<tr>
<td>9:00</td>
<td>Dr. Jeannie Callum</td>
<td>Red Cell Transfusion (45 minutes)</td>
</tr>
<tr>
<td>9:45</td>
<td>Dr. Yulia Lin</td>
<td>Basic Blood Bank Testing (30 minutes)</td>
</tr>
<tr>
<td>10:15</td>
<td></td>
<td>Break (15 minutes)</td>
</tr>
<tr>
<td>10:30</td>
<td>Dr. Lani Lieberman</td>
<td>Platelet Transfusion (45 minutes)</td>
</tr>
<tr>
<td>11:15</td>
<td>Dr. Katerina Pavenski</td>
<td>Seminar 1A: RBC &amp; Platelet Transfusion Cases (75 minutes)</td>
</tr>
<tr>
<td>12:30</td>
<td></td>
<td>Lunch (60 minutes)</td>
</tr>
<tr>
<td>13:30</td>
<td>Dr. Lani Lieberman</td>
<td>Neonatal &amp; Pediatric Transfusion (30 minutes)</td>
</tr>
<tr>
<td>14:00</td>
<td>Dr. Jeannie Callum</td>
<td>Plasma, PCC &amp; Cryoprecipitate (60 minutes)</td>
</tr>
<tr>
<td>15:00</td>
<td></td>
<td>Break (15 minutes)</td>
</tr>
<tr>
<td>15:15</td>
<td>Dr. Jeannie Callum</td>
<td>Seminar 1B: Plasma, PCC &amp; Cryoprecipitate Cases (75 minutes)</td>
</tr>
</tbody>
</table>

- Pre-readings
- 15 hours of didactic sessions
- 15 hours of team based learning seminars
2018-2019 Participating University Sites
10 Canadian & 1 UK

Jacqueline Trudeau
Oksana Prokopchuk-Gauk
Michelle Zeller
Ziad Solh
Elianna Saidenberg
Jill Dudebout
Mike Murphy
Robert Anderson
Dev Jayaraman
David Conrad
McGill
McMaster University
University of Toronto
University of Saskatchewan
University of Western Ontario
University of Queen's
Dalhousie University
Northern Ontario School of Medicine
University of Ottawa
Delivery

• University of Toronto:
  – Live in person lectures and seminars
• 8 Universities
  – Gotowebinar for live lectures and local faculty-led seminars
• 2 Universities
  – UBC: Classroom recorded lectures and local faculty-led seminars
  – Oxford: Trainees watch recorded lectures and local faculty-led seminars
# Postgraduate Trainees (2016-2018)

Trainees from 13 specialties at 8 sites (N=390)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total n=390</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialty (n, %)</td>
<td></td>
</tr>
<tr>
<td>Anesthesia</td>
<td>160 (41)</td>
</tr>
<tr>
<td>Hematology</td>
<td>56 (14)</td>
</tr>
<tr>
<td>Critical Care Medicine</td>
<td>28 (7)</td>
</tr>
<tr>
<td>Pediatrics / Pediatric Hematology Oncology</td>
<td>25 (6)</td>
</tr>
<tr>
<td>General Pathology / Pathology</td>
<td>22 (6)</td>
</tr>
<tr>
<td>Hematopathology</td>
<td>19 (5)</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>18 (5)</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>16 (4)</td>
</tr>
<tr>
<td>Surgery</td>
<td>15 (4)</td>
</tr>
<tr>
<td>Medical Oncology</td>
<td>10 (3)</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>10 (3)</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>9 (2)</td>
</tr>
<tr>
<td>Transfusion Medicine</td>
<td>2 (1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PGY (n, %)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>97 (25)</td>
</tr>
<tr>
<td>2</td>
<td>61 (16)</td>
</tr>
<tr>
<td>3</td>
<td>68 (17)</td>
</tr>
<tr>
<td>4</td>
<td>84 (22)</td>
</tr>
<tr>
<td>5</td>
<td>28 (7)</td>
</tr>
<tr>
<td>6 or higher</td>
<td>52 (13)</td>
</tr>
</tbody>
</table>

Lin Y et al. Transfusion 2019; in press
1. 70 M is admitted to the ICU with respiratory failure due to pneumococcal pneumonia. His past medical history is significant for DM Type 2, HTN, and coronary artery disease. He is on antibiotics and hemodynamically stable. He is intubated and ventilated (PS10, PEEP 8, FiO2 0.5, oxygen saturation 94%). There is no evidence of bleeding or hemolysis, however, over the last few days, his hemoglobin has drifted down to 70 g/L.

Does this patient require a transfusion?
1. 70 year old male admitted to the ICU with respiratory failure due to pneumococcal pneumonia...

Which of the following represents the most appropriate RBC transfusion strategy for this patient?

A. Transfuse RBCs if Hgb <90 g/L  
B. Transfuse RBCs if Hgb <80 g/L  
C. Transfuse RBCs if Hgb <70 g/L  
D. Transfuse RBCs if Hgb <60 g/L
Modified Team-Based Learning
Modified Team-Based Learning

• Why did you answer A?
• Why did you answer B?
• ...

• After discussion, facilitator provides summary with “answer” and why other options not as good
Faculty rating of trainee participation?

- **Traditional format**
  - Poor (falling asleep) 40%
  - Fair (distracted, checking cell phone) 40%
  - Good (attentive, participating when called upon) 20%
  - Excellent (engaged, asking questions) 0%

- **Team based learning format**
  - Poor (falling asleep) 0%
  - Fair (distracted, checking cell phone) 0%
  - Good (attentive, participating when called upon) 40%
  - Excellent (engaged, asking questions) 60%

Lin Y et al. Transfusion 2019; in press
Faculty insight into trainee knowledge during the seminar?

Lin Y et al. Transfusion 2019; in press
Impact on Trainee Knowledge?

Pre-test 10.3 (SD 2.9; n=286) vs. Post-test 13.0 (SD 3.0; n=194)

Mean improvement 2.7 out of 20 (p<0.0001; 95% CI 2.2-3.2)

Lin Y et al. Transfusion 2019; in press
Impact on Trainee Behaviour?

At the end of Transfusion Camp survey, 81% had applied learning (n=91)

- Minimize unnecessary transfusion
- Transfuse one unit at a time
- Consider furosemide to prevent TACO
- Always give vitamin K for warfarin reversal
- How to obtain transfusion consent
- How to manage transfusion reactions
- Use of tranexamic acid

Lin Y et al. Transfusion 2019; in press
Novel Strategies
You Retweeted

ORBCoN @ORBCoN1 · Feb 1
Join us this April "Pumping Iron-Strategies to Manage Iron Deficient Patients"
@itsinyoutogive @ORBCoN1 Symposium #transfusionmed
fhs wedge2.mcmaster.ca/limes/orbcon/i...

Yulia Lin @dryulialin · Feb 2
Check out these great Videos on #ChoosingWisely Canada transfusion recommendations. Please retweet!
Videos: Choosing Wisely Canada transfusion rec...
Led by project director Dr.
professionaleducation.blood.ca
Choosing Wisely Canada transfusion recommendation #1:

Don’t transfuse blood if other non-transfusion therapies or observation would be just as effective. Blood transfusion should not be given if other safer non-transfusion alternatives are available. For example, patients with iron deficiency without hemodynamic instability should be given iron therapy.

Sources:
Are you one of the hundreds of users active on our Audit Tool? We currently have 7 audits available, including Materials... [link](https://t.co/OmT2FtJJJg)
200,000 visitors per year
170,000 podcast downloads
Top 5 podcasts each with >
5000 downloads

050CE: Pretransfusion Testing 1
with Sue Johnson

CE episode! How well do you understand the tests
required before transfusion? Sue Johnson returns
to the podcast to explain the essentials of
pretransfusion testing (part 1 of 2).
Listen to the Current Episode!

Apr 27, 2018 | 6 Comments
Episode 65 – IV Iron for Anemia in Emergency Medicine

For years we’ve been transfusing red cells in the ED to patients who don’t actually need them. A study looking at trends in transfusion practice in the ED found that about 1/3 of transfusions given were deemed totally inappropriate. As we explained in previous EM Cases episodes, there have been a whole slew of articles in the literature over the years that have shown that morbidity and mortality outcomes with lower hemoglobin thresholds, like 70g/L for transfusing ICU patients (TRICC trial), patients in septic shock (TRISS trial), and patients with GI bleeds are similar to outcomes with traditional higher hemoglobin thresholds of 90 or 100g/L. We’re simply transfusing blood way too much! The American Association of Blood Banks in conjunction with the American Board of Internal Medicine’s Choosing Wisely campaign, as one of its 5 statements on overuse of procedures, stated, “Don’t transfuse iron deficiency without hemodynamic instability.”

So, in this episode with the help of Transfusion specialist, researcher and co-author of the American Association of Blood Banks transfusion guidelines Dr. Jeannie Callum, Transfusion specialist and researcher Dr. Yuliu Lin, and the walking encyclopedia of EM Dr. Walter Himmel, we give you an understanding of why it’s important to avoid red cell transfusions in certain situations, why IV iron is sometimes a better option in a significant subset of anemic patients in the ED, and the practicalities of exactly how to administer IV iron.

https://emergencymedicinecases.com/iv-iron-for-anemia-in-emergency-medicine/
Appropriate transfusion for iron deficiency in ED

A. IV iron avail. in ED
B. IV iron guideline
C. Stakeholder feedback
D. Grand rounds
E. Access to TM MD
F. Podcast release
G. ED IDA toolkit

Khadadah, Lin et al. Transfusion 2018;58:1902-8
Coaching Transfusion Prescribers

• Trainee Stage
  – Development of TM education
  – Delivery and Evaluation

• Continuing Education
  – Measuring transfusion practice
Continuing education

- Ongoing education
- Guidelines
- Designing education/intervention within systems
  - Order sets, computerized decision support
  - Prospective order screening
- Key is to measure and feedback
Western Australia

- PBM in Hematology (acute leukemia, auto- and alloSCT)
  - PBM medical director and nurse coordinator
  - PBM educational road shows
  - More restrictive thresholds
  - Adopting single unit policy for nonbleeding patients
  - Computer provider order entry

Leahy et al. Transfusion 2017;57:2189-96
Western Australia

2014-15 vs. 2010/11

- No change in LOS
- Serious bleed OR 1.14 (95% CI 0.38-3.44)
- Mortality OR 0.31 (95% CI 0.06-1.56)

Leahy et al. Transfusion 2017;57:2189-96
Power of data

• Choosing wisely initiative in the Department of Surgery to reduce unnecessary transfusion
  – Knowledge survey to clinical providers (Surgery)
  – Lecture: Overview of guidelines with results of survey and correct answers
  – Monthly transfusion reports

A. Sample RBC transfusion report

Education on Guidelines, Audit & Feedback

Fig. 1. *Overall change in transfusion practices pre- vs. post-intervention.* Overall, there was a significant improvement in RBC and platelet transfusion compliance pre- vs. post-intervention (panel A). There was also a significant decrease in the mean number of RBC units ordered per patient and a non-significant trend toward a decreased number of plasma units ordered per patient across the two study periods (panel B).
WHY GIVE TWO WHEN ONE WILL DO?

Help reduce unnecessary red blood cell transfusions in our hospital

http://www.choosingwiselycanada.org/in-action/toolkits/
Quality Improvement Plan

Quality Improvement Plan

Title & Information

Ontario Transfusion Quality Improvement Plan Guidance Document for Institutional Implementation

This document was created to provide guidance on how to implement quality improvement activities to reduce unnecessary RBC transfusion at your institution or hospital. It can be used as a template by transfusion medicine committees or institutional (hospital) departments or incorporated in the institution's corporate quality improvement plan.

Quality Improvement Plan Tools

http://transfusionontario.org
Transfusion QI Toolkit

How to develop a formal Quality Improvement Plan
(Narrative and QIP template)

Module 1
How to do a simplified RBC transfusion audit

Module 2
How to implement local transfusion guidelines

Module 3
How to implement MLT prospective transfusion order screening
Partnership with Academic Teaching Hospital Collaborative

Education on Guidelines

9-5 Prospective Order Screen

MAC Approval & 24/7 Screen

↓31%

Monthly events / 100 AIDP

RBC Units Transfused

Mean

LCL

UCL

Hospital Deaths

Month

Ontario Transfusion QIP Data (32 sites)

Repeat Audits for QIP Metrics (Aug 2016-Sep 2018)

Thompson T, ORBCON, OTQIP, February 2019 unpublished
START Study

Objective
Obtain a rate of 90% appropriateness of RBC transfusion across 16 Ontario, Saskatchewan and Alberta hospitals

Intervention
Guidelines, education, prospective transfusion order screening by technologist

Outcomes
Primary: Transfusion appropriateness
Secondary: Utilization, Clinical outcomes, Undertransfusion

Start Date
Feb 1, 2018 (Study duration – 2 years)

Principal Investigator: Callum J. START Study. 2018
Summary

• Coaching the transfusion prescriber can be successful!
• Trainee level: Impart knowledge in an engaging, practical, measurable and sustainable way
• Continuing education: more complex
  – Think about how to convey that information effectively
  – Know your audience and adapt to context
  – Measure so you know where you’re starting from and where you want to go