Inappropriate plasma transfusion at five GTA Hospitals: Results of an audit & qualitative study

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Background

- Despite a narrow list of accepted clinical indications for its use, more than 200 000 units of frozen plasma are used annually in Canada (excluding Quebec)
- Previous audits completed by ORBCoN report 30 to 50% of plasma use is inappropriate
- No improvement noted between 2008 and 2013

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Objectives

- To estimate appropriate versus inappropriate use of plasma at five teaching hospitals in the GTA (Toronto General, Toronto Western, Sunnybrook, Mt Sinai, St. Mike's)
- To explore patterns of plasma use at participating hospitals
- To explore clinicians' perceptions of factors that may contribute to inappropriate transfusion of plasma and perceptions of how inappropriate transfusion could be decreased

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Methods: Part I - Quantitative Audit

- Prospective cohort study in the summer of 2014
- Consecutive orders for plasma tracked until 15-20 orders received at each site, plasmapheresis orders excluded
- Chart's reviewed within 72h of order to ascertain demographic data, indication for plasma, relevant clinical and lab data, data re ordering physician/NP
- Appropriateness determined retrospectively using OrBCON/Blood Easy criteria, consensus determination by hematology fellow + local blood bank director

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Methods: Part II – Qualitative, Interviews

- Process mapping used to identify key players in the plasma transfusion process at each participating site
- Range of key players invited to be interviewed on plasma transfusion
- Semi-structured interviews, 3 open-ended questions:

    1. Describe your involvement in, or use of plasma transfusion
    2. What factors do you perceive contribute to suboptimal or inappropriate plasma use?
    3. What strategies or initiatives might improve plasma transfusion practices? Comment on advantages and limitations of each.

- All interviews were recorded, transcribed and anonymized
- Transcripts were coded and analyzed for recurring themes

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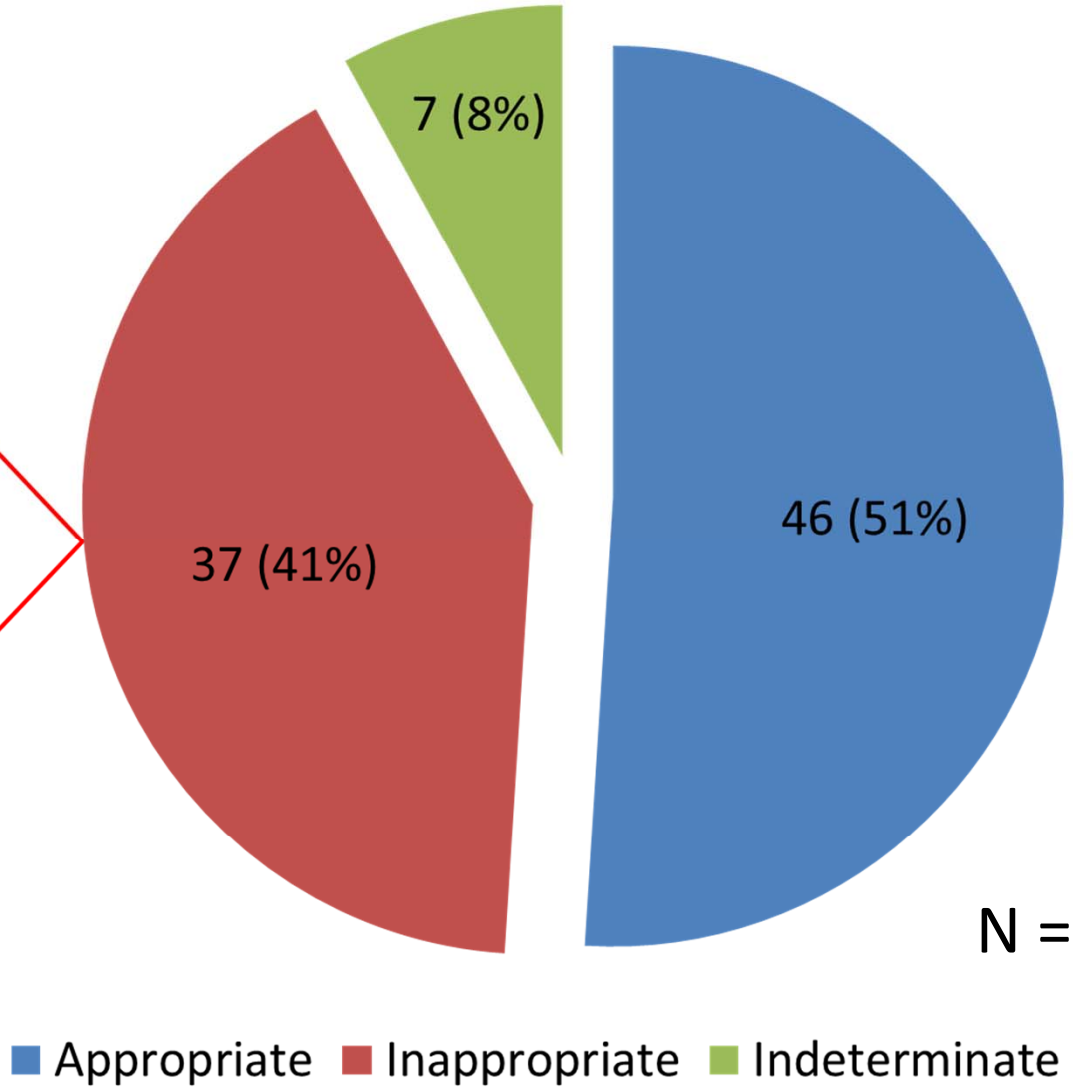
Results – Part I, Plasma Audit

- International normalized ratio (INR) < 1.5
- Bleeding/urgent procedure with warfarin or vitamin K deficiency, but no contraindication to prothrombin complex concentrates
- Reversal of heparin and oral anticoagulants
- Absence of bleeding/ urgent procedure



Results – Plasma Audit

Plasma Orders (Total Number)	Number of Inappropriate Orders (% in category)
Total (90)	37 (41%)
Order Setting	
To Intensive Care Unit (41)	19 (46%)
To Operating Room (39)	12 (31%)
Prescriber Discipline	
Anesthesiology (25)	9 (36%)
Surgery (19)	7 (37%)
Intensive Care (15)	8 (53%)
General Internal Medicine (11)	6 (54%)
Prescriber Level of Training	
Staff Physician (47)	17 (36%)
Trainee (43)	20 (47%)

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Results – Part II, Interviews

Results - Interview

- 25 interviews completed, data saturation was reached

- Nurses
  - Front-line nurses
  - Nurse educators
  - Nurse practitioners

- Physicians (staff and residents)
  - General and cardiovascular surgeons
  - Obstetricians
  - Intensivists
  - Anesthetists
  - Emergency docs
  - General internists

- Transfusion staff
  - Regional transfusion leader, blood bank director, transfusion safety officer, technologists

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Factors Contributing to Inappropriate Plasma Ordering – Five Themes

1. Knowledge Gaps

   "Broadly it's ignorance…of the tests…the perception of benefit, misconceptions of the risk" – Intensivist

   "…I think it has to do with a lack of familiarity with the indications for plasma" – OB resident

   "Some may not realize that unnecessary transfusion actually results in worse outcomes" – Gen. surgeon

   "I don't think we worry about harm [from plasma] very much at all, I mean there is so much harm in everything else that we do…" – Intensivist

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Factors Contributing to Inappropriate Plasma Ordering – Five Themes

2. Action preferred to inaction (especially in a crisis)

"I think there's something that happens in practitioner's head where [they think] there's less risk of me giving it than not giving it" – RN

"…[there are] situations where there's significant bleeding and people just don't feel they have time to wait for coagulation tests…" – Anesthetist

"I get the sense that plasma is often used to help the physician feel better" – Regional leader

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Factors Contributing to Inappropriate Plasma Ordering – Five Themes

3. Middle-man phenomenon

"…radiology will just refuse to do the procedure. So what ends up happening is we just give it with the understanding it's not going to lower [the INR]" – Intensivist

"I mean if it's for a procedure we'll do whatever we can to…arrange for the plasma, because as I said you're kind of at their mercy" – Gen. Internist

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Factors Contributing to Inappropriate Plasma Ordering – Five Themes

4. Time Pressures

"…[there is a] whole MD module in ORBCoN…but it's rather lengthy, so probably most people don't really want to do it" – Transf. safety officer

"…people don't feel they have time to wait for coagulation tests…" – Anesthetist

5. Barriers to interdisciplinary collaboration

"…sometimes we get push back, you know, 'why are you asking us these questions, we know what we need' sort of thing" – Lab tech.

"…doctors don't like to be told they can't do what they want to do by someone who's not caring for the patient" – Internist

"…calling the blood bank…can be intimidating…people don't want to feel like they're stupid" – Internist

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Strategies to address inappropriate plasma use

1. Education

   - Traditional educational strategies (guidelines, institutional policies, educational documents) generally not viewed favourably by interviewees
   - A sense that these resources are already available, are under-utilized, and don't change practice

     "[people] haven't seen [the institutional policy] at all or they're not aware of things that are going on" - Transfusion safety officer

   - Point of care education was viewed more favourably (embedded in order sets, blood bank consultations, prospective auditing and feedback)

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Strategies to address inappropriate plasma use

2. Gate Keeping

- Some willingness to consider limited gate-keeping

  "I think it's not unreasonable to say you've got to have consultation [to access plasma for unlisted indications]." – Intensivist

- But also some anxiety around unintended consequences and inefficiencies

  "I'm concerned that there are indications that just aren't covered [in gate-keeping efforts],...then it's a long procedure to try and bypass [the rules]" - Intensivist

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Strategies to address inappropriate plasma use

3. Optimize timely access to relevant tests and consultations

   - A number of interviewees referenced a link to timely coagulation testing and appropriate utilization of plasma
   - Others talked about being able to access transfusion expertise very quickly during clinical crises

4. Encourage reflective practice

   - Some interest in receiving practitioner-level data on transfusion practice, possibly with peer comparison
   - Private, non-shaming disclosure

   "… I think if I knew my transfusion rates on my patients, I would be holding that up and saying, 'I wonder what I'm doing with [the products]'" -Anesthesiologist

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Conclusions

- A substantial proportion of plasma transfusion at the 5 participating institutions was inappropriate
  - Location of transfusion, provider discipline, and level of training did not appear to impact appropriate use

- Participants in the transfusion process including physicians, nurses, blood bank staff are insightful about barriers to appropriate to transfusion, and potential strategies to change practice

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Take Home Messages

- More education is needed…but not in the traditional format of policies, guidelines or passive learning
- There is interest among practitioners in point-of-care-teaching that is brief, time-sensitive and relevant
- Gate-keeping may be accepted by practitioners, provided that allows for exceptional circumstances
- Achieving large scale change in plasma transfusion practice is likely to require a multi-disciplinary, layered approach that leverages bloodbank expertise, order entry, feedback and other targeted interventions
- Initiatives that are respectful and empowering are likely to be better received

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