Cryoprecipitate usage in South Australian Public Hospitals

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Results

Demographics:
- From July 2009 to March 2013, a total of 8,421 WBE units (4,395 units of either apheresis or whole blood cryoprecipitate) were transfused in 877 admissions across 7 major metropolitan SA public hospitals.
- 64% (5,397/8,421) of admitted patients were male and 36% were female.
- The median age was 55 years (IQR 40 – 70 years) (IQR = interquartile range)

Admission Type:
- 74% of admissions issued with cryoprecipitate were emergency.
- Based on Diagnostic Related Group (DRG), admissions included:
  - 63% surgical
  - 29% medical
  - 8% obstetric

Other Products Issued:
- Admitted patients issued with cryoprecipitate also were issued:
  - Red Cells (93%)
  - FFP (94%)
  - Platelets (84%)
- Of the patients issued with Red Cells during their hospital stay:
  - 17% received 1–4 units
  - 21% received 5–9 units
  - 51% received > 10 units
- Patients who were not issued Red Cells (7%) were mainly haematology (haematological malignancy) and gastroenterology patients.

Usage Patterns:
- Figure 2 shows the use of apheresis versus whole blood cryoprecipitate by FY. Overall 90% of use was apheresis cryoprecipitate.
- Figure 3 shows the increase in usage over the 3 complete FYs. Issues have increased steadily year upon year since the last quarter of 2010-11 FY, with a more substantial increase in 2012–13 FY.
- Figure 4 shows over time that there was both an increase in total number of separations (admissions) issued with cryoprecipitate and the number of WBE units issued per patient stay (or transfusion index = total WBE units / admissions issued cryoprecipitate).
- Figure 5 shows range of WBE units of cryoprecipitate issued to patients 18 years during their hospital stay. Overall, 49% of patients were issued with < 8-10 WBE units per stay.
- The new SA adult dosing guideline of 10 WBE units would be expected to increase the demand for cryoprecipitate. We attempted to estimate the increase in demand for patients who received WBE units less than a standard dose of 10 WBE units. As the number of WBE units per patient stay had increased over the 3½ FY, the last ½ FY was used to estimate the potential impact of the new guideline.

Issues Per Patient Stay:
- The median number of whole blood units per patient admission was 6 (IQR 4–10) and for apheresis units the median was 4 (IQR 2–7).
- Figure 5 shows range of WBE units of cryoprecipitate issued to patients 18 years during their hospital stay. Overall, 49% of patients were issued with < 8-10 WBE units per stay.
- The new SA adult dosing guideline of 10 WBE units would be expected to increase the demand for cryoprecipitate. We attempted to estimate the increase in demand for patients who received WBE units less than a standard dose of 10 WBE units. As the number of WBE units per patient stay had increased over the 3½ FY, the last ½ FY was used to estimate the potential impact of the new guideline.

Discussion

There has been a continuing increase in the use of cryoprecipitate in SA major metropolitan public hospitals, particularly in the one-year period in both number of admitted patients and WBE units per patient stay. The introduction of a standard adult dosing guideline is likely to further increase use.
- Based on statewide issue data, the 7 SA hospitals in this study used 77% of SA cryoprecipitate in the 2012–13 FY. There was an increase in cryoprecipitate issues across the state of 31% from 2011–12 to 2012–13 and an increase of 40% for the 7 hospitals combined consistent with the data from this study. The increase in use of cryoprecipitate in SA is consistent with increases in other states (Figure 6).
- It is not possible to assess the appropriateness of the increase in usage from this study. The earlier use of cryoprecipitate in recent years as part of critical bleeding protocols and increased access to point of care testing such as ROTEM in cardiac surgery and liver transplant are likely contributors.
- Age and sex distribution of admitted patients issued with cryoprecipitate in this audit was similar to previous audits conducted in Australia1, New Zealand2 and England3.

It was difficult to compare the main indications for cryoprecipitate because of differing methodologies and definitions between previous studies. The study from 3 regions in England4, found that around 1% of patients were transfused for haemorrhage which is consistent with our data where 1% of the patients received 5 or more units of red cells. The proportion of use in obstetric and haematology patients was also similar.
- An electronic medical record system which includes transfusion ordering is currently being rolled out across SA public hospitals. This includes indication for transfusion and will allow targeted audit of usage in the future.

References
4. Blood, Organ and Tissue Programs, Department for Health & Ageing, South Australia
5. SAFETY AND QUALITY IN ACTION