Evaluation of the Special Blood Request app with medical students

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Final year medical students and the supervisory team.
Introduction

• Anecdotal evidence suggest young doctors find it difficult to remember the indications for irradiated and CMV negative components.

• Special blood components is an area of transfusion where guidelines are complex.

• About 100 mistakes are reported every year.
Data provided courtesy of Dr. Paula Bolton-Maggs, Ms. Debbi Poles and Ms. Alison Watt.
Why do mistakes occur?

Wide range of reasons, including a lack of adequate knowledge in clinical staff:

"The admitting doctor noted the past history of Hodgkin's disease but was not aware of the requirements for irradiated blood."

(SHOT 2011 annual report, p.26)
Special Blood Request

- Is an interoperable mobile web app.
- Designed for healthcare staff involved in prescribing, requesting and administrating blood transfusion.
- Based on BCSH and SaBTO* national guidelines for irradiated and cytomegalovirus negative blood components.

* Advisory Committee on the Safety of Blood, Tissues and Organs.
What does the app look like?
Granulocytes

Irradiation required. CMV negative required for CMV negative patients.

1. "All granulocyte transfusions should be irradiated for recipients of any age, and they should be transfused soon as possible after irradiation. (1 C)." [BCSH2010]

2. "As granulocytes cannot be leucodepleted and is usually given to immunocompromised patients, it is essential that the product be irradiated prior to transfusion to avoid graft-versus-host disease." [UKBTS2012]

CMV negative required for CMV negative patients.

1. "Granulocyte components should continue to be provided as CMV seronegative for CMV seronegative patients." [SABTO2012]

2. "CMV PCR monitoring should be considered for all patients (even CMV negative/negative patients) to allow early detection of any possible CMV infection (whether transfusion-transmitted or otherwise acquired)." [SABTO2012]
Evaluation objectives

- Is the app perceived to be useful?
- Is the app easy to use?
- Is the quiz helpful?
- How can we improve the design?
Evaluation method

- Presented app to final year medical students at a training day at a large UK medical school.
- Students asked to freely explore the app and leave feedback using an online questionnaire.
- The questionnaire included the System Usability Scale (SUS) inventory (Brooke 1996).
- Use of app monitored with Google Analytics.
Response

• Approximately 270 final year medical students attended training.
• Analytics recorded 186 unique visits.
• Suggests close to 70% (186/270) of attending students opened the app.
• 54 students left detailed feedback.
Profile of the students

The majority of respondents:

- Were aged 20-29.
- Reported using smartphones at work.
- Did not carry out responsibilities related to blood transfusion or special requirements.
- Spent about eight minutes looking at the app.
Is the app perceived to be useful?

- Over 80% (44/54) could see a use for the app.
- 62% (32/54) would recommend the app to others.
- Almost half (25/54) believed that they were likely to use the app in the future.
Comments

“The app is useful, however, the information [...] seems more useful for specialist registrar level as opposed to medical student level.”
Is the app easy to use?

- The SUS inventory score of 63 (n=40) indicates an acceptable level of usability.
- 75% (38/51) agreed that the information was succinct and easy to read.
- 70% (35/50) felt that it was easy and quick to look up the indications.
Was the quiz helpful?

4. Quiz

Question 1 of 22

How should red cells or platelets for patients who have been treated with purine analogue drugs be transfused?

1. Irradiated and CMV negative
2. Irradiated
3. CMV negative
4. Special component not required
5. Not enough information

Answer the question by selecting an option from the list. Only one answer is correct.
Was the quiz helpful?

• 77% (36/47) felt that the quiz in the app was an useful way of learning.
• Many students requested an expanded quiz.
Comments

“More information in the answers section as to why each answer was correct or incorrect would be helpful.”

“I would have liked a summary of my answers and overall score for the quiz at the end.”
Conclusion

- Junior doctors often prescribe transfusion.
- Few learning materials on special blood components available.
- The app sustained a good level of engagement and largely positive response.
- Further improvements and evaluation with clinicians planned.
Special Blood Request is available at:

www.OptimalBloodUse.eu/app/