



MLS Student Perceptions of Preparation for Transfusion Medicine Clinicals

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ABSTRACT

Simulation is used in health care education worldwide to promote safer care for patients and is most beneficial when it addresses student needs. Recent and current University of Minnesota Medical Laboratory Sciences (UMN MLS) students (2021-2024) who have completed their clinical experience in transfusion medicine were surveyed about the didactic course learning objectives they felt needed more emphasis in addition to other inadequately covered aspects of the blood bank. A survey was developed using best practices to ensure accurate responses. Responses to this survey in addition to best practices for simulation development in healthcare education were used in the creation of a simulation learning activity to be integrated into the transfusion medicine didactic course. This simulation learning activity focuses on emergency blood release, massive transfusion protocols, and issuing blood products in coolers. While relatively rare, understanding these topics is vital for medical laboratory scientists working in a blood bank. The resulting simulation follows to protocols used currently in a Minnesota-based hospital.

BACKGROUND

Simulation enables safe learning, interprofessional collaboration, and standardized assessments, ensuring that students have the skills necessary to be successful in their careers. In medical education, clinical simulations are used worldwide to help prepare professionals to improve patient safety. In the UMN MLS program, students transition from didactic courses to clinical experiences. To improve student readiness for their transfusion medicine clinical experience, a survey was used to assess what students wish they had more exposure to before starting their blood bank clinical experience. From survey results, an activity focused on emergency blood product release, massive transfusion protocols, and cooler usage was developed. A massive transfusion protocol (MTP) is the administration of 10 or more units of blood within 24 hours. Emergency transfusions occur when blood products are needed urgently before compatibility testing. Blood Bank cooler use understanding is essential during massive transfusion protocols and emergency release.

METHODS

A survey was developed in the QualtricsTM program to gather information from current students and recent graduates of the MLS program who have completed their blood bank rotation (2021-2024). This survey was comprised of a mix of select all that apply, multiple choice, and free-response questions. From the survey responses, a simulation focused on three of the most frequently mentioned aspects of transfusion medicine that students felt they could have benefited from more exposure to was developed. The simulation was created following best practices for healthcare simulation, requiring a pre briefing and debriefing, and development of simulation objectives and outcomes. To create the most representative simulation possible, the procedure and timing of result "release" was based on the true timing of testing as well as procedures for massive transfusion and emergency release used currently in a Minnesota-based hospital.

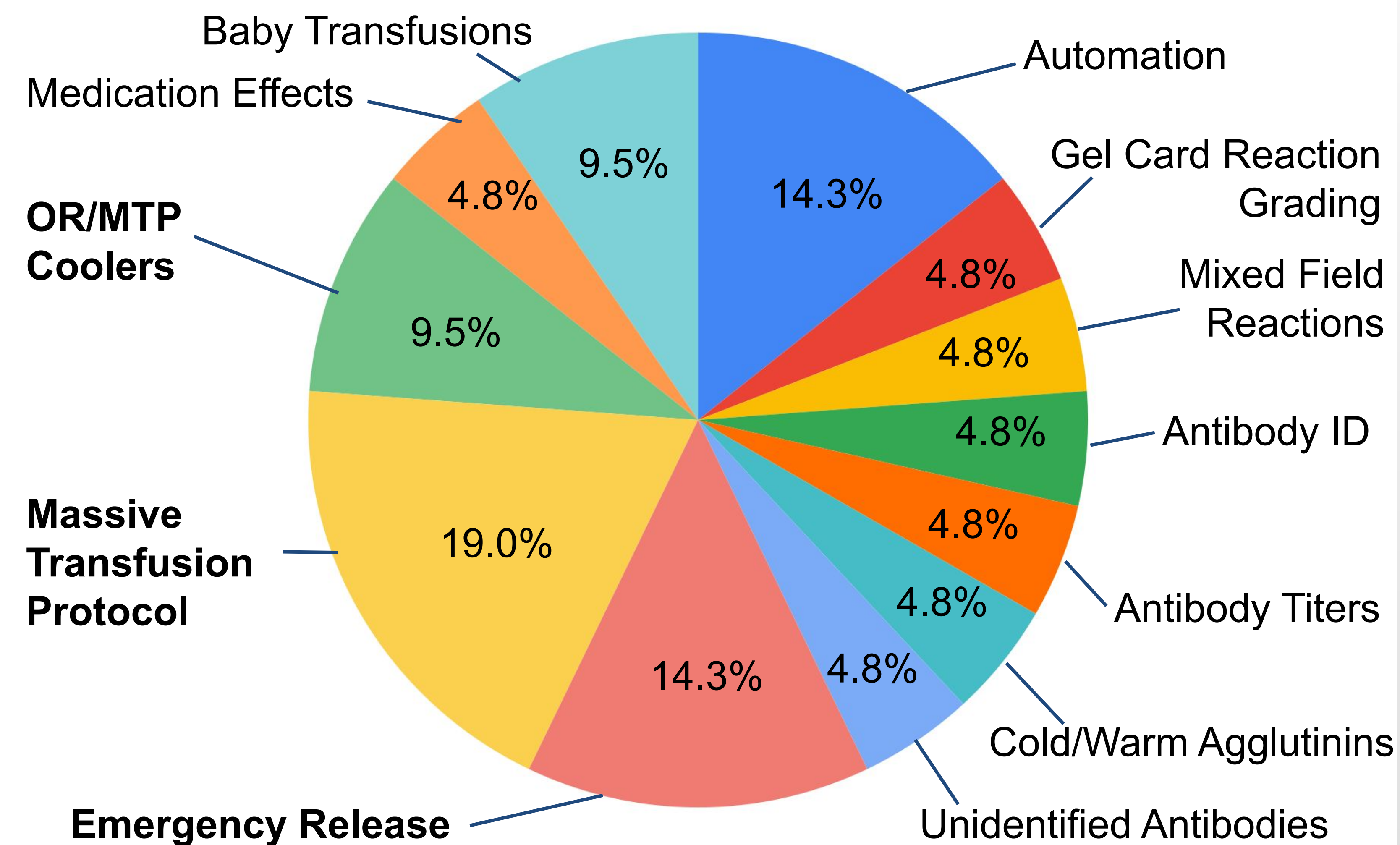


Figure 1. Most frequently appearing open-ended question answers.

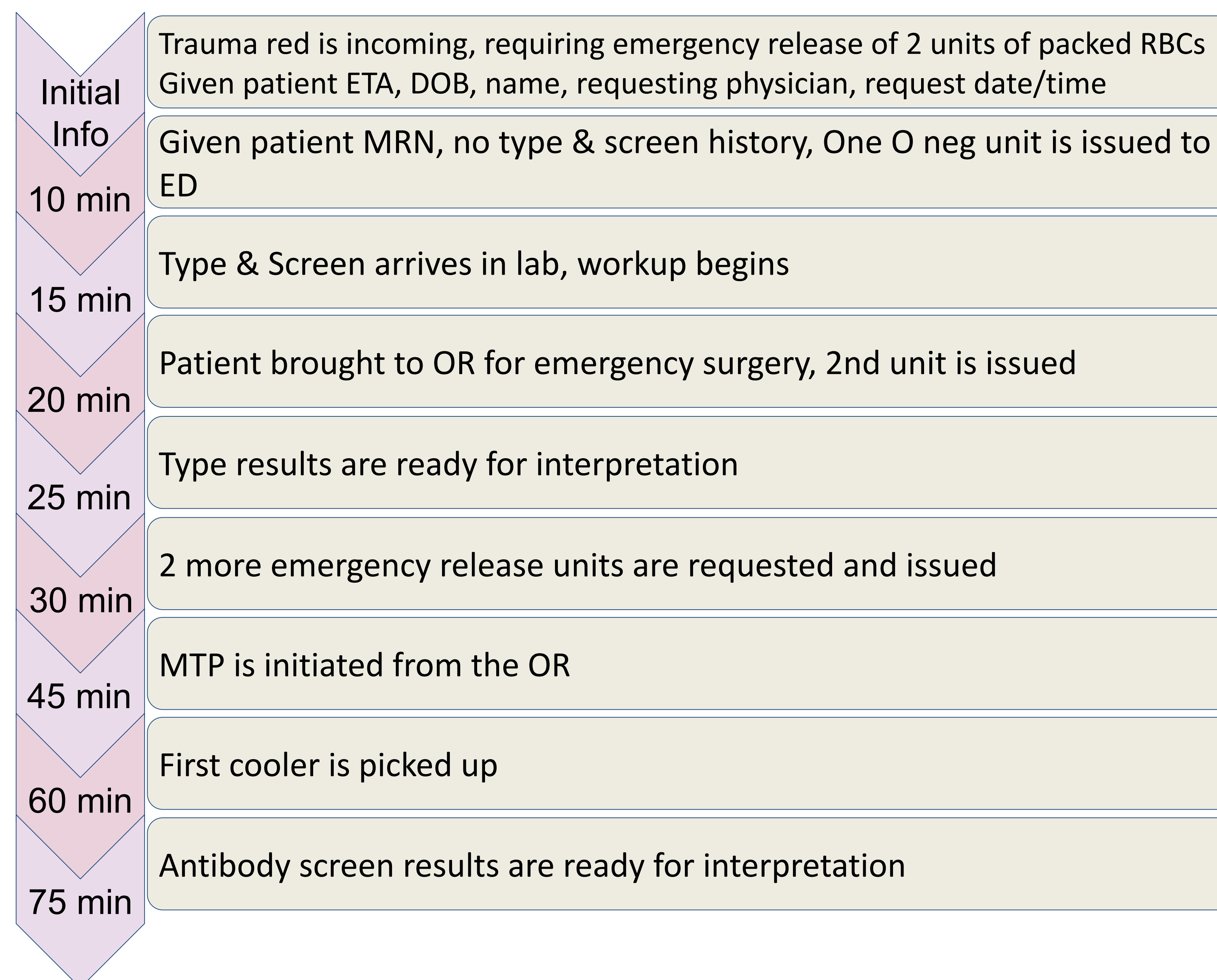


Figure 2. The timeline of the simulation and the information given at each time point.

Learning Objective	Percent of Respondents (n=16)
Crossmatching Blood	7.7%
Ordering Blood	7.7%
Discrepancies	53.8%
Integrity of Samples	7.7%
Selecting Blood Products	15.4%
Impact of Accreditation	7.7%

Table 1. Learning objectives respondents felt needed more emphasis

DISCUSSION

As experience with a massive transfusion protocol is not part of the coursework, it was determined to be the best option for the development of a simulation based on emergency release and massive transfusion procedures, in addition to the use of coolers, combining the three most frequently mentioned aspects of transfusion medicine. These procedures were obtained from a Minnesota hospital laboratory and modified to promote ease of use for students. A simulation patient and history were developed for both the emergency release and the massive transfusion protocol. A timeline of information release and corresponding testing and product pick-up was developed. Worksheets were created to assist in workflow and simulate entering real patient results as would be done in the clinical laboratory. Pre-simulation learning material was input into a simulation-specific Canvas site. A pre and post-simulation survey was developed in the QualtricsTM program to monitor pre post- simulation understanding of massive transfusion, emergency release, and cooler issuing. Implementation and assessment of this simulation is planned for the 2025 Spring semester.

CONCLUSION

It was determined that a simulation of a massive transfusion protocol would benefit UMN Medical Laboratory Sciences Program students entering their transfusion medicine clinical experience based on their survey responses. The simulation was developed using best simulation practices and information on healthcare education. In the future, it would be beneficial to implement the simulation before students go to their clinical experience and compare student preparedness before and after the simulation and clinical experiences.

References and Learning Objectives:

