

Using Simulation to Enhance Staff Skills in Massive Transfusion

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Background

- Massive hemorrhage is a potentially preventable cause of death (Farkas, 2021) and are often managed with a Massive Transfusion Protocol (MTP).
- MTP is the rapid administration of many blood products to an actively bleeding patient (Hess, Uhl & Timarer, 2023)
- Initial training and subsequent regular drills are recommended to maintain competency.
- A knowledge gap surrounding this protocol has led to unnecessary Massive Transfusion Response (MTR) activation resulting in wasted blood products.
- In quarter 1 of 2021, 50% of the MTR's called were inappropriate.
- Audits identified opportunities to educate on documentation, patient care and appropriate MTR activation.
- Advocate Aurora Health is a high reliability organization, focusing on patient safety and the Journey to Zero events of patient harm.

Purpose

- The purpose of this quality improvement project is to decrease the number of inappropriate MTR activations resulting in a reduction of wasted blood products. Our aim was to provide education through simulation to improve workflow and appropriate identification of patients requiring MTR.

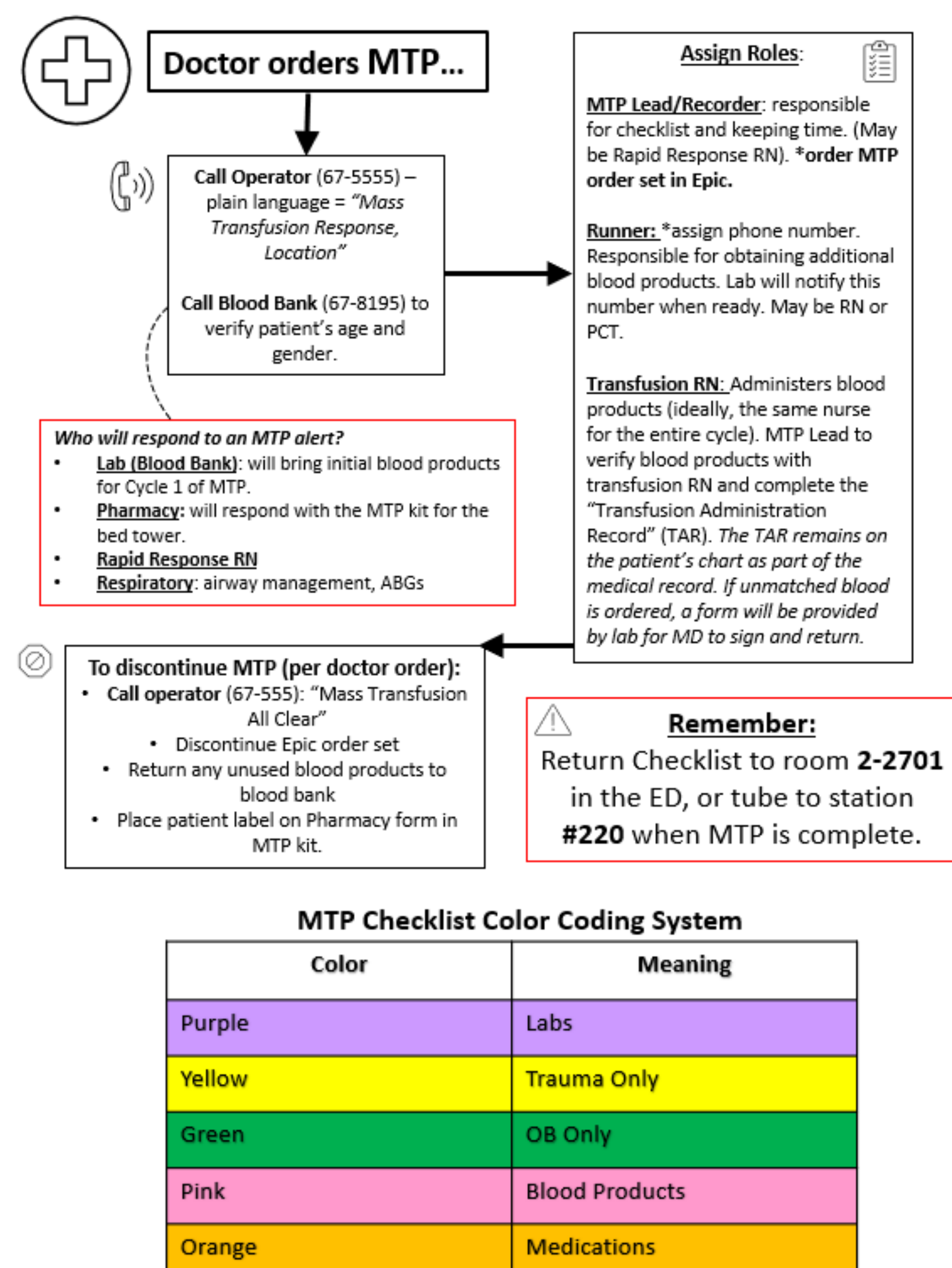


Figure 1. Massive Transfusion Protocol Tip Sheet pg. 1.

Methods

- Audits identified inappropriate activation of MTRs. A referral was brought to the hospital-wide Education Council in Shared Governance regarding an educational need.
- A Multidisciplinary team consisting of council members, nurses, physicians and advance practice providers were included in conversations regarding best practices of MTP.
- The MTR protocol and checklist were updated using best practices identified in The American College of Surgeons Massive Transfusion in Trauma Guidelines (2014) in accordance with Region 9 and AAH policies.
- An MTP toolkit was created to aid the nurse utilizing the protocol in real time. The toolkit consists of the protocol checklist, job aid and the emergent release of blood products SBAR.
- A simulation was developed to provide hands-on education while utilizing these tools. Simulation was chosen because it provides a safe and controlled approach to education, allowing nurses to work through the MTR process without patient risk. In simulations, students have the chance to work through mistakes by repeated application (McGaghie et al., 2014). Nurses were able to debrief after the simulation and ask questions for clarification.
- Education was provided on the MTP toolkit from May 2022 – July 2022 and MTP simulations began in August and extended through the beginning of December 2022.

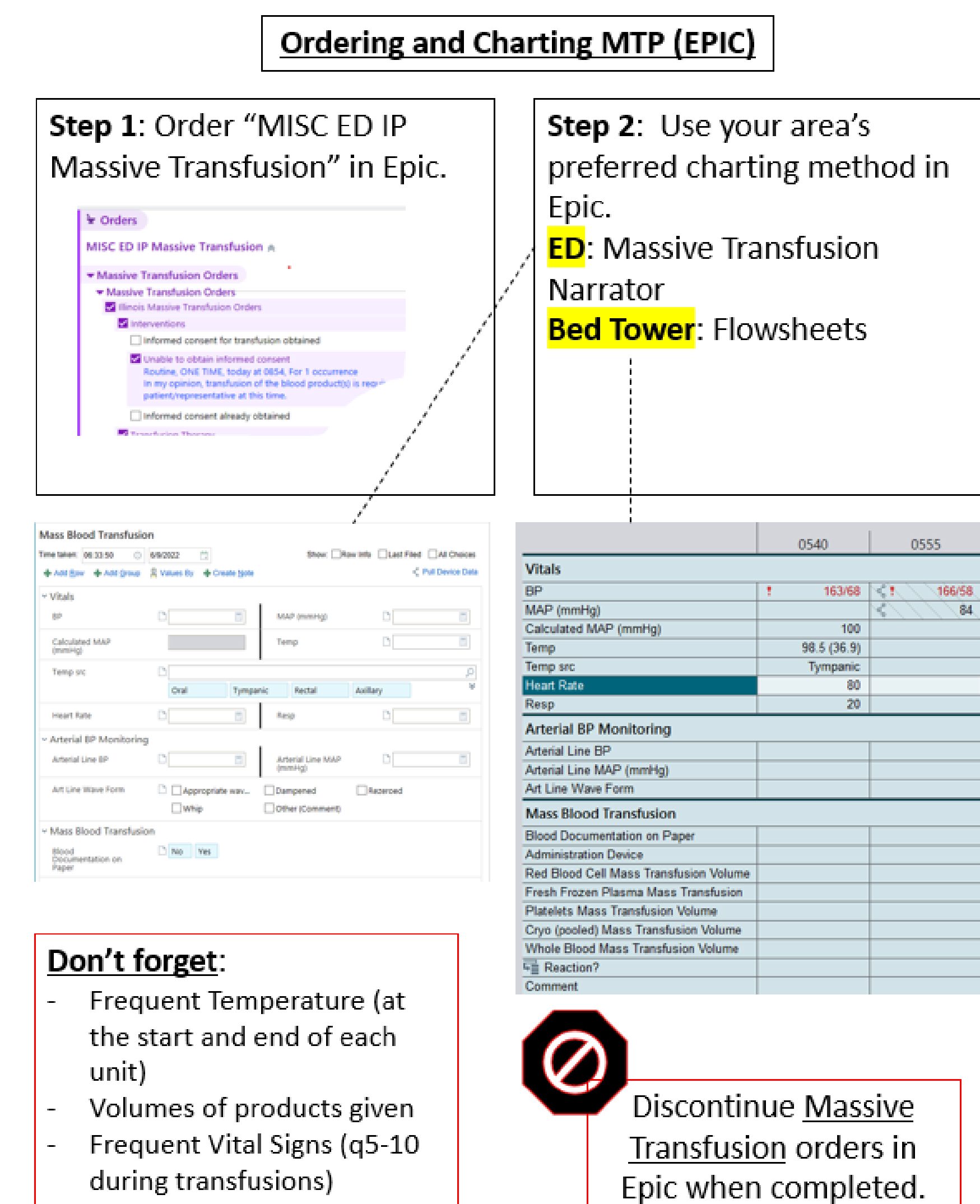


Figure 2. Massive Transfusion Protocol Tip Sheet pg. 2.

Results

- Data was collected quarterly from audits of the MTP checklist and chart review.
- The utilization of the MTP toolkit began in June of 2022.
- Prior to the MTP Simulation, there were 45 MTRs called and 19 units of blood were wasted (January 2022-December 2022).
- After implementing the toolkit and simulation, there have been 12 MTRs called to date and 7 units of blood products were wasted (January 2023-September 2023).

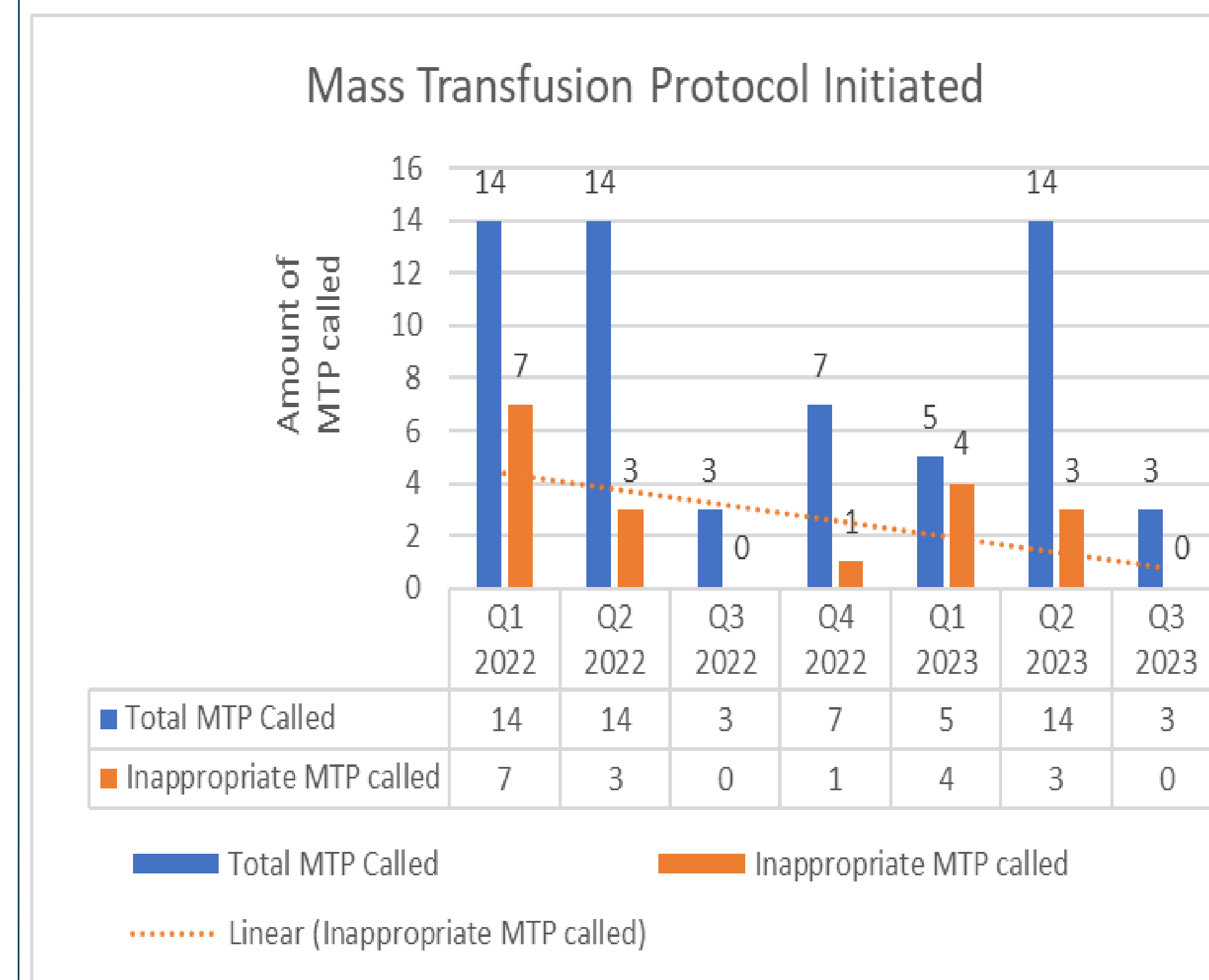


Figure 3. Number of MTRs activated pre and post education.

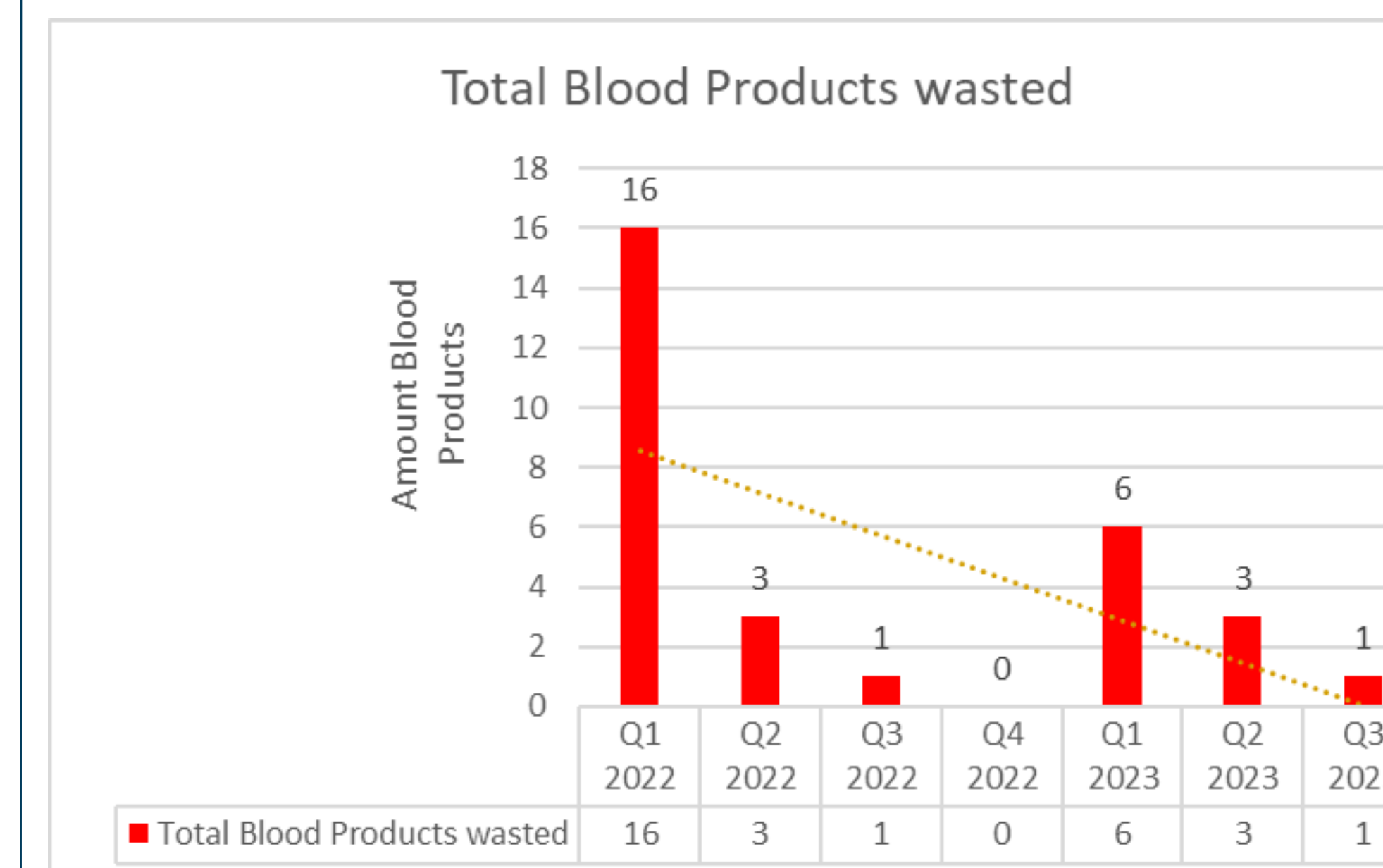


Figure 4. Number of total blood products wasted.

Conclusions

- Education simulation and the MTP toolkit resulted in appropriate use of emergency release blood and MTRs.
- Using simulation allows nursing to put education into practice in a meaningful way with hands on experience.
- One barrier was simulation lab availability. A decision was made to educate charge nurses and all nurses in high-risk areas due to this barrier which included approximately 200 nurses that attended the simulation training.

Implications for Practice

- Simulation is an effective way to educate on high-risk low volume topics which will include annual MTP simulations.
- Educating on the appropriate situations to call an MTR versus releasing emergent blood significantly decreased the amount of wasted blood products.
- MTP toolkits are available for reference on nursing units hospital wide and attached to rapid infusers.



Figure 5. Massive Transfusion Simulation.

References

American Association of Blood Banks Tech Manual, Current edition. AABB. Bethesda, MD. ACS TQIP Massive Transfusion in Trauma Guidelines. 2014. American College of Surgeons Trauma Quality Improvement Program. OTHolcomb JB, Tilley BC, Baraniuk S, Fox EE, et al; PROPPR Study Group.

McGaghie, W.C., Issenberg, S.B., Barsuk, J.H., Wayne, D.B., 2014. A critical review of simulation-based mastery learning with translational outcomes. Med. Educ. 48 (4), 375–385. <https://doi.org/10.1111/medu.12391>.

Hess, J., Uhl, L. & Timarer, J. (2023). Massive Blood Transfusions. Up to Date.

Farkas, J. (2021). Massive Transfusion Protocol. In the Internet Book of Critical Care. [https://emcrit.org/ibcc/mtp/#introduction_to_massive_transfusion_protocol_\(MTP\)](https://emcrit.org/ibcc/mtp/#introduction_to_massive_transfusion_protocol_(MTP))

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