

Cost Savings in Operative Burn Care

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Background

- “Over the past 30 years, techniques of early excision and grafting along with enhancement of critical care have significantly improved survival following severe burn. Despite these advancements, large volume blood loss associated with surgical intervention continues to be a challenging aspect of burn surgery.”(Sterling, 2011)
- “Estimates of blood loss in adults during burn surgery range from 196 to 269 ml for each percent of the body surface area excised and grafted.” (Cartotto, 2000)
- A gold standard to achieve hemostasis does not exist. Therefore, institutions rely on their habit, practices, and FDA guidelines to formulate a standard of care. (Groenewold et al, 2011)
- . In multiple comparison studies, “telfa pads soaked in epinephrine solution are a mainstay of hemostasis.” (Sterling, 2010)
- In 2018, an epinephrine shortage led to an increase cost to the operating room (OR) during the surgical treatment of burn wounds.
- This prompted the pharmacy and OR to collaborate on a more cost-effective measure without compromising patient care.

Significance of the Problem

- Epinephrine solution costs increased in 2018.
- Cost to the OR for Epinephrine used for treating burn patients was approximately \$36,000.00 per month.
- Each week, 10-38% of this product was wasted in the OR due to over estimation of product.
- By eliminating waste and decreasing the dosage, a potential cost savings of approximately \$50,000-\$100,000.00/year was identified

Implementation

- In November 2018, the epinephrine dosages were modified. Dosages were changed from Epinephrine 1;1000, 1mg/ml, 60mg/L for adults and 30mg/L for pediatrics to Epinephrine 1:1000, 1mg/ml, 30mg/L for adults and 15mg/L for pediatric patient’s.
- Parameters were set as to the amount of product that would be preordered from the pharmacy for each patient based on the total body surface area to be excised and or grafted:
 - <20%-----2 bottles
 - 20-30%---3 bottles
 - >40%-----4 bottles

Should additional quantities be needed, an arrangement was made that the pharmacy would prepare and deliver the solution to the OR within 15 minutes of order to avoid delays in treatment.

Methodology

- The time periods examined were: June 1, 2018 though November 7, 2018 and November 8, 2018 through June 20, 2019.
- Total burn patients requiring surgical intervention admitted during this time frame were 180 and 184 patients.
- June 2018-November 2018 represents previous practice.
- November 2018-June 2019 represents the implementation of changes in epinephrine dosage and establishing parameters for ordering.



Outcomes

- The overall Cost Savings In Operative Burn Care in relation to decreasing the dosage of Epinephrine from November 2018 to June 2019 was \$100,952.25.
- Setting parameters provided better estimation of need and resulted in a 26% decrease in ordered product.
- Better estimation of product led to a 9.3% decrease in waste.
- Decreasing waste led to a savings of \$28,463.61.
- Monthly cost to the OR for Epinephrine solution decreased to \$9708.30 per month indicating a savings of \$26,291.70 per month.
- No clinical differences in hemostasis were noted by any of the burn attending surgeons

Dates	June 1, 2018-November 7, 2018	November 8, 2018-June 20, 2019
Total patients receiving Epinephrine Irrigations	71	70
Total Adult Doses Ordered	403	300
Total Pediatric Doses Ordered	10	7
Total Cost	\$160,735.68	\$59,783.43
Total Doses Wasted	95	42
% Waste	23	13.7
Total Cost of Waste	\$37,032.24	\$8,174.67

Nursing Implications

- Operative costs decreased therefore leading to departmental savings.
- Burn wound hemostasis was accomplished using reduced doses of Epinephrine solution.
- Nurses have a clearer picture on the amount of Epinephrine solution to order for each patient.
- The amount of product waste was reduced.