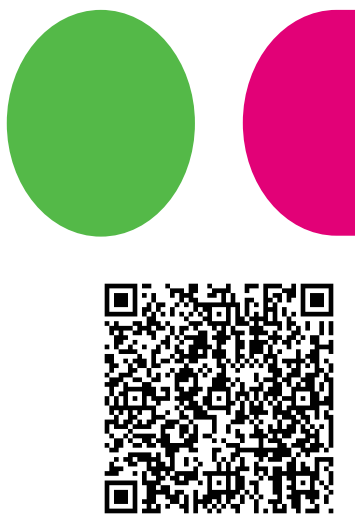


Evaluating the Budget Impact of an Intrauterine Device for Postpartum Hemorrhage Management: A Hospital Perspective

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1. BACKGROUND & OBJECTIVES:

- Postpartum hemorrhage (PPH) is one of the most dangerous complications associated with childbirth and was responsible for 12% of maternal deaths in the United States (US) between 2017 and 2019.¹
- Beyond its impact on patients, PPH remains a significant economic burden, with an estimated cost of \$1.8 billion in the US in 2019.²
- Treatment guidelines emphasize a stepwise approach for PPH, starting with uterotonics and progressing to measures such as the balloon tamponade and more invasive surgical treatments such as hysterectomy.³
- An intrauterine vacuum-induced hemorrhage control (VIHC) device controls hemorrhage via vacuum, offering an alternative to balloon tamponade.
- A budget impact model (BIM) was developed to evaluate the budget impact (BI) of introducing the intrauterine device within the treatment pathway for patients with PPH in the US.

2. METHODS:

- The BIM adopted a hospital perspective and a 1-year time horizon.
- The population aligned with the PEARLE study and included females with abnormal bleeding/PPH that required at least one uterotonic (beyond oxytocin).⁴
- The inputs comprised hospital resource utilization, epidemiology, treatment adoption, efficacy, and cost factors. Resource use and cost data were primarily obtained from the PINC AI™ Healthcare Database (PHD), with additional inputs sourced from the RUBY study when necessary.⁵
- Resource use and efficacy data was stratified by delivery method (caesarean section and vaginal delivery), and (for VHIC only) by blood loss category (>999, 1000-1999, 2000-2999, ≥3000 mL).
- The unit costs for each resource use were sourced from the PHD data, current procedural terminology, and diagnostic delated group codes.

Table 1: Budget impact comparing intrauterine vacuum-induced hemorrhage control (VIHC) device and the balloon tamponade

	VIHC	Balloon tamponade	Budget impact
Number treated	1,474	1,474	
Total cost per 10,000 births	\$20,215,161	\$21,903,646	-\$1,688,486
Total cost per birth	\$2,022	\$2,190	-\$169
Total cost per treated patient	\$13,714	\$14,860	-\$1,146

Table 2: Budget impact for every 10,000 births (1,474 treated patients) by cost type

	VIHC	Balloon tamponade	Budget impact
Direct treatment cost	\$2,326,786	\$907,222	\$1,419,565
Blood transfusion costs	\$743,732	\$674,141	\$69,591
Hospital length of stay costs (room and board)	\$13,939,938	\$14,410,950	-\$471,012
Device in-dwelling costs	\$434,246	\$2,086,746	-\$1,652,500
Intensive care admission cost	\$2,081,577	\$2,812,125	-\$730,549
Subsequent procedures costs	\$688,881	\$1,012,461	-\$323,581
Total	\$20,215,161	\$21,903,646	-\$1,688,486

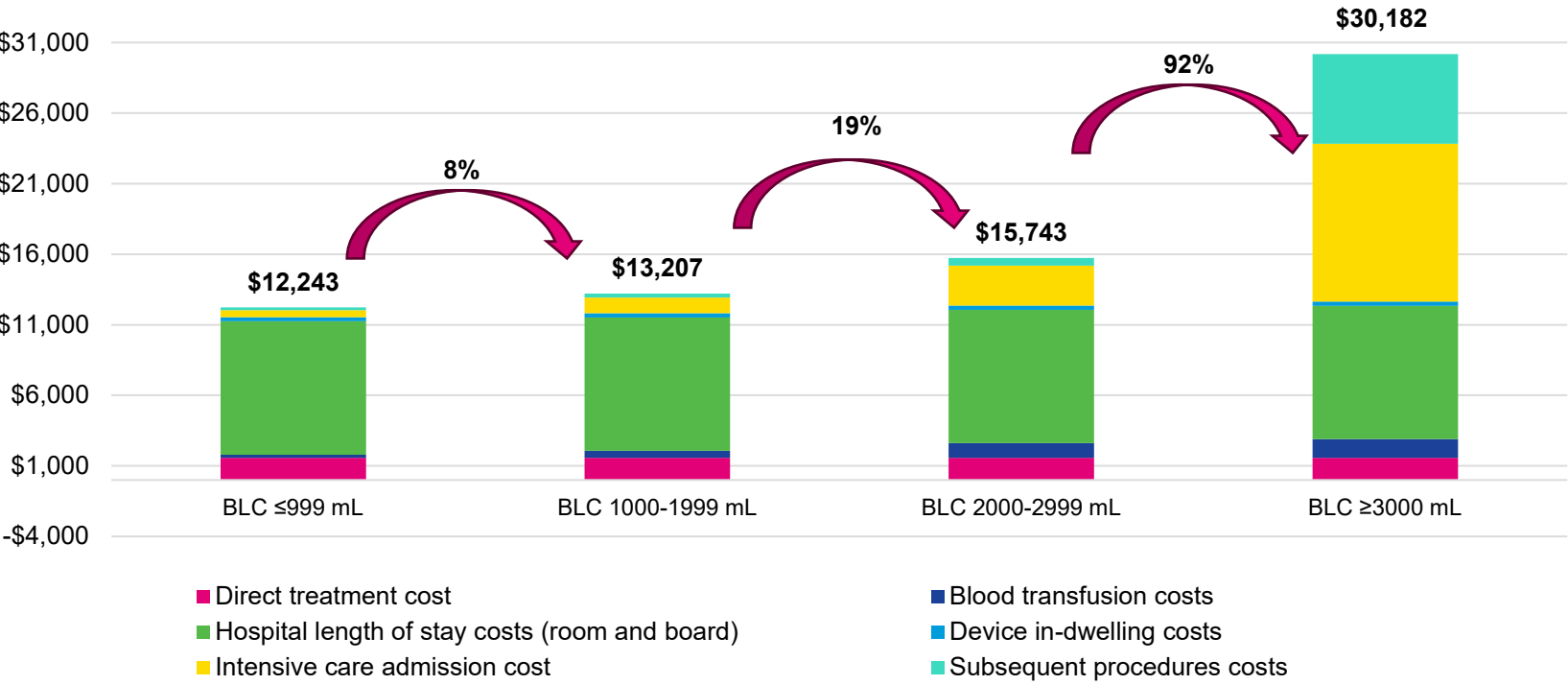
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3. RESULTS:

- For every 10,000 births, the model estimated that 1,474 patients would be treated with the intrauterine VIHC device, resulting in cost savings of \$1,146 per patient compared to balloon tamponade (Table 1).
- Despite higher direct treatment costs and blood transfusion costs for the intrauterine VIHC device, total hospital costs were reduced by \$1,688,486 compared to the balloon tamponade (Table 2).
- Cost savings were driven by device in-dwelling costs (\$1,652,500) and intensive care admissions (\$730,549). Additional cost savings were achieved in hospital length of stay costs (\$471,012) and subsequent procedure costs (\$323,581) (Table 2).
- Higher blood loss led to increased total costs, due to increased blood transfusions, ICU admissions and subsequent procedures (Figure 1). Costs in these categories increased by an average of 91%, 191%, and 396%, respectively.

Figure 1: VIHC cost per patient by blood loss category (BLC)



4. CONCLUSION:

- The BIM showed that implementing an intrauterine VIHC device for PPH management can reduce costs through improvements in resource use and efficacy from the hospital perspective.
- Results indicate greater economic benefits for hospitals when treating patients in lower blood loss categories particular below 2000mL.

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