

# The Value in Drawing a Pre-Op HbA1c in Non-diabetic Adult Patients: A literature review

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## Background of Issue

- Surgical site infections (SSIs) are among the most common healthcare acquired infections<sup>1</sup>
- Wound healing is affected by hyperglycemia (HG) due to:
  - Suppression of various aspects of immune function
  - Activation of proinflammatory cytokines<sup>2</sup>
- Higher hemoglobin A1c (HbA1c) may be a predictor of who will experience stress hyperglycemia (a transient increase in blood glucose brought on by illness or stress on the body)<sup>3</sup>

## Significance of Issue

- SSI costs: ~\$20,000/patient and ~\$3.5-10 billion annually<sup>4</sup>
- 77% post-op mortalities attributed to SSIs
  - Of these, ~60% are preventable<sup>4</sup>

## PICOT Question

- Surgery creates bodily stress, which can lead to stress hyperglycemia (SHG), which can lead to increased risk of SSIs
- A controlled diabetic (DM) patient with a similar HbA1c to a non-diabetic does not reflect the same metabolic status
- So we asked: is there a benefit to having a pre-op HbA1c drawn on all patients?
- PICOT: In non-diabetic adult patients undergoing surgery (P), how does elevated pre-op HbA1c (I) vs not knowing a pre-op HbA1c (C) affect complication rates (O) in the acute post-op phase (T)?

## Pre-op HbA1c National Guidelines

- American College of Surgeons Strong for Surgery: check a fasting blood glucose (FBG) the AM of surgery IF prior DM diagnosis OR BMI >30 OR age >45; and pre-op HbA1c only if prior DM diagnosis<sup>5</sup>
- American Diabetes Association: perform a pre-op risk assessment for those at risk for ischemic heart disease and those with neuropathy or renal failure<sup>6</sup>
- JAMA Clinical Update: pre-op HbA1c in all DM patients, defer elective surgery if HbA1c >8%; no guidelines on non-DM patients<sup>7</sup>

## Synthesis Table

Level of Evidence	References						
	8	9	10	11	12	13	14
Level I: Systematic review or meta analysis							
Level II: Randomized controlled trial							
Level III: Controlled trial without randomization							
Level IV: Case-control or cohort study				X	X		X
Level V: Systematic review of qualitative or descriptive study						X	X
Level VI: Qualitative or descriptive study	X	X	X				
Level VII: Expert opinion or consensus							

Literature search of online databases of PubMed, CINAHL, and Cochrane yielded low level evidence linking perioperative blood glucose optimization to better surgical outcomes



## Conclusion

- More research into the topic warranted
- Limited sample sizes, limited pre-op HbA1c collection, many studies retrospective
- Current data support focus on strict perioperative BG monitoring and treatment as best measure to prevent SSIs vs pre-op optimization of HbA1c
- Even less research is available on the oncology population
- Should we change our practice...? Not yet!
- According to the Center for Disease Control (CDC), there are no randomized controlled trials evaluating optimal pre-op HbA1c for prevention of SSIs in DM and non-DM patients
  - CDC classification: "No recommendation/Unresolved issue"<sup>16</sup>



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