

# Implementation of Glucose Management Software (Endotool®) Intra-operatively in Cardiac Surgery Patients to Improve Post-operative Blood Glucose Control and Compliance with SCIP INF-4

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## Background

- ❑ Tampa General Hospital (TGH) is a 1,018-bed level 1 trauma, academic medical center
- ❑ Surgical site infections (SSIs) are a significant source of morbidity and mortality in post surgical patients<sup>1,2</sup>
- ❑ Hyperglycemia is associated with an increase in surgical site infections in addition to morbidity and mortality, particularly in postoperative cardiac surgery patients<sup>3,4</sup>
- ❑ The Surgical Care Improvement Project (SIPC) was developed by CMS, the CDC, and the Joint Commission to decrease the incidence of SSIs<sup>5</sup>
- ❑ SCIP measure INF-4 requires that cardiac surgery patients have blood glucose less than or equal to 200 mg/dL at 6am on postoperative (POD) days one and two<sup>5</sup>
- ❑ Endotool® is an FDA-approved glucose management software system that optimizes insulin therapy by utilizing adaptive algorithms to provide individualized therapy<sup>6</sup>
- ❑ Endotool® has been utilized at TGH in the Cardiothoracic Intensive Care Units (CTICU) since January 2011 and was implemented intra-operatively in cardiac surgery patients in January 2012

## Objective

- ❑ To analyze the impact of utilizing Endotool® for blood glucose management intra-operatively on compliance with SCIP measure INF-4 compared to patients on Endotool® post-operatively alone

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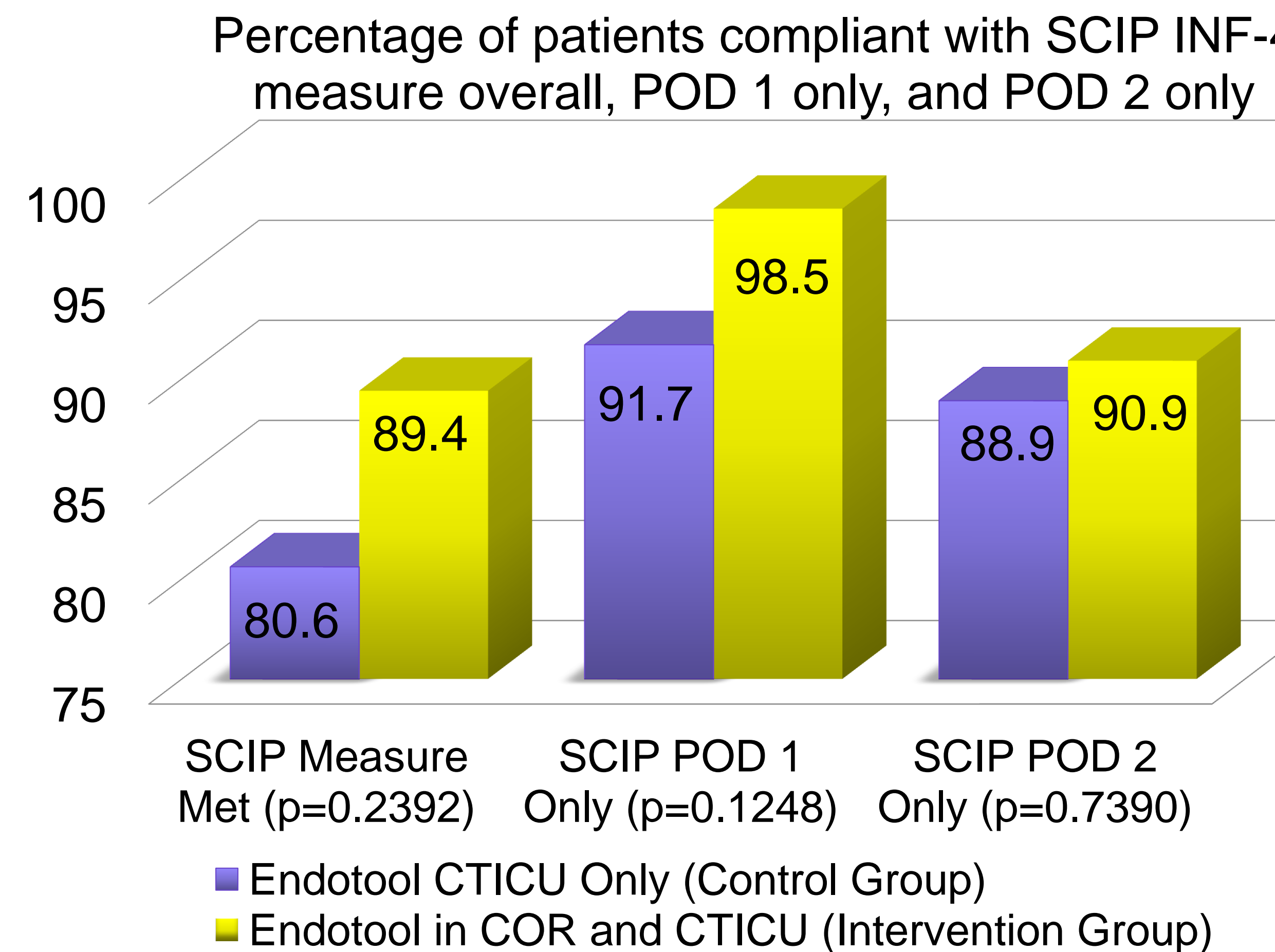
## Methods

- ❑ Single center, retrospective, IRB-approved study
- ❑ Summary of patients receiving cardiac surgery were obtained from Data Resources between October 1, 2011 and March 31, 2012.
- ❑ Inclusion criteria:
  - ❑ All inpatients receiving cardiac surgery and utilizing Endotool®
- ❑ Exclusion criteria:
  - ❑ Less than 18 years of age
  - ❑ Length of stay >120 days
  - ❑ Diagnosis of preoperative infectious disease
  - ❑ Burn and transplant diagnosis
  - ❑ Laparoscopic procedures
  - ❑ Concurrent enrollment in clinical trial
  - ❑ Perioperative mortality
  - ❑ Patients not utilizing 5Endotool®
- ❑ Elements of data collection:
  - ❑ Anesthesia start and stop date/time
  - ❑ 6am blood glucose on POD1 and POD2
  - ❑ Duration of Endotool® (hours)
  - ❑ Nursing adherence with Endotool® recommendations
- ❑ Outcomes:
  - ❑ Primary:
    - ❑ Overall percentage of patients meeting SCIP measure INF-4
  - ❑ Secondary:
    - ❑ Percentage meeting the SCIP measure INF-4 on POD 1
    - ❑ Percentage meeting the SCIP measure INF-4 on POD 2
- ❑ Statistics:
  - ❑ Chi-squared or Fishers exact test, as appropriate

## Results

- ❑ A total of 102 patients were included in the analysis (n=36 control, n=66 intervention)
- ❑ The overall percentage of patients that met the SCIP measure was 80.5% pre-implementation and 89.4% post-implementation of Endotool® intra-operatively, respectively (p=0.239). See Figure 1
- ❑ On POD1, the difference between the pre- and post-implementation was 6.8%; 91.7% and 98.5%, respectively (p=0.125). See Figure 1

Figure 1.



- ❑ 100% of patients in both groups that met the SCIP measure on POD 1 but not POD 2, Endotool® was discontinued prior to the POD 2 6am blood glucose
- ❑ Number of patients with non-adherence events:
  - ❑ Control: 6 (16.7%) 1 did not meet SCIP
  - ❑ Intervention: 10 (15.2%) 1 did not meet SCIP

## Discussion

- ❑ Endotool® used to manage blood glucose intra-operatively in cardiac surgery patients increased our overall compliance with SCIP measure INF-4 as displayed in Figure 1
- ❑ Reasons identified for not meeting SCIP compliance:
  - ❑ Discontinuation of Endotool® prior to POD 2
  - ❑ Decreased time between anesthesia stop date/time and POD 1 blood glucose
- ❑ Future Directions:
  - ❑ Continue utilization of Endotool® in the cardiac operating room and in the cardiothoracic intensive care unit to maintain euglycemia
  - ❑ Re-evaluate SCIP measure INF-4 compliance

## Conclusion

- ❑ Endotool® utilized intra-operatively to manage blood glucose in cardiac surgery patients lead to improvements in our overall compliance with SCIP measure INF-4

## References

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## Disclosure

Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.