

CUMULATIVE TIME IN BAND:

GLYCEMIC LEVEL, VARIABILITY AND PATIENT OUTCOME vs. MORTALITY

Sophie Penning, Matthew Signal, Jean-Charles Preiser, Geoffrey Shaw, Aaron Le Compte, Christopher Pretty, Thomas Desaive, J. Geoffrey Chase

Introduction

Negative outcomes of dysglycemia are associated with exposure and repetition to high glucose levels, indicating that metrics of exposure might influence outcome.

Objectives

This research addresses the key questions:

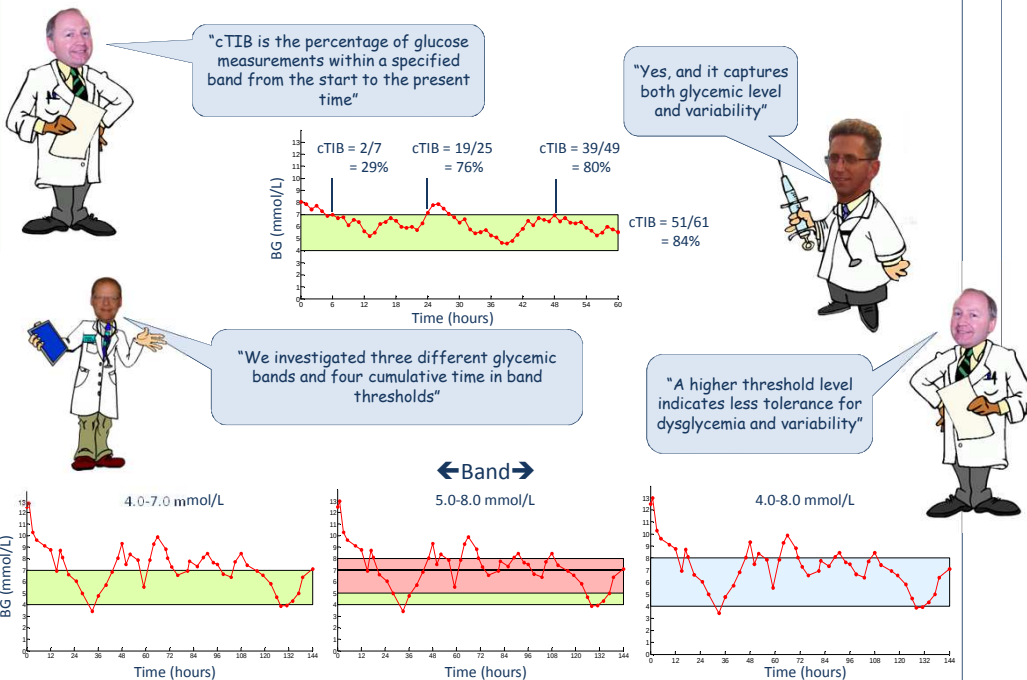
- Is glycemic control associated with improved hospital mortality regardless of how it is achieved?
- Is there a metric of glycemic control performance or level that can be assessed in real time to adequately discriminate between patient outcomes?

Methods

- Retrospective analysis of data from two glycemic control studies.

	SPRINT	Glucontrol	All
Number of patients	784	933	1717
Percentage of males	61.2	63.2	62.3
Age of patients	65.0 [52.0 - 74.0]	65.2 [51.5 - 74.0]	65.0 [51.8 - 74.0]
APACHE 2 score	18.0 [15.0 - 24.0]	15.0 [11.0 - 21.0]	17.0 [13.0 - 23.0]
Cohort BG (mmol/L)	6.2 [5.3 - 7.4]	6.9 [5.8 - 8.4]	6.6 [5.6 - 8.1]
Per-patient median BG (mmol/L)	6.3 [5.6 - 7.5]	6.9 [6.1 - 8.2]	6.6 [5.8 - 7.9]
%BG in 4-7 mmol/L	66.8	49.8	56.4

- Glycemic performance metric: cumulative time in band – cTIB



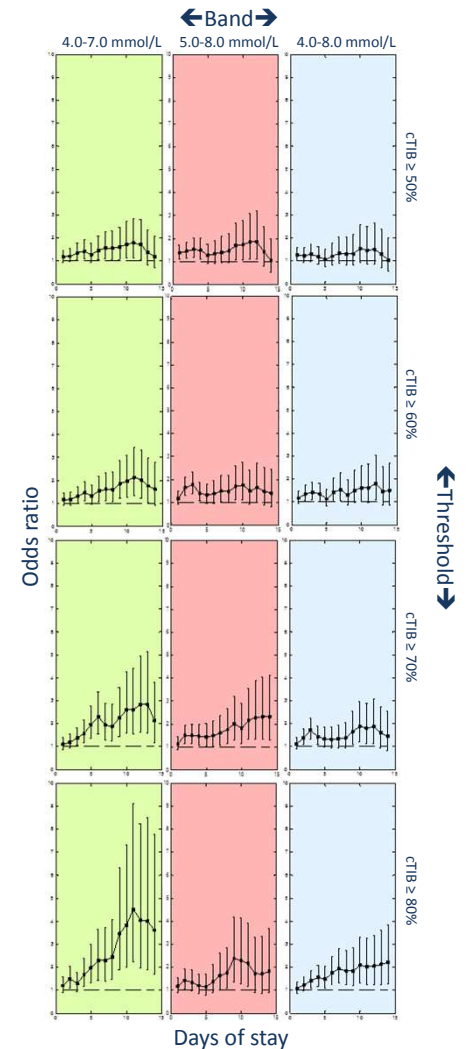
- Analysis by outcome glycemic performance rather than treatment group.

	Lived	Died
cTIB ≥ t	N ₁	N ₂
cTIB < t	N ₃	N ₄

$$\text{Odds ratio (OR)} = \frac{\text{Odds of living given cTIB} \geq t}{\text{Odds of living given cTIB} < t} = \frac{N_1 N_4}{N_2 N_3}$$

"A higher OR means a better chance of survival"

Results



"A higher cumulative time in band is associated with a greater chance of survival"

Conclusions

- Yes! Glycemic control is associated with improved hospital mortality regardless of how it is achieved.
- Yes! there is a metric of glycemic control performance or level that can be assessed in real time to adequately discriminate between patient outcomes.