

Letter

Recent literature regarding tight glycaemic control: pitfalls in the sweet debate

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Articles concluding that tight glycaemic control (TGC) in the intensive care unit (ICU) has no mortality benefit and an unacceptably high rate of hypoglycemia have been published recently in several journals. The Diabetes Special Interest Group (DSIG) [1] believes that the data from some of these recent papers have been interpreted incorrectly, misconstrued, or misunderstood. The DSIG agrees with the scientists whose editorial comments were published with these articles [2,3] that the studies were underpowered to show a lack of benefit and agrees that hypoglycemia below 40 mg/dL is an undesirable complication. The incidence of hypoglycemia in these studies compares unfavorably with data from results with the Glucommander, which in published data has an overall hypoglycemia rate (below 40 mg/dL) of only 2.6% [4], and more recently, no blood sugar below 40 mg/dL was seen in patients on the Glucommander in the cardiovascular ICU [5]. Algorithms for achieving TGC are being continually refined. The target ranges for ICU patients are firmly established in only the post-cardiac surgical population. The DSIG joins others in the hope that the NICE-SUGAR (Normoglycemia in Intensive Care Evaluation - Survival Using Glucose Algorithm Regulation) trial (currently in the analysis phase, having enrolled over 6,000 subjects) will add to the knowledge base for these issues and also notes that the principal investigator for this study has commented that even a negative finding for benefit will not provide evidence in favor of abandoning glucose control entirely [6].

The DSIG has learned during its six-year effort that instituting TGC is an individual institutional undertaking that first requires broad commitment from, among others, both the leadership and the implementing staff. Policies and protocols

specific to TGC are essential. Standardization is a must. Chosen targets should be evidence-based *and* realistic for the individual institution. Ongoing monitoring of outcomes, including both the success rate for achieving the glycaemic target and the frequency of hypoglycemia, should guide continuing education and protocol adjustments. Some published protocols are more successful than others, although there are no published randomized clinical trials to clearly establish the best. Computerization of protocols with alarms and reminders drastically reduces protocol violations and calculation error and facilitates documentation. Achieving TGC requires good protocols and reasonable targets, but effective implementation at the institutional level (reflected by consistent improvement in glycaemic control) may be more important than having the best protocol in safely achieving the desired target range.

Competing interests

PCD is a co-inventor of the Glucommander and is the medical director of GlucoTec, Inc. (Greenville, SC, USA), which markets a related device. RDS is a co-inventor of the Glucommander and has derived income by providing Glucommanders to hospitals himself. LK worked as a contract registered nurse-certified diabetes educator with Eli Lilly and Company (Indianapolis, IN, USA), Johnson & Johnson (New Brunswick, NJ, USA), Pfizer Inc (New York, NY, USA), Rite Aid Corporation (Harrisburg, PA, USA), Wal-Mart Stores, Inc. (Bentonville, AR, USA), Value Medical, Inc. (Piedmont, SC, USA), and Byram Healthcare (White Plains, NY, USA) and has financial interests in sanofi-aventis (Paris, France) and Novo Nordisk A/S (Bagsvaerd, Denmark). The other authors declare that they have no competing interests.

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References

1. **Diabetes Special Interest Group homepage** [<http://diabetes.gha.org>].
2. Mesotten D: **Tight glycaemic control in the intensive care unit: pitfalls in the testing of the concept.** *Crit Care* 2008, **12**:187.
3. Van den Heuvel I, Ellger B: **A sweet debate: glycaemic control in the intensive care unit.** *Crit Care Med* 2008, **36**:3271-3272.
4. Davidson PC, Steed RD, Bode BW: **Glucomander A computer-directed intravenous insulin system shown to be safe, simple, and effective in 120,618 h of operation.** *Diabetes Care* 2005, **28**:2418-2423.
5. Davidson PC, Steed RD, Bode BW, Hebblewhite HR, Prevosti L, Cheekati V: **Use of a computerized intravenous insulin algorithm within a nurse-directed protocol for patients undergoing cardiovascular surgery.** *J Diabetes Sci Tech* 2008, **2**:2669-2675.
6. Finfer S, Delaney A: **Tight glycaemic control in critically ill adults.** *JAMA* 2008, **300**:963-965.