



Transitioning from intravenous to subcutaneous insulin: the 80% rule, what is the data behind it?

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Background

- In-hospital hyperglycemia is associated with increased inpatient mortality and morbidity.
- Early clinical trials suggested an optimal glucose target of 81-110 mg/dL for patients in the ICU setting.
- The 2009 NICE-SUGAR study raised concerns that such tight glycaemia results in increased mortality from hypoglycemia thus advising a target of 140-180 mg/dl (1).
- Intravenous (IV) insulin remains the gold standard to achieve optimal glycemic control in the ICU setting and in patients that are not achieving target glycemia in-hospital.
- Switching from IV to subcutaneous (SQ) insulin can be quite challenging. Guidelines advise converting to 80% of total daily dose (TDD) of IV insulin.

Objective

- Review Pubmed literature behind the 80% transition calculation from IV to SQ insulin

Methods

- PubMed search for studies looking into optimal transition calculation from IV to SQ insulin between 2006 and 2014

Results

- Our search found one article (2) published in 2006. It randomized 75 hospitalized patients receiving IV insulin to transitions of 40%, 60% or 80% of TDD calculated from the rate during the final 6 hours of the infusion.
- That study showed that 80% of the TDD resulted in the highest percentage of glucose values within a glycemic range of 80-150 mg/dL within the first 24 hours of conversion in comparison with the 40% and 60% group, but not statistically significant from the 40% group.

Discussion

- Using the 80% rule to transition from IV to SQ insulin has been widely used.
- Research looking into optimal transition from IV to SQ insulin is scarce.
- While the 2006 study (2) provided helpful important information about insulin transition and advised transition to 80%, it was a small size study and did not account for the individual effect of variables that can impact glucose control like use of steroid medications, previous history of diabetes, previous history of insulin use, weight, kidney function, nutrition status (tube feeds vs. TPN vs. NPO status), use of immunosuppressants and inotropes. The study investigated only the first 24 hours after conversion.

Conclusion

- ✓ The transition from IV to SQ insulin in hospitalized patients is crucial to providing safe and effective care.
- ✓ While the benefits of IV insulin are well-studied in multiple trials, large scale studies looking into optimal transition calculation from IV to SQ insulin are needed.
- ✓ Considering other variables like renal function, use of glucocorticoids, nutritional status in SQ insulin dose calculations are warranted.
- ✓ This review highlights the need of such research and will serve as a core for future research we are planning to perform.

References

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