250 words

ADMISSION GLUCOSE NUMBER (AGN): A NOVEL POINT-OF-ADMISSION SCORE ASSOCIATED WITH PROLONGED ADMISSION DURATION AND WITH GLYCAEMIC CHARACTERISTICS IN PATIENTS WITH TYPE 1 DIABETES

**Aims/Objectives**

To assess associations between admission glucose number (AGN) and admission outcomes for inpatients with T1D.

**Methods**: Inpatient capillary blood glucose (CBG) data for patients with T1D in our health board were identified for 6-year period and associated with most recent pre-admission HbA1c. AGN was calculated as first CBG measured during admission (mmol/L), subtracted from most recent pre-admission HbA1c (converted to estimated median glucose mmol/l) within 15-months pre-admission. The association between AGN and CBG variability (interquartile range), length of stay (LOS), and number of hypoglycaemic (<4mmol/l) episodes/day were investigated. Hypoglycaemic episodes defined as sequences of contiguous CBG measures below 4mmol/L where the time interval between each measure was <60 minutes.

**Results:** 10598 admissions with data identified. A U-shaped association between AGN and CBG variability was seen with lowest variability at AGN of 0-2 (IQR 3.7mmol/l), with peak variability AGN of negative 16-18 (6.9mmol/l) and 12-14 (5.9mmol/l). Median LOS was negatively associated with AGN from AGN negative 18-20 (6.1 days) to AGN 8-10 (1.9 days), with AGN >10 associated with an increase to AGN 16-18 (2.9 days). A U-shaped association between AGN and hypoglycaemic episodes/day was seen with minimum 0.13 episodes/day at AGN (-2-0) and peak frequency at AGN negative 14-12 (0.34 episodes/day) and AGN 8-10 (0.51 episodes/day) (p<0.05 for all values compared with minimum)

**Conclusion/Summary:** AGN is a simple metric which combines 2 measures readily available very early during admission. AGN may be a useful tool to stratify patients for risk of glycaemic variability, hypoglycaemia and prolonged hospital stay at the point of admission.

LOS

attdAbstractLOS<-boxplot(subset(plotReportingDF,admissionDurationDays>0.5)$admissionDurationDays ~ cut(subset(plotReportingDF,admissionDurationDays>0.5)$eAGyyyyDiff,breaks=seq(-30,30,5)),las=3,varwidth=T,ylim=c(0,10),plot=T,main="IQR vs AGN ATTD abstract 1 (x axis)")

nb – subset of all admissions with los>0.5