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EARLY OBSERVATIONS ON GLYCAEMIC VARIABILITY OF NORMOGLYCAEMIC PARTICIPANTS AND ITS INTERPLAY WITH PHYSICAL ACTIVITY AND DIET USING FLASH GLUCOSE MONITORING

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Background
Flash glucose monitoring has made glycaemic variability much easier to observe. To better understand the technology and explore the interplay between meal consumption and physical activity on glucose levels, we started a study in February 2019, recruiting, by end April, 55 normoglycaemic participants of 100 total. Below are initial observations.

Methods
For two weeks, participants wore a Libre sensor and Fitbit Flex 2 activity monitor and kept a food diary. For our analysis, we focused on the first 50 participants and looked at data collected during the lunch period of 11am to 4pm from the fourth to tenth days for maximum Libre accuracy. Glycaemic variability was measured using Interquartile Range (IQR) and Interdecile Range (IDR).

Results
The average age of participants was 35 years-old. Average glucose ranged between 3.48mmol/L and 6.06mmol/L with median 4.69mmol/L. Average IQR ranged between 0.64mmol/L and 2.59mmol/L with median 1.47mmol/L. Average IDR ranged between 1.42mmol/L and 4.99mmol/L with median 2.83mmol/L. From this, five clusters of participants were identified based on their variance of median, IQR and IDR. While overall physical activity levels and proportion of lunches high in simple carbohydrates and sugar-sweetened beverages were not statistically significantly different between clusters, individual intraday results showed signs of increased physical activity delaying the rise of glucose levels.

Conclusion
While clear clusters are visible, our initial results point to the need for us to leverage the more granular intraday glucose and physical activity data and food consumption to better understand the underlying influences for glycaemic variability as we recruit more participants.