Supplementary Data

Supplementary S1 Table. Continuous Glucose Analysis – Definitions and measures of glucose series

Parameter	*Definition*	*Equation*	*Reference*
Statistical measures and temporal events			
$MEAN_I$	Mean glucose over time interval I I: 24 h Before Breakfast/ Lunch/ Dinner After Breakfast/ Lunch/ Dinner Day Night Early Morning	$MEAN_I = \frac{\sum_{i=1}^{N_I} g_i}{N_I}$	[1]
AUC180/ iAUC	*AUC180* - Percentage Area under glucose curve above target range (180 mg/dl) *iAUC* - includes all area below the glucose curve and above the fasting concentration.	$\frac{\sum_{i=1}^{N_I-1}(g_i + g_{i+1} - 360)\cdot \Delta t/2,\ \ g_i \geq 180}{\sum_{i=1}^{N_I-1}\left(g_i + g_{i+1} - 2\cdot g_{fasting}\right)\cdot \Delta t/2,\ \ g_i \geq g_{fasting}}$	[2]
Max_I	Max glucose level within 4 h after meal ingestion I: Breakfast/ Lunch/ Dinner	$\max_{4\,h}[g_0\ ..\ g_{N_I}]$	

Glucose variability and risk assessment			
SD	Standard Deviation	$SD = \sqrt{\frac{\sum_{i=1}^{N_I}(g_i - Mean_I)^2}{N_I - 1}}$	[1]
% CV	Coefficient of Variation	$CV = \frac{SD_I \cdot 100}{Mean_I}$	[1]
M-value	weighted SD	$M = \frac{\sum_{i=1}^{N_I}\left\lvert 10 \cdot \log\frac{g_i}{120}\right\rvert^3}{N_I}$	[3]
MAGE	Mean Amplitude of Glycemic Excursion	$MAGE = MEAN\lvert\lambda\rvert$ where λ = change in glucose levels over each excursion from peak to nadir (or nadir to peak) and $\lambda > SD_{24}$	[4]
MODD	Mean of Daily Differences	$MODD = \frac{\sum_{i=1}^{N_I}\lvert(g_i - g_{i-f\cdot 24})\rvert}{N_I}$	[5]
CONGAn	SD of the difference between values obtained exactly n hours apart n = 1, 2, 4, etc.	$CONGA_n = \sqrt{\frac{\sum_{i=1}^{N_I}(D_t - \overline{D})^2}{N_I - 1}}$	[6]

		where $$D_t = g_i - g_{i-f \cdot n}$$ and $$\overline{D} = \frac{\sum_{i=1}^{N_I} D_t}{N_I}$$	
BGRI	LBGI - Low Blood Glucose Index HBGI - High Blood Glucose Index BGRI - Blood glucose risk index	$$f(g_i) = 1.509 \cdot [(\ln(g_i)^{1.084} - 5.381]$$ $$r(g_i) = 10 \cdot f(g_i)^2$$ $$rl(g_i) = r(g_i) \ \ if \ \ f(g_i) < 0 \ and \ \ 0 \quad o.w$$ $$rh(g_i) = r(g_i) \ \ if \ \ f(g_i) > 0 \ and \ \ 0 \quad o.w$$ $$LBGI = \frac{1}{N_I} \sum_{i=1}^{N_I} rl(g_i)$$ $$HBGI = \frac{1}{N_I} \sum_{i=1}^{N_I} rh(g_i)$$ $$BGRI = LBGI + HBGI$$	[7]

g_i = Continuous glucose monitoring (CGM) glucose time series – glucose reading i

N_I = number of glucose readings for a given time interval I

Δt = time interval between adjacent samples (min)

f = sampling frequency (samples per hour)

References

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