Journal of Diabetes Science and Technology
Volume 7, Issue 1, January 2013

ORIGINAL ARTICLE

Minding the Gaps in Continuous Glucose Monitoring: A Method to Repair Gaps to Achieve More Accurate Glucometrics

Stephanie J. Fonda, Ph.D.,[1] Drew G. Lewis,[2] and Robert A. Vigersky, M.D.[1]

Abstract

Estimation of glycemic variability requires frequent measures of glucose and is greatly aided by continuous glucose monitoring (CGM); however, under real-world conditions, missing data or "gaps" of ≥ 10 minutes can occur in CGM data, affecting the reliability of certain estimates. Thus, we determined the magnitude of the gap problem as observed in a cohort of patients with type 2 diabetes and demonstrated an approach to fill the gaps. The approach takes the difference between readings before and after a gap and distributes the difference equally across the number of missing readings, as determined by the sensor's setting for reading frequency. The approach is easy to implement, conservative, and improves estimation of variability measures that reference time, namely, mean of daily differences and continuous overlapping net glycemic action.

J Diabetes Sci Technol 2013;7(1):88–92

Author Affiliations: [1]Walter Reed National Military Medical Center, Bethesda, Maryland; and [2]Estenda Solutions, Inc., Conshohocken, Pennsylvania

Abbreviations: (CGM) continuous glucose monitoring, (CONGA) continuous overlapping net glycemic action, (MAGE) mean amplitude of glycemic excursion, (MODD) mean of daily differences, (SAS) Statistical Analysis System, (SD) standard deviation

Keywords: Continuous glucose monitoring, data quality, glycemic variability, measurement

Corresponding Author: Stephanie J. Fonda, Ph.D., Walter Reed National Military Medical Center, 8901 Wisconsin Avenue, Bethesda, MD 20889-5600; email address *fondasj@gmail.com*