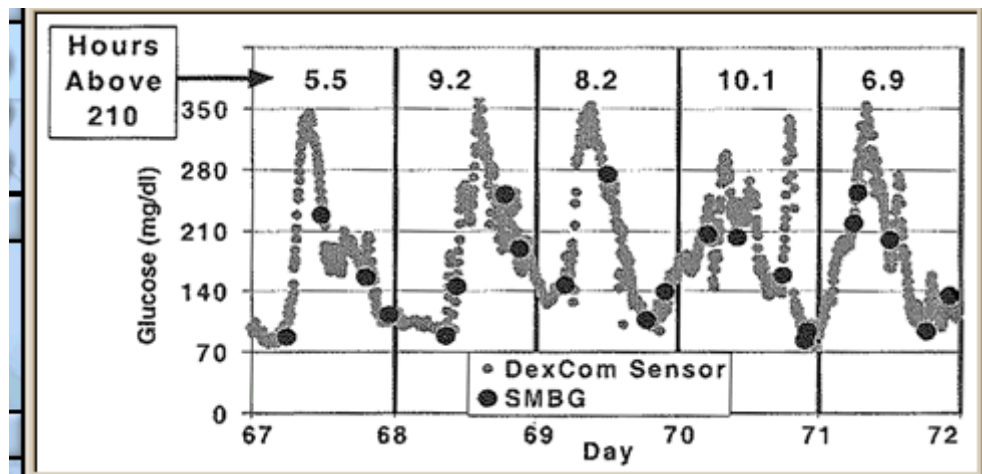


Glucose Sensor in the Subcutaneous Tissue: Continuous Data in Patients with Type 1 Diabetes

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The capability of emerging sensor technology to continuously monitor daily glycemic excursions may provide treatment regimens to improve metabolic control and compliance. A novel, long-term continuous sensor that transmits data to a portable receiver was tested for up to 7 months in humans. The small, cylindrical sensors were implanted into the subcutaneous tissue under local anesthesia. The electrochemical sensor used a 3 electrode system covered with proprietary membranes. Accuracy of the sensors was evaluated by in-clinic Glucose Tracking Studies (GTS) consisting of oral glucose loading and comparison of sensor values to YSI. Average R-values were 0.93. All values fell within the A & B region of a Clarke Error Grid. At various times, patients were asked to perform 4-10 SMBG tests daily and keep a logbook. The sensors detected patterns that the SMBG method was not able to reveal. Additionally, the daily peak values detected by the sensor were 50 to 100 mg/dL higher than those reported by SMBG because SMBG failed to capture the high points of the excursion. When glucose levels detected by the sensors exceeded 210 mg/dl, average time to detection using SMBG ranged from about 1.5 to 4 hours. In some cases 5 hours or more passed without detection. These results document the potential utility of an implantable continuous glucose sensor for detecting glucose patterns and excursions in patients with diabetes.



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