Cost-Effectiveness of Real-Time Continuous Glucose Monitoring (RT-CGM) in Type 2 Diabetes (T2DM)

Stephanie J. Fonda, PhD, b Claudia Graham, PhD, b Yevgeniy Samyshkin, MSc, c Julie Munakata, MS, c Julie Powers, MHS, c David Price, MD, b Robert A. Vigersky, MD a Diabetes Institute, Endocrinology Service, Walter Reed National Military Medical Center (Washington, DC), b Dexcom, Inc. (San Diego), c IMS Health, (London, Redwood City, & Alexandria)

• The social and economic burdens of diabetes make it important to identify cost-effective approaches for managing Type 2 diabetes mellitus (T2DM).
• A 3-month course of RT-CGM in people T2DM who do not take prandial insulin reduces A1c compared with self-monitoring of blood glucose (SMBG) – an effect which persists for 9 more months.1,2
• There are no studies of cost-effectiveness of RT-CGM in people with T2DM not taking prandial insulin; to our knowledge, there are no published cost-effectiveness studies of RT-CGM in T2DM.
• We examined the potential impact of RT-CGM on the lifetime clinical and economic impact of such a treatment approach.

METHODS

We used the validated IMS CORE Diabetes Model (CDM). The CDM:
• Main assumptions of the cost-effectiveness analysis:
  • Used the validated1 IMS CORE Diabetes Model (CDM). The CDM:
  • Predicted cumulative rates of diabetes complications and progression physiological parameters, such as A1c.
  • Used inputs from: a) the clinical study or cohort; b) clinically-derived assumptions about treatment algorithms; and c) data from the UKPDS, the DCCT, and Framingham Study.
  • Estimated health outcomes in the modeled cohort in terms of quality-adjusted life-years (QALYs).
  • Base case and scenario analyses performed; base case assumed no further use of RT-CGM after Year 1, and scenario assumed refresh use at beginning of Year 2. Both analyses assumed average transition to insulin would be by Year 5.
  • Analyses performed from a US payer perspective, including only direct costs obtained from published sources and inflated to 2011 U.S. dollars. Costs and outcomes discounted at 3% annually.
  • We performed sensitivity analyses and these were generally robust.

CONCLUSIONS AND DISCUSSION

• Intermittent, short-term use of RT-CGM is a cost-effective disease management option in the U.S. for people with T2DM not taking prandial insulin. A repeat “course” or “dose” of RT-CGM may result in additional cost-effective health benefits, due to longer-term impact on physiological parameters.
• However, the gains in quantity and quality of life are modest. Thus, much of the cost-effectiveness is due to the low cost of the intervention, which is far below standard thresholds for costs per quality of life year gained.
• The small effect on quantity and quality of life is typical of behavioral interventions, where no prolonged action of the intervention is assumed. This use of RT-CGM is a behavioral intervention because no interpretation of RT-CGM data by a clinician was provided, nor did study staff adjust diabetes therapies; physiologic effects were due to participants’ actions. Clinician interpretation might increase costs, but might also increase the beneficial effects of this technology, and thereby offset costs. This is a question for future research.

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REFERENCES