


### Objectives

- Discuss the use of diabetes device download for assessing glycemic control, adherence and knowledge in clinical practice
- Identify facilitators and barriers to download use in clinical practice
- Demonstrate effective download use for assessment and dose titration

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### Death by Data




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### Disclosures

- Conflict of Interest (COI) and Financial Relationship Disclosures:
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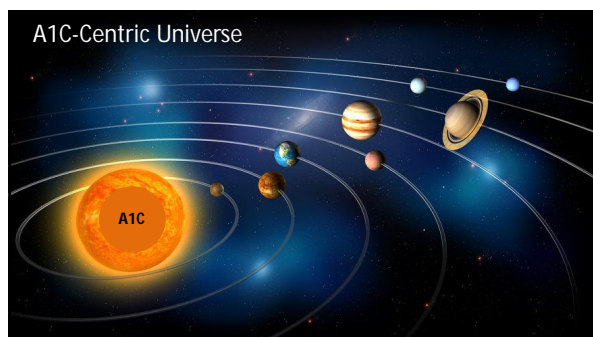
### Flying Blind: Diabetes Management Without Download Support



- Downloads are underutilized in diabetes management
- Should be part of vital signs
- Barriers
  - Time and cost constrains
  - Infrastructure not in place
  - Data overload
- Facilitators
  - Device-agnostic single hardware/software system
    - Simplifies download process
    - Streamlines assessment with uniform downloads
    - Integrates all patient technologies
    - Provides uniform decision support tools
  - Cloud-based platforms can streamline clinic visits

Hirsch, I.B., (2010). Practical Pearls in Insulin Pump Therapy. Diabetes Technology & Therapeutics 12(1), 5-23-27.

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## Download Tricks of the Trade

- Visualize overall pattern
- Utilize available decision support tools
- Mean blood glucose with standard deviation and coefficient of variation
- Time-in-target
- Total daily dose along with basal/bolus ratio
- Pattern overview to elicit daily and weekly trends
- Use of “best-day”

Hirsch, I.B. (2010). Practical Pearls in Insulin Pump Therapy. *Diabetes Technology & Therapeutics* 12(1), 5-23-27.

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## Assessing Adherence

- Adherence should be assessed at every clinic visit with medication adjustment only when adherence estimated >80%<sup>1</sup>
- Medication non-adherence results in 50% of medication related hospitalization and about \$100 billion in health care costs<sup>1</sup>
- Nonadherence with self-management between 20-60%<sup>2</sup>
- In one study, less than 30% of patients with T2DM prescribed initial insulin therapy were still taking insulin at 12 months<sup>3</sup>
- Limitations of traditional self-report measures:
  - Over-estimation due to memory bias and social desirability bias<sup>4</sup>
  - Children and adolescents with 40-70% misreporting<sup>5</sup>
- Download provides superior, objective means of assessing adherence

1. American Diabetes Association. Standards of medical care in diabetes—2015. *Clin Diabetes*. 33(2), W1-11. doi:10.2337/130122

2. Coates, J. A. (2015). A systematic review of adherence with medications for diabetes. *Diabetes Care* 38(10), 1518-1524. doi:10.2337/130122

3. Cook, C. L., et al. (2015). Persistence with medication in adults with type 2 diabetes: a cross-sectional study. *Diabetes Care* 38(10), 1518-1524. doi:10.2337/130122

4. Sallis, M. L., et al. (2015). Self-report measures of medication adherence in adults: recommendations on optimal use. *Diabetes Care* 38(10), 1518-1524. doi:10.2337/130122

5. Choi, M. (2016). Accuracy of verbal self-reporting of glucose in teenagers with type 1 diabetes at diabetes clinic. *J Diabetes Invest* 7(1), 1-11. doi:10.1016/j.jdi.2015.12.004

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## Not Downloading a Pancreas

- Data is not always what it seems
- Data can be omitted or miss-entered
- Approach the download with healthy skepticism
- Ask patient about the story behind the download

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## Knowledge Assessment

- Highlights educational needs using patient's own data
  - carbohydrate counting
  - missed bolus
  - hyperglycemia/hypoglycemia management
  - device skills assessment
  - use of device advanced features
- Patient visualization of their own data can be a powerful teaching tool
  - Highlights cause and effect patterns
  - Teaches patient how to use their data for self-management
- Educational goals can be personalized and tailored to fit patient's need

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## References

- Miller, D.M., et al. (2018). Time Savings Using a Standardized Glucose Reporting System and Ambulatory Glucose Profile. *Journal of Diabetes Science and Technology*, 12(3) 614-621.
- American Diabetes Association. Standards of medical care in diabetes—2015 abridged for primary care providers. *Clin Diabetes*, 33(2), 97-111. doi:10.2337/130122
- Coates, J. A. (2015). A systematic review of adherence with medications for diabetes. *Diabetes Care* 38(10), 1518-1524.
- Cook, C. L., et al. (2015). Persistence with medication in adults with type 2 diabetes: a cross-sectional study. *Diabetes Care* 38(10), 1518-1524. doi:10.2337/130122
- Sallis, M. L., et al. (2015). Self-report measures of medication adherence in adults: recommendations on optimal use. *Diabetes Care* 38(10), 1518-1524. doi:10.2337/130122
- Choi, M. (2016). Accuracy of verbal self-reporting of glucose in teenagers with type 1 diabetes at diabetes clinic. *J Diabetes Invest* 7(1), 1-11. doi:10.1016/j.jdi.2015.12.004
- Placitelli, M., Williams, L. K., Potts, L. A., Diving, G., Xi, H., & Lafata, J. E. (2004). Clinical outcomes and adherence to medications measured by claims data in patients with diabetes. *Diabetes Care* 27(12), 2869-2874.
- Cooke, C. E., Lee, H. Y., Tong, Y. P., Haines, S. T. (2010). Persistence with injectable anti-diabetic agents in members with type 2 diabetes in a commercial managed care organization. *Current Medical Research and Opinion*, 26(1), 231-238.
- Striatt, M. J., Dunbar-Jacob, J., Crane, H. M., Simon, J. M., Czajkowski, S., Hillard, M. E., Nizer, W. J. (2015). Self-report measures of medication adherence behavior: measurement on optimal use. *Transl Behav Med*, 4(4), 470-482. doi:10.1007/s12420-015-0315-2
- Vols, C. L., Hoyle, R. H., Thorpe, C. T., Maciejowski, M. L., & Yancy, W. S., Jr. (2011). Improving the measurement of self-reported medication nonadherence. *Clin Diabetes* 29(3), 210-214. doi:10.2337/116225
- Chae, M., Reith, D. M., Tomlinson, P. A., Rayns, J., & Wheeler, B. J. (2014). Accuracy of verbal self-reported blood glucose in teenagers with type 1 diabetes at diabetes clinic. *Diabetes Mellitus* 7(8), 14. doi:10.1186/2191-2100-7-14
- Wilson, D. P., & Endres, R. K. (1986). Compliance with blood glucose monitoring in children with type 1 diabetes mellitus. *J Pediatr*, 108(6), 1022-1024.
- Osherson, L., & Schrier, T. Adherence to medication. *N Engl J Med*. 2005;353:487-497.
- Hirsch, I.B. (2010). Practical Pearls in Insulin Pump Therapy. *Diabetes Technology & Therapeutics* 12(1), 5-23-27.
- McElwee-Malloy M. The right meter for you. *Diabetes Forecast*. 2016;69(2):50-63.

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