

The Lowdown on Downloading

By Gary Scheiner MS, CDE

If you've ever made the effort to download your blood glucose meter, it matters not if you're a computer geek or complete techno-phobe. Hardly anyone has a clue about what to do with the data once you've done it. And that needs to change. Those of us who live with diabetes need to become more adept at analyzing our own data to see, essentially, what's working and what isn't. And for the sake of our time-strapped healthcare providers, be prepared for your office visits with something useful to share.

The Download Process

Virtually all modern blood glucose meters are downloadable to a PC running in a Windows environment; many are also downloadable to a MAC if it has Windows compatibility software. The meters themselves attach a time and date stamp to each glucose value so that graphs, charts and statistics can be generated. Of course, it helps if the meter's clock and calendar are set properly, so check these before doing a download. (*nothing ticks me off more than doing a complete download and data analysis only to find that the a.m. and p.m. are backwards!*)

Meter downloading software is usually free of charge, available on the meter company's website or by obtaining the software on a compact disk. Download cables, which plug into your computer's USB port, are either free or modestly priced. Some connect directly to your meter; others use infrared signals to communicate with your meter. Below is a summary of the software used to download meters from the major manufacturers:

Lifescan (Ultra): One Touch Zoom DMS
www.lifescan.com/products/otdms/

Bayer (Ascensia): Glucofacts Deluxe
www.simplewins.com/sections/Monitor/meters/glucofactsdeluxe/overview

Abbott (Freestyle): CoPilot
www.abbottdiabetescare.com/content/en_US/20.40:40/product/Product_Profile_0027.htm

Roche (AccuChek): Accu-Chek 360°
www.accu-chek.com/us/data-management/360-software.html

Home Diagnostics: True Manager
http://homediagnosticsinc.com/our_products/true_manager.aspx

AgaMatrix (Wavesense): Zero Click
www.wavesense.info/zero-click

ReliOn: My Care Team
Call 800-631-0076 to order, or visit
www.mycareteam.com

Key Reports

Beautiful pies and bars (charts) are better suited for eating than insightful data analysis. From my experience, these are the items that are truly useful when viewing downloaded meter data:

1. Statistics

When viewing data over the past couple of weeks or more, focus on the overall average glucose, standard deviations, and percentage of readings that are above, below and within your target range. The average should correlate well with your HbA1c, although it may underestimate a bit if you don't do any after-meal testing (BGs tend to spike up for a short while after meals & snacks).

The standard deviation (SD) reflects the amount of *variability* in your readings. Lower is better. If the SD is more than half of your average, your readings include many extreme highs and/or lows. A SD that is less than one third of your average means that your readings are fairly consistent from day to day, without too many in the extreme ranges.

The percent of readings within range is, to me, the gold standard for assessing the quality of your diabetes management. While a couple of extreme highs or lows can greatly influence your average and SD, they won't necessarily wreck your percent in-range. In the software, be sure to set your target range, based on a discussion with your healthcare provider. The preset range is usually very tight and narrow, and applicable to only a small segment of the population. For those who take multiple doses of insulin, ranges of 70-150 or 80-180 may be more reasonable.

In some meter software packages, more detailed statistics are sometimes available. These include averages by day of the week (to see if you are having control issues related to your weekly schedule) and averages and percent high/low/in-range by mealtime.

2. Modal Day (or Standard Day) Report

This provides a scatter plot of blood glucose values arranged by time of day. It provides a quick visual summary of the *quality* of your blood glucose control grouped according to your usual mealtimes. As was the case with setting your target BG range, be sure the meal schedule in the software corresponds with your usual schedule. (many are preset for the "early bird special" crowd, with meals and bedtime at very early times of day).

Take a look at your modal day report for the past several weeks. Are there frequent highs or lows at certain times of day? Are the readings consistent or widely scattered? When viewed in conjunction with the averages and percent

high/low/in range statistics described above, you may be able to determine not only *when* your highs/lows occur and what may be contributing to them.

3. Logbook Report

Summary statistics (averages, SD, % in-range) and modal day reports can be misleading if you check more than once when your blood glucose is high or low, or if you tend to check more often when you feel that something isn't quite right. The logbook report allows a more complete look at your blood glucose history, listing readings in chart form according to the time of day. Once again, be sure to set up the software so that the time intervals correspond with your typical schedule.

A detailed look at your logbook can answer questions such as:

- ✓ Do lows tend to occur after highs? (perhaps you are over-dosing for the highs)
- ✓ Do highs tend to occur after lows? (perhaps you are over-eating or rebounding)
- ✓ Do you tend to run several highs in a row? (perhaps your correction doses are insufficient)
- ✓ Do glucose levels change overnight or between meals? (perhaps your basal insulin needs adjustment)
- ✓ Are there patterns related to when you do (or don't) exercise?
- ✓ Are there patterns after you eat out or have take-out food?

Glucose Trend Graphs

Trend graphs provide a plot of glucose values over an extended period of time, such as a month or several months. By highlighting periodic peaks and valleys, these graphs can help determine whether therapy adjustments are

needed for factors such as menstrual cycles, off/vacation days vs. work/school days, and seasonal variations in physical activity. Trend graphs are also useful for illustrating control changes over prolonged periods of time. Gradual upward trends often indicate a need to intensify therapy. Downward trends may indicate that your therapy is on the right track, as long as you are not experiencing hypoglycemia too often.

Editor's Note: Gary Scheiner is a Certified Diabetes Educator with a private practice, Integrated Diabetes Services (www.integrateddiabetes.com), near Philadelphia. He and his staff provide advanced diabetes management and education services for insulin users throughout the world via phone and the Internet. For more information, contact gary@integrateddiabetes.com, or call (877) 735-3648.