Automated Insulin Delivery: How Artificial Pancreas “Closed Loop” Systems Can Aid You in Living With Diabetes

Reviewed by Renza Scibilia

In recent years, diabetes technology has developed at a startling pace. New devices are being launched regularly that promise to reduce the burden of day-to-day demands placed on people with diabetes, making this a truly fascinating time to be using diabetes technology.

Perhaps one of the most exciting, interesting, and controversial topics in the diabetes technology space at the moment is the do-it-yourself artificial pancreas systems (DIY APS) movement. A community of people affected by diabetes, rallying under the social media banner #WeAreNotWaiting, are using their own expertise, experience, and knowledge to augment currently available technologies rather than waiting for commercial, regulated artificial pancreas technologies and devices to be approved and launched. The group hopes to more rapidly meet the needs, and better meet the expectations, of people living with insulin-dependent diabetes and their caregivers.

DIY APS have moved from the fringe of diabetes technology to something that is now firmly in the view not only of people with diabetes, but also of health care professionals (HCPs), regulators (1), and industry. Almost all major diabetes conferences around the world now have sessions dedicated to the movement, with oral and poster sessions discussing the pros and cons of using such systems. Although there has been reluctance and hesitancy in more traditional corners of the diabetes health care sector to embrace these user-led technologies, it has been impossible to stop the juggernaut so far.

The release of a book explaining just what DIY APS are all about is a welcome addition to diabetes technology literature, and it is no surprise that the book was written and self-published by Dana M. Lewis. Lewis has lived with type 1 diabetes for more than 16 years and is one of the pioneers of DIY APS development.

In the introductory chapter of Automated Insulin Delivery: How Artificial Pancreas “Closed Loop” Systems Can Aid You in Living With Diabetes, Lewis describes how she moved from initial frustration that her devices could not do more for her to cooperation with other likeminded people to develop a system of automate insulin delivery. Sharing the details of how this vision became a reality available for all online meant that others could build a system and use it for themselves.

Although DIY APS are the focus of this book, the information it provides is also relevant to people using commercially available insulin delivery systems. For those new to the concept of APS, there is an excellent explanation of how the technology works, including diagrams, illustrations, and graphs to describe each component and how it contributes to the process. There is also a clear explanation of the ways in which DIY and commercial systems are similar and how they differ.

Lewis dedicated one section of the book to describing the benefits of AP systems by using analogies to get her point across. This is an excellent way to highlight the impact and benefits of devices that automate some aspects of diabetes management and to help readers who are not familiar with the technology understand why many people using such a system have described it as life-changing. The automation these systems provide significantly reduces the time, effort, and energy previously required by people with diabetes who are dependent on insulin. As Lewis...
explains, “With an APS, it’s like having a night nanny for your diabetes.”

Automated Insulin Delivery is an excellent guide and manual for people with diabetes who are considering or already using APS. It also should be in the office of every diabetes HCP who is interested in staying up to date on cutting-edge diabetes technology. With all commercial devices moving toward increased automation, understanding how the components of APS operate is crucial. The DIY aspect of the book is also essential reading, especially for any HCPs who have been reticent to embrace the user-led movement.

In Chapter 10, Lewis addresses just how HCPs can be a part of the DIY movement. Although she acknowledges that it can be scary for HCPs when patients appear before them having built their own APS, she gently reminds us that patient innovation in diabetes management is really not a new thing. She also correctly states that, despite the automation these systems provide, all people with diabetes still need their HCPs.

In his foreword to the book, JDRF president and chief executive officer Aaron Kowalski acknowledges that DIY APS are not a cure for diabetes. But as someone who now uses such a system himself, he also recognizes that he “can’t imagine” how he managed his insulin regimen before he started. “The impact of an AP system in my life has been less hypoglycemia, a better A1C, less work to get there, and most impactful—better sleep,” Kowalski writes.

DIY APS are experimental technology. A disclaimer at the beginning of the book alerts readers to the lack of regulatory endorsement of DIY systems. That statement is bookended with the book’s conclusion that DIY APS are not going away and that, because people with diabetes are the true experts in APS, there will always be innovation outside of traditional, regulated channels.

DUALITY OF INTEREST

No potential conflicts of interest relevant to this article were reported.

REFERENCE