



RESPONSE TO COMMENT ON DOYLE ET AL.

## Closed-Loop Artificial Pancreas Systems: Engineering the Algorithms. *Diabetes Care* 2014;37:1191–1197

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Oliver et al. (1) raise an interesting point regarding the need to include patient-centered outcomes to guide the development of an artificial pancreas (AP). We agree completely that patient acceptance will be the final outcome measure that decides whether or not the AP will be adopted and thus achieve its full potential for health improvements in people with diabetes. In our review article (2), we focused on describing the technological advancements that have been made in the field in recent years. Still, we are aware that people with diabetes have highlighted the limitations of existing technologies for diabetes care, some of which are being used within current AP systems (3). There is clearly a need to understand further the implications of “living with a machine” and to improve many of the design and functional aspects of the individual components of AP systems, taking into account these human factors and the consequences of being asked to use such a system over the long term. As

we mentioned in our article, it is likely to be the case that there will not be one single system but rather different APs that will be developed to meet the needs of different populations of users (2).

In a survey of our own subjects' experiences as participants in AP research, we found that the personal benefit, convenience, perceived usefulness, and perceived ease of use of an AP system were the major factors leading to its acceptance. Subjects would be more willing to adopt an AP if its effectiveness at controlling glycemia had been demonstrated; however, the complexity of the technology has the potential to serve as a barrier to adoption and thus to successful diabetes treatment (4). Based on these results, it would be prudent to develop a standardized approach for researchers to capture the relevant psychosocial domains to guide AP design so that when such systems become available they will be more likely to be used in the long term by

those individuals who will benefit the most from this innovative approach to type 1 diabetes care. This work is in progress.

**Duality of Interest.** H.C.Z. is an employee of Insulet Corp. No other potential conflicts of interest relevant to this article were reported.

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