Pumps, Smart Pens, and the Future of Insulin Delivery

Exclusive survey insights from the diabetes community

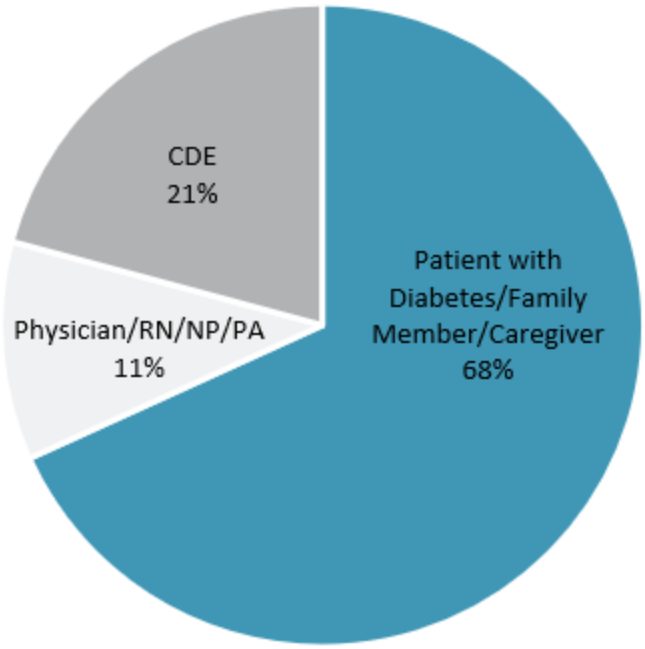
New technologies have the potential to revolutionize diabetes care. But what are the advantages and disadvantages of insulin pumps vs. daily injections, and will new smart pen technologies change the choices patients make? How widely will new technologies be adopted, by patients with type 2 diabetes as well as type 1? What factors will make a difference for adoption – convenience, accuracy, costs?

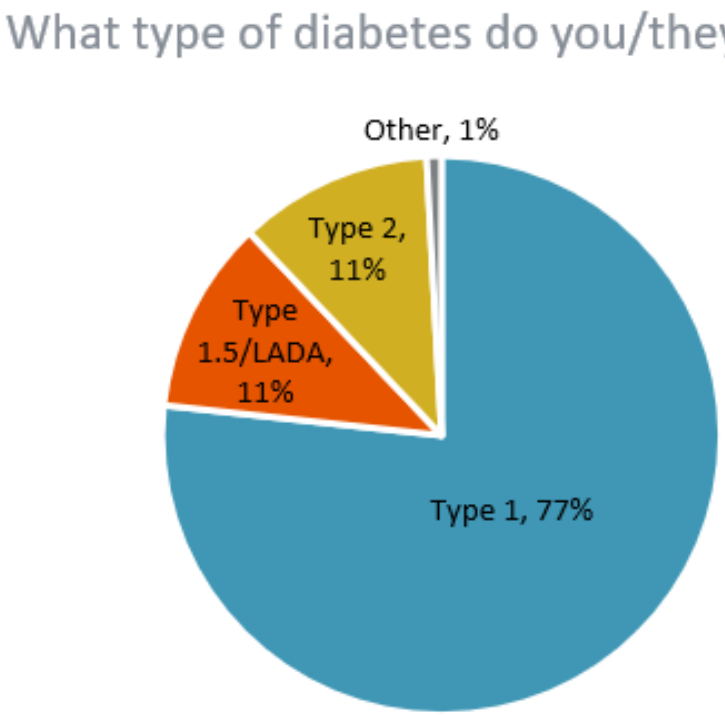
Diabetes in Control recently asked our readers to help us examine the future of insulin delivery and find the answers to these questions. See for yourself how your fellow members of the diabetes community plan on using insulin pumps and/or smart pens, now and in the future.

Survey Methodology:

We conducted a survey of Diabetes in Control readers in August, 2019, consisting of patients, physicians, nurses and CDEs (Certified Diabetes Educators). The survey was focused on insulin delivery technologies, primarily pumps and pens. We had a total of 173 responses of which 68% were patients, family members or caregivers, 11% were physicians, nurses, or other healthcare professionals, and 21% were CDEs. The mean age of participants was 60. Of the participants who had diabetes, 77% had type 1, which is not surprising as use of insulin pumps or daily injections is much more common for people with type 1.

Which of the following best describes you?



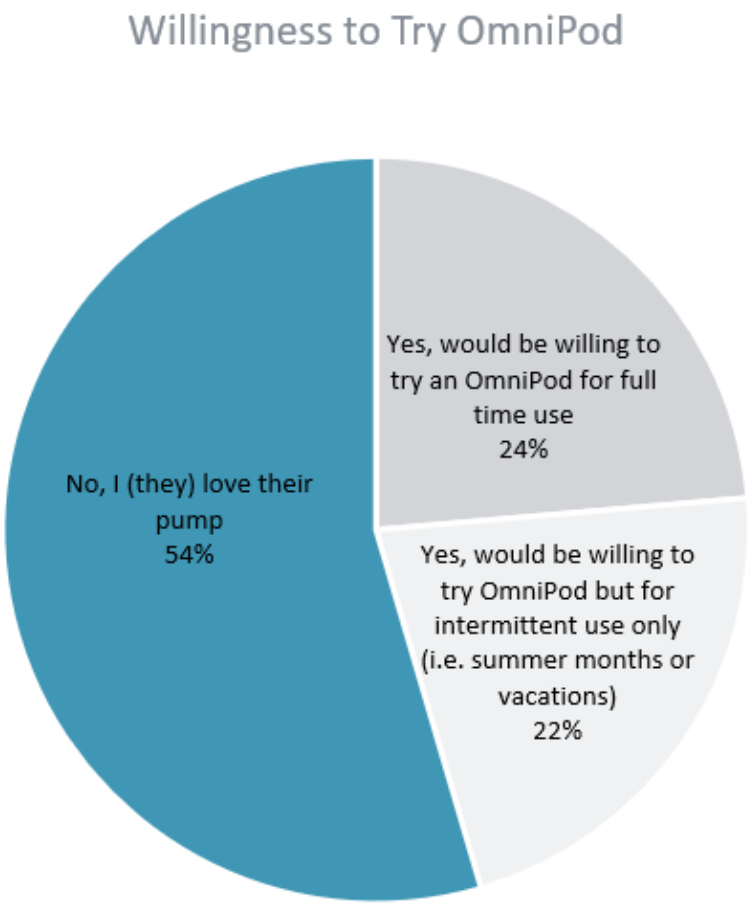


Diabetes Patients who Currently Use Pumps

Among those patients who choose to use a pump, the most popular option currently is Medtronic (670G, 630G, 530G), which was used by 50% of respondents, followed by Tandem (t:slim X2, t:slim, t:flex) (26%) and Insulet (OmniPod) (19%). While Medtronic was most popular, about 12% of Medtronic users thought they might switch to a different brand in the future; loyalty was higher for the other brands.

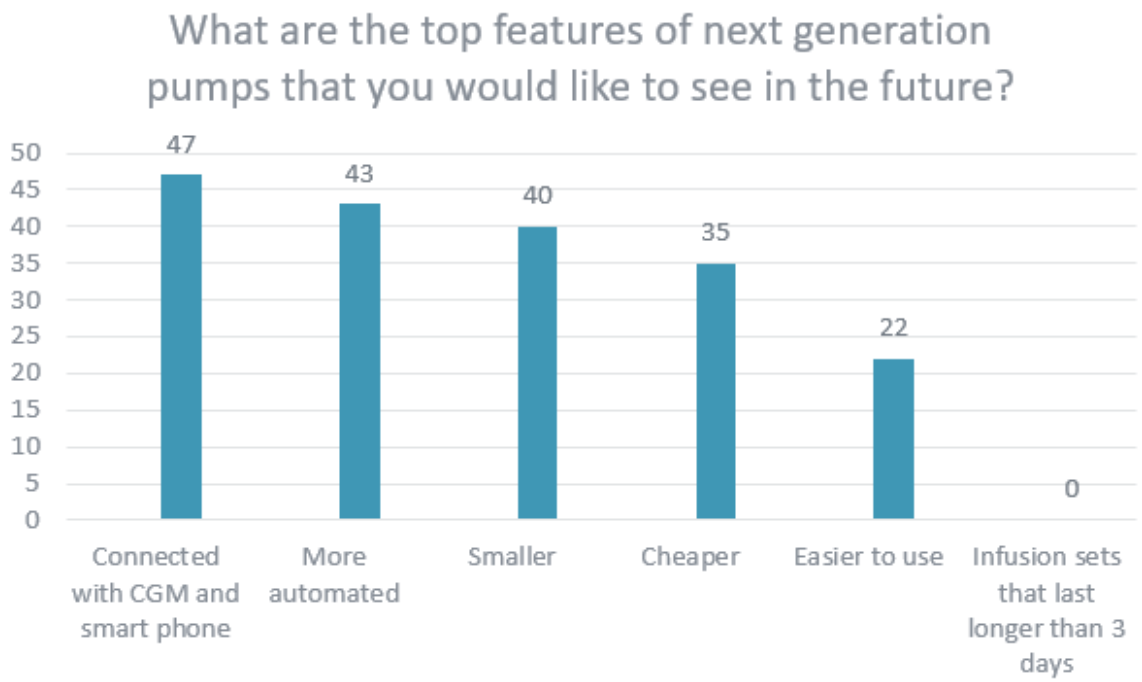
Pump users are cautious about change, but willing to consider it when they find the benefits appealing, as indicated in their response to this question:
Traditional tubed pumps are covered through durable medical equipment providers but OmniPods DASH is becoming available through the pharmacy for no upfront cost/commitment, just a $35-$50 co-pay for a three month supply. Would you be willing to try OmniPod or be interested in using OmniPod during the summer/vacations, since it is now the only waterproof pump on the market?

About half were willing to try OmniPod, either permanently or as an option for vacations.



Pump users had even higher levels of interest in potential features for pumps in the future. The features users wanted most were CGM & smart phone connectivity and greater automation, followed by smaller

size; all of these were somewhat more important to users than lower cost.

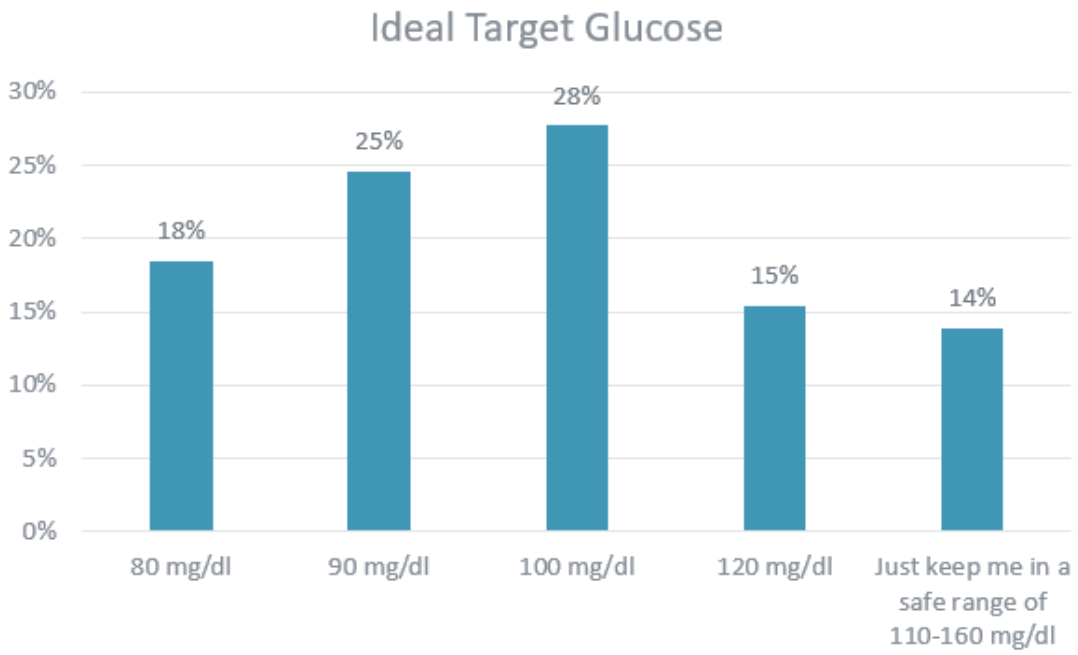


Pumps, Glucose Control & Hypoglycemia:

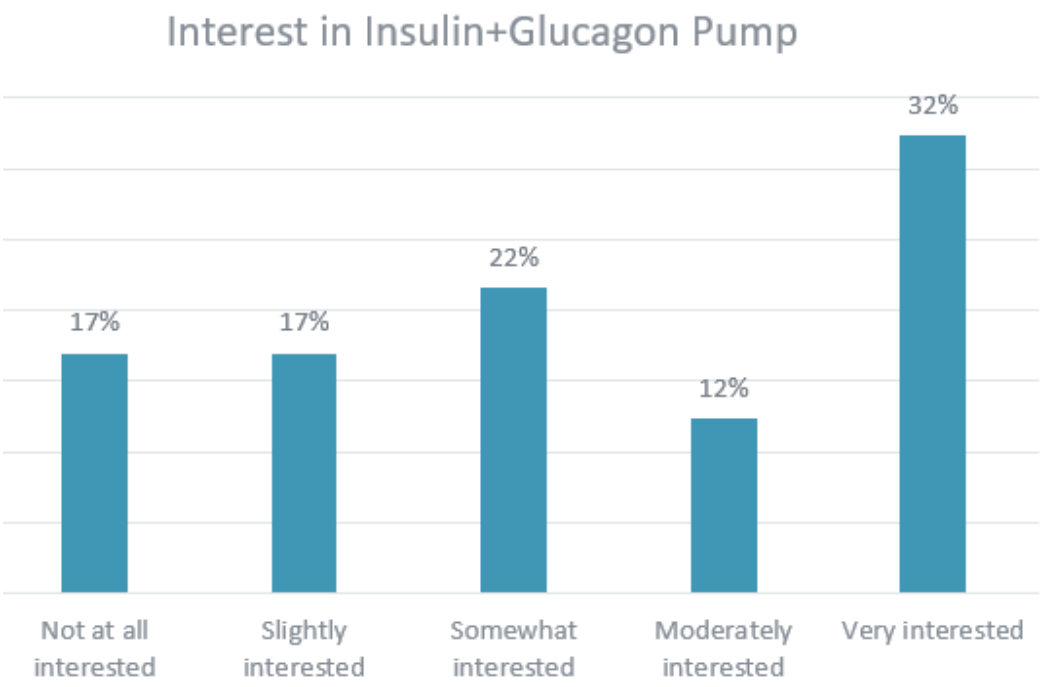
New generations of pumps may provide greater automation (as desired by many of our respondents) and other features. In response to our question on automated targeting,

If the pumps in the future are more automated and run closed loop systems, what would be your ideal target glucose level understanding the lower the target gets set, the risk of hypoglycemia increases as well (assuming the system controls everything itself). The clinical definition puts "normal" blood glucose at 70-120 mg/dL.

most users expressed a desire for their pumps to keep them at a level within mid "normal" range.

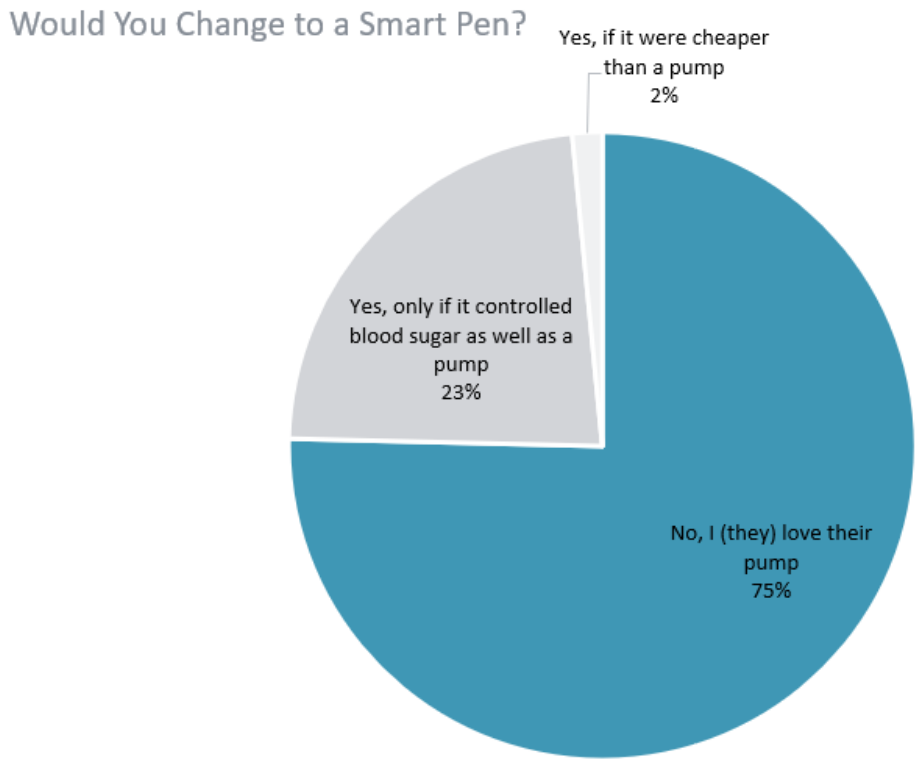


Current pumps deliver insulin only. Future pumps may deliver insulin and glucagon which better mimics the body's natural physiology and also reduces the risk of hypoglycemia. Only about a third of respondents indicated strong interest in these bi-hormonal pumps, with most expressing some interest; there may be a role for diabetes educators in building more awareness of the potential benefits.



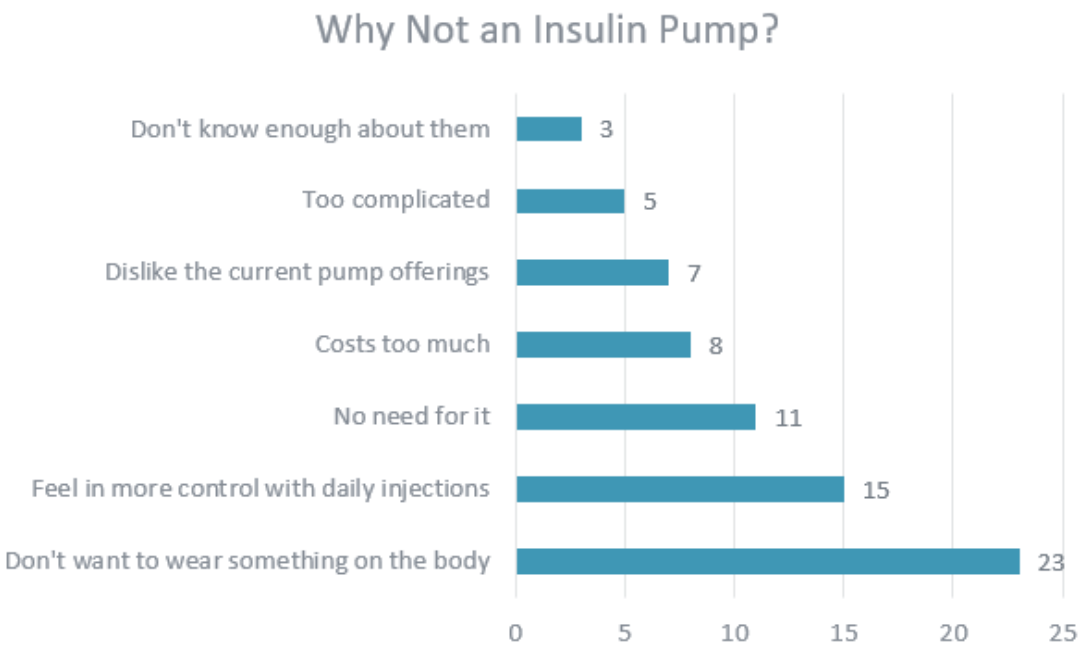
Perhaps these cautious attitudes to change are linked to pump users' general satisfaction with their pumps. They have very little interest in changing to smart pens, despite the new technologies these may offer: 75% of our respondents are very happy with their pumps.

Q. If a smart pen, defined as a Bluetooth enabled insulin pen that is connected to CGM or BGM that automatically shows insulin on board, the last dose time and amount as well as a built in dose calculator were available would you stop using an insulin pump and go back to daily injections with the smart pen?



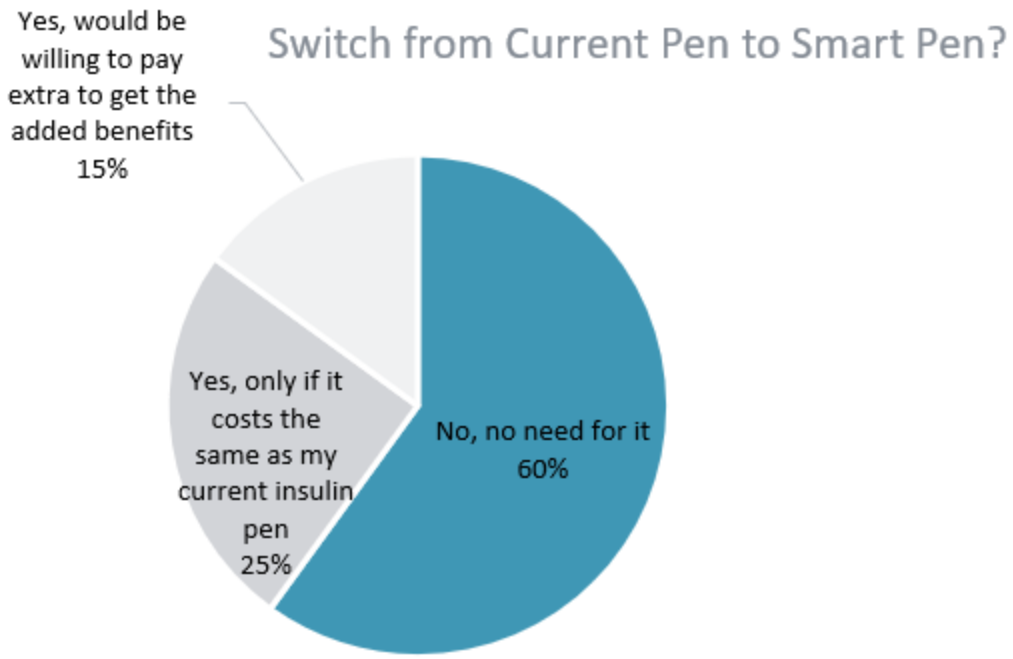
Patients who do not currently use insulin pumps:

While current pump users seem happy with their choice, there are still many patients who do not want to use a pump .The most common reason given by our respondents for not choosing a pump was that they simply do not want to wear something on the body, followed by feeling more in control with injections.



Perhaps surprisingly, many of these non-pump users also take a conservative view about the potential of new smart pen technologies, with most of those surveyed saying they do not see a reason to switch. It may be that users who prefer injection to pumps because they feel more In control also prefer to rely on their own knowledge, rather than pen features. Or they may simply wish to see these new technologies demonstrate their value before making a change.

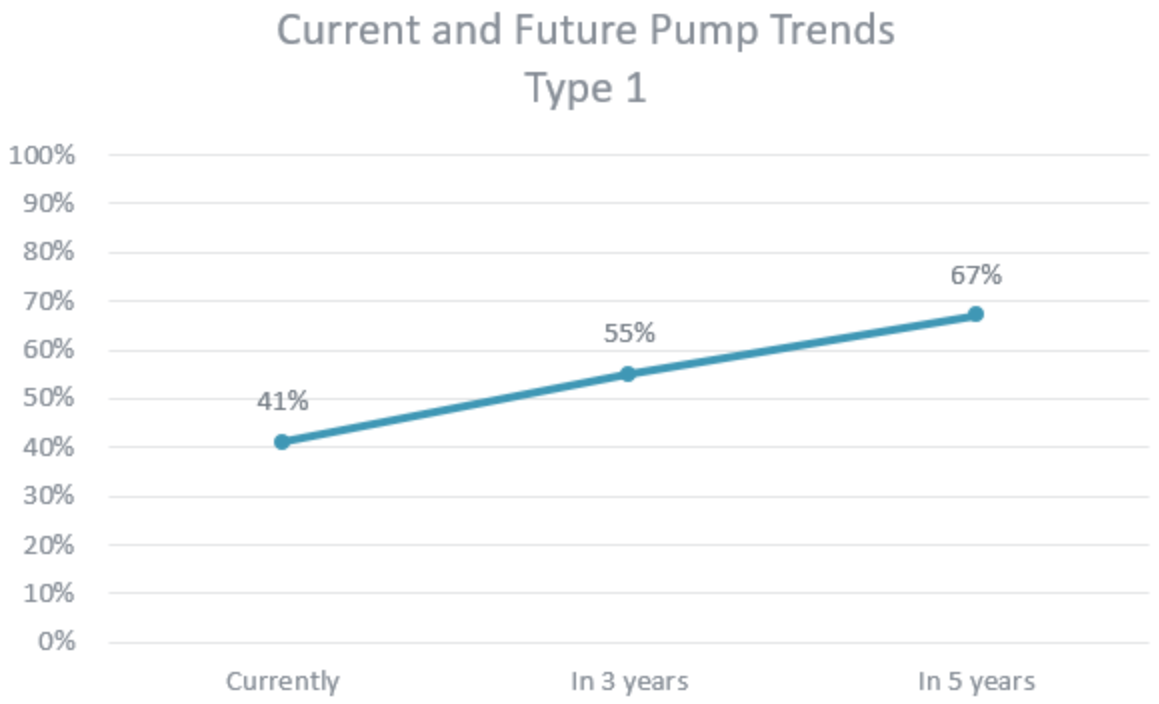
Q. There is increased discussion by companies and experts around smart insulin pens. If a smart pen, defined as a Bluetooth enabled insulin pen that is connected to CGM or BGM that automatically shows insulin on board, the last dose time and amount as well as a built in dose calculator were available, would you/they switch from your/their current insulin pen to a smart pen?

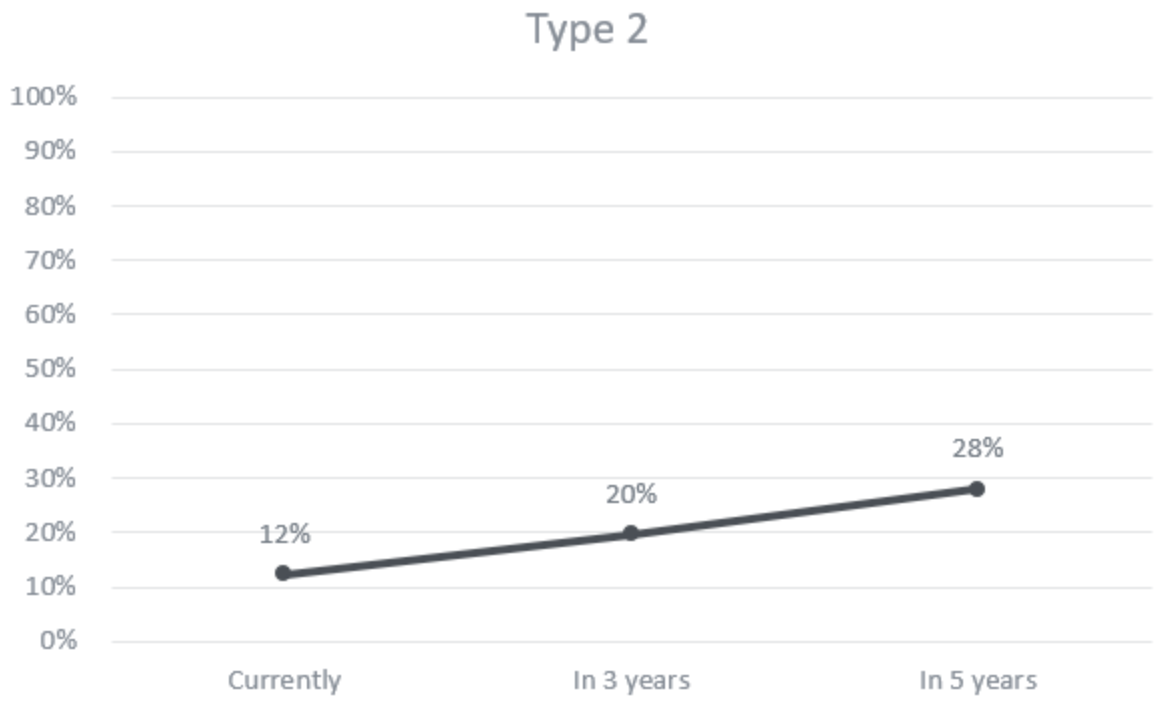


The Health Professional Viewpoint:

Although some patients are averse to adopting insulin pumps, the health care professionals we surveyed see pump use continue to trend upward – and expect use of pumps to grow among patients with type 2 diabetes, as well as type 1.

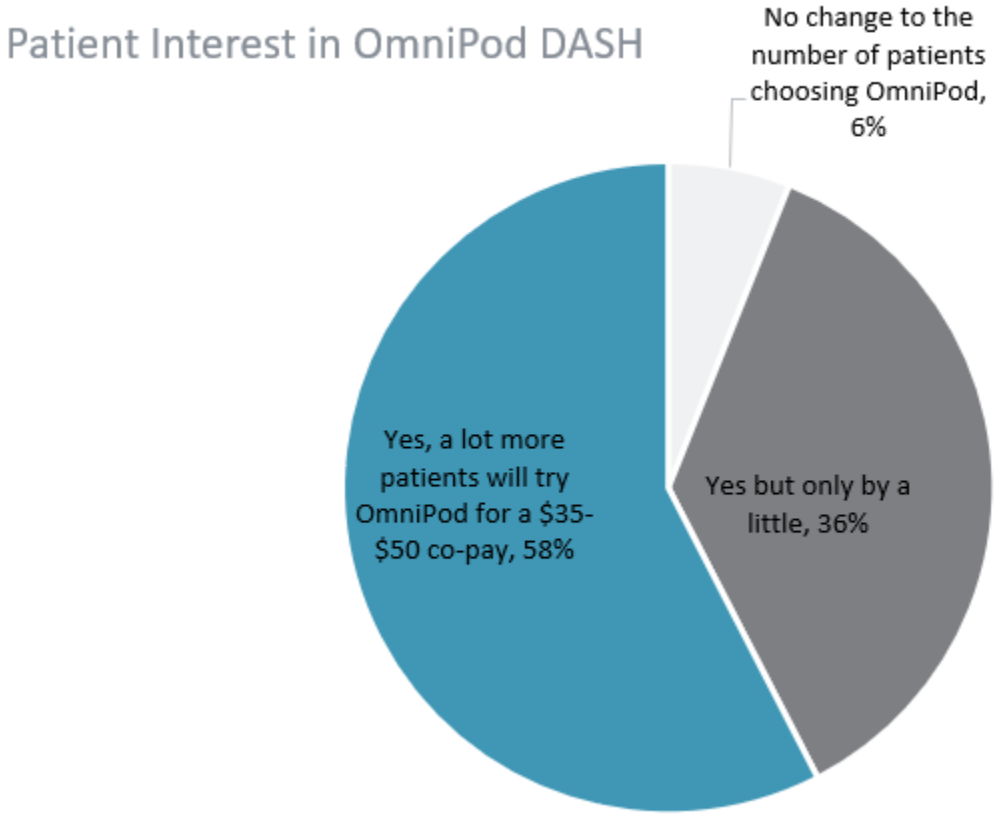
Q. What percent of your Type 1 & Type 2 patients are on insulin pumps and how do you see that trending in the future?





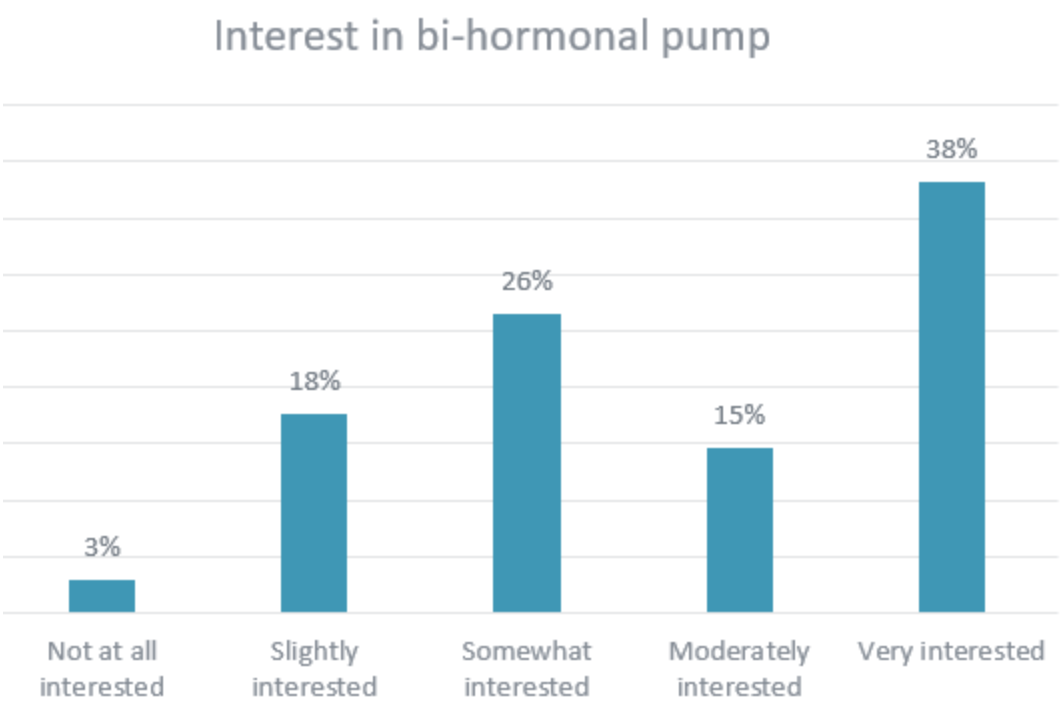
Medical professionals think OmniPod DASH may appeal to the patients who currently are not pump users, which may help to contribute to the upward trend..

Q. Insulet's OmniPod DASH is the only insulin pump through the pharmacy channel where patients are getting a three month supply of OmniPods for $35-$50 co-pay compared to traditional pump through the DME channel costing $4,000-$5,000 upfront. Do you think this pay as you go, low up front cost will attract more patients to pumps and OmniPod?

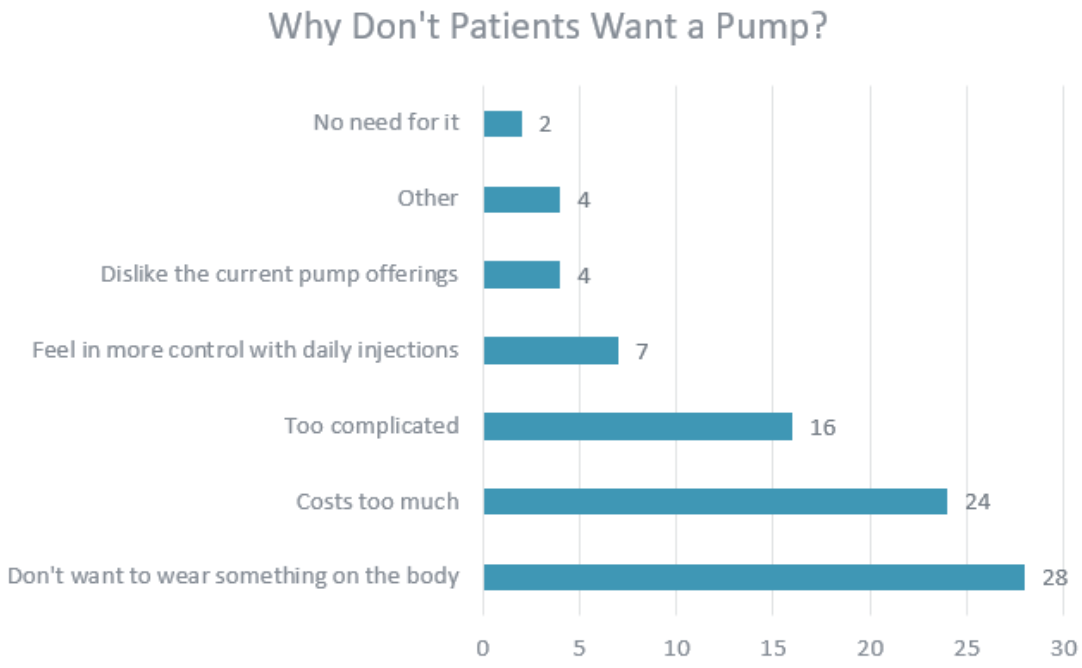


Medical professionals were more interested in the possibility of a bi-hormonal pump than their patients, with nearly all expressing some interest.

Q. How interested are you in a bi-hormonal pump that delivers both insulin and glucagon?



Interestingly, the medical professionals surveyed saw cost as being more of a motivating factor in patients choosing injections than our patient respondents did; cost was the fourth most common reason for not choosing a pump cited by the patients. HCPs, however, ranked it second.



In assessing the value of smart pens for their patients, HCPs were almost evenly divided on which patients would benefit most from the technology – perhaps indicating that for both HCPs and patients, the benefits of the new smart pen technologies are still in the process of definition.

Q. We define a smart pen as a Bluetooth enabled insulin pen that is connected to CGM or BGM that automatically shows insulin on board, the last dose time and amount as well as a built in dose calculator. Which patients do you think would benefit most from this technology? (please select all that apply)