

## Appendix

### **Decision Aid Development**

A previous detailed report <sup>18</sup> described our stakeholder-driven design and development of two internet-based, multimedia decision aids (DA) for adolescents with T1D and their caregivers who were considering use of an insulin pump or continuous glucose monitoring as part of their care. We present a brief summary of DA design and development here. Previous research has shown that adolescents with T1D are less likely than other age groups to demonstrate optimal, persistent use of insulin pumps or CGMs, perhaps because their decision-making in considering these devices was less than ideal. <sup>32-35</sup>

The researchers developed DA content through extensive engagement of adolescents with T1D and their caregivers who had faced these treatment decisions previously, T1D clinicians, qualitative researchers, experts in pediatric SDM and children's health media. The team used the International Patient Decision Aid Standards, <sup>1-3</sup> health literacy and plain language protocols and input from stakeholders via qualitative interviews. Using qualitative findings, the team developed content to provide families with facts, perspective, and assurance to empower them as they made T1D care decisions. Both DAs asserted that the "best" decision was one that leads the adolescent and caregiver to reach a decision matching their circumstances, values, and preferences and leads to improvement in outcomes that they value. Content selections provided:

- 1) Accessible information enabling users to select content and navigate freely (i.e., no required, linear path);
- 2) Repetition of key points;
- 3) Presentation of key information in different formats (text, video, illustration, etc.);
- 4) Active learning tactics so users engage with content (move a decision slider, advance slides, look up a definition);
- 5) Strategies that motivate users to view maximal information (e.g., progress meter);

- 6) Promotion of conversation among teens, caregivers and clinicians;
- 7) Text at 6<sup>th</sup>-8<sup>th</sup> grade reading level;
- 8) Balanced information about adopting versus not adopting the devices (i.e., the goal is an informed decision that is best for each individual, not to influence them toward a particular option);
- 9) Diverse age, race, gender, interests, and care choices among adolescents/families featured in the DA.

The team developed DA content based on input from adolescents with T1D and caregivers who had faced these same treatment decisions in the past. These teens and caregivers also provided iterative feedback on DA structure and content. The team intentionally selected stakeholders with diverse decision-making experiences, outcomes and satisfaction. Nine adolescents and five caregivers appeared in video interviews within the DAs, illustrating diverse decision-making pathways and processes. The team built the content into a user-friendly layout, tested usability periodically and distributed the near-final content to experts in pediatric SDM for review and refinement. Caregivers, adolescents and clinicians provided ongoing feedback on DA structure and content alternatives. A web development firm supplied the technical expertise needed to build the DAs, an iterative process moving from general concepts to increasingly detailed structure, punctuated with periodic user testing and feedback. The final website design reflected the engagement principles outlined earlier. In building the technical infrastructure for the two DA websites, a logging system tracked website user activity to allow for collection and analysis of website usage at the level of individual users or in aggregate. After the content was loaded into the system, the team tested the application across multiple devices, operating systems and browsers to ensure a consistent experience before launching the websites.

## **Decision Aid Structure and Function**

The two DAs, entitled “My Decision: Getting Insulin” and “My Decision: Checking Blood Sugar” were constructed with parallel design. Both DAs included these structural components:

- Welcome Tour: A 4 minute animated and narrated introduction to the DA features;
- My Quiz: A brief self-assessment of one’s readiness for adding the insulin pump or CGM to their care;
- Pumps and Shots (or CGM and Home Glucose Meter) at a Glance: A comparison of the pros and cons of each device;
- Everyday Tasks and Responsibilities: Teens telling in their own words what they have to do each day to use the insulin pump or CGM to get the most out of it;
- How an Insulin Pump (or CGM) Works: A brief illustrated summary of how the devices work and what’s required to use them properly;
- What’s it Like to Have an Insulin Pump (or CGM)?: Teens telling in their own words what it is/was like to use an insulin pump (or CGM);
- 5 Things to Know about Pumps (or CGM): The five most important facts that teens say other teens should know about each device before deciding to get one;
- 5 Things to Know about Shots (or Home Glucose Meters): The five most important facts that teens say other teens should know about staying with the devices they are using now;
- Talking With Your Family: Suggestions from teens and parents about effective and ineffective ways to make a decision about adopting an insulin pump or CGM;
- Frequently Asked Questions: Teens and parents suggested these questions that they wish they could have answered before starting on an insulin pump or CGM;
- What Can Go Wrong?: Each device can be a problem if certain things go wrong. What are some of the problems and how can teens prevent them from happening?;

- My Progress: This circular symbol illustrates how much or how little of the DA website the logged-in user has opened;
- Decision Slider: A user can move the decision slider on each page to show how much a given section of the website caused them to shift their opinion toward or away from the insulin pump or CGM;
- Glossary: A searchable list of T1D-related technical definitions stated in plain language.