Designing for diabetes

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"Managing type 1 diabetes requires close monitoring of blood sugar levels throughout the day and regular injections of insulin," says Dr. McCarthy. "For young people this often poses challenges, as it can disrupt participation in everyday activities and present problems of dealing with the stigma that can surround the condition."

Dr. McCarthy spoke to 16 adolescents and young adults, building up a detailed picture of what life is like for young people living with this lifelong condition. Her research found that while devices for managing diabetes met medical requirements, they didn't always fulfil the wider social and personal needs of individuals.

"In my research I've particularly focused on the psycho-social aspects of type 1 diabetes. If adolescents are too embarrassed to use their device in a public setting, that's going to be a problem. My focus is on practical, everyday things about designing a medical device. It's not just responding to a disease, but responding to a disease for an individual person.

"We're getting more and more complex medical devices emerging but the health outcomes haven't been getting much better. So we're asking what requirements adolescents have that aren't being met, but that we should be meeting as we develop new and better technologies."

Some potential prototype devices are a blood glucose meter that can be used while swimming, avoiding the need to get out of the pool to check blood glucose levels, and medical devices that look like jewellery and

allow adolescents to decide whether or not they disclose their diabetes.

"The research also looked at Pharmac's usability criteria for what they think about when deciding which devices to fund, and contrasted this with criteria adolescents think of as important. We can then identify any mismatches and report back, highlighting which things companies might like to consider in their design."

After graduating from Victoria University with a Ph.D. in Design last week, Dr. McCarthy will be continuing her research as a lecturer at the University's School of Design. The School's research lab for Smart Interactions Design has funded a CoRE MedTech grant for a Master student which will allow the research to progress with an Industrial Design approach, with potential to design prototype devices that can be taken to market.

Thinking about smart, practical and engaging ways to design medical tools is crucial for the future, says Dr. McCarthy.

"We're living longer, which is great," she says, "but we're going to be living with health issues. There's going to be an increase in people having to use medical devices in their own homes and daily life, at work, in the middle of the night, wherever it may be. So there's less tolerance for these devices to be bad.

"My focus is on designing medical devices that can be integrated into daily life in a way that works for us and keeps us healthy."

More information: Dear my Very Problematic Blood Glucose Meter: Adolescents' Experiences Self-Managing Type 1 Diabetes and their Psychosocial User Requirements Of Medical Technologies. researcharchive.vuw.ac.nz/handle/10063/6975

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