

SWiFT Seeing the Wood From the Trees: helping people make sense of their health data

Dan Brown¹, David Duce¹, Rachel Franklin², Rachel Harrison¹, Clare Martin¹ and Marion Waite²

¹Department of Computing and Communication Technologies, Oxford Brookes University, UK

²Department of Clinical Healthcare, Oxford Brookes University, UK

The aim of the SWiFT project is to determine which visualisations of blood glucose-related data on mobile devices are most usable by people with insulin-dependent diabetes, to improve self-management. Such people are often advised to maintain a logbook to record glucose measurements, insulin doses and related information. Software exists for downloading and scrutinising such data, but some people find numerical data difficult to interpret. However, many people find visual data easier to understand. The question of which data visualisations would be most usable for self-management is still open. This study will determine what people with diabetes and clinicians want to learn from their data, and interactive visualisations will be designed accordingly. Interaction allows the users to modify what they see and how they see it. The visualisations will be designed for small screens and tested through the development of a glucose tracking diary app. Some parameters that affect the condition are displayed in figure 1. The '?' indicates that there are open questions about which of these parameters will be of most value to users and how best to visualise them.

Blood glucose level	Stress
Carbohydrate intake	Blood pressure
Insulin dose	Basal dose
Physical activity	BMI
Infusion site	Meal composition
Illness	Alcohol intake

Figure 1: Parameters affecting diabetic conditions.

Evidence suggests [BBHM13] that most individuals with diabetes are not interested in technology that will be difficult to use, or make their lives even harder. On the contrary, what most people want is a system that will make reliable decisions for them. There is some evidence that mobile technologies can offer cost effective support that is associated with improvements in health outcomes but few of the existing applications have been optimised for usability or evaluated for their effectiveness in motivating users or chang-

ing their self-management behaviour. Recent in silico studies (e.g. [WMCN13]) also suggest that the combination of artificial intelligence with wearable sensors may offer effective solutions in the future, but such systems do not currently exist. Further research is therefore needed to develop a system that will reduce the burden to diabetic subjects to respond to a much wider variety of personal data.

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References

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