**Diabetes Technology in Ageing: Insulin pumping in patients aged 65+ years**

This is a low-risk, exploratory summer student project. Organisational stakeholders include Te Whatu Ora Waitaha, University of Otago Christchurch, and also Diabetes Christchurch (local diabetes lay society).

**Background.** Several types of diabetes are associated with absolute insulinopenia, which mandates replacement of endogenous insulin production with exogenous insulin. These diagnostic types include type 1 diabetes, and less commonly other forms of diabetes associated with total, or near-total, loss of pancreatic beta cells, such as total pancreatectomy. Type 1 diabetes is a chronic medical condition that may develop at any age, and other diseases associated with anatomical loss of the pancreas commonly occur later in life. Clinicians looking after people with diabetes aim to deliver age-appropriate treatment and education across the lifespan. Age-appropriate insulin replacement strategies for children and young adults have been well-researched. There is however a paucity of published information about health service delivery aspects of the use of insulin pumps in older patients with diabetes.

Because of this information gap, diabetes clinical staff are not clear about the topics that might usefully be covered when an older patient using an insulin pump comes to a routine diabetes outpatient clinic visit. Also, older patients may have additional health issues such as cognitive decline or loss of physical flexibility (hands, torso) that affect their functional ability to manage their insulin pump, safely and effectively. In theory, clinical assessment of function and exploration of ‘work around’ ideas that compensate for reduced function, should be part of the ongoing clinical assessment and management of older patients on pumps. Diabetes clinic consultation time is however very limited. What might the patient and clinician best focus on during the consultation, so that age-appropriate clinical care is being delivered to older patients on an insulin pump?

**Aims.** This summer student-led study aims to explore patient perceptions and values regarding insulin pump use in older patients, and also explore clinicians’ perceptions and values with a focus on how to make the best use of clinic consultation time. Study information will be obtained using a semi-structured questionnaire that will be delivered by the research student (patients only) and through the use of the software tool 1000minds (https://www.1000minds.com/), which explores decision-making and conjoint analysis. The online 1000minds survey will be completed by both patients and diabetes clinical staff.

**Stakeholder involvement (study design).** Informal views and perspectives will be obtained from the lay diabetes society, diabetes clinicians, insulin pump industry representatives, and also Māori advisors within Canterbury (New Zealand). This information will aid the research team to populate the patient questionnaire, and the 1000mind statements about prioritisation of in-clinic tasks, with age-specific content.

**Inclusions:** People aged 65 years or older, who are using a PHARMAC funded insulin pump (typically these are patients with type 1 diabetes, or patients who have undergone a total pancreatectomy) and are domiciled in Canterbury, New Zealand, will be invited to participate. Patients will be identified through a hospital insulin pump database and by word-of-mouth through the local diabetes lay society. Assessment of suitability for participation and initial contact with the patient regarding their willingness to receive study information, will be though their usual care clinicians or their proxy (i.e. a specialist physician colleague). People with diabetes who agree to participate will have used an insulin pump for a minimum of 3 months.

**Exclusions:** If the attending diabetes physician considers the patient unsuitable for the study, then the patient will not be approached. Patients diagnosed with type 2 diabetes are also excluded.

**Intervention.** The semi-structured patient questionnaire will be administered to around 25 study participants, who are established on an insulin pump. This questionnaire allows patients to comment on their pump experience. The online 1000minds prioritising assessment tool will be given to, i) consented study participants and also to, ii) around 20 consented diabetes clinical staff members, who are involved in the clinical care of this patient subgroup.

**Locality.** The primary locality is diabetes outpatients, Te Whatu Ora Waitaha.

**Study analysis.** Clinical and demographic characteristics of participants with diabetes will be summarised in a table format. The 1000minds software will provide a nonidentifiable, automated descriptive summary of prioritisation tasks, and also a statistical comparison of responses from the two groups of participants (i.e. people with diabetes and diabetes-related health professionals).

Responses to the semi-structured questionnaire will be presented descriptively, and analysed using a thematic analysis approach.

Results will be prepared for a conference presentation and also for publication in a peer-reviewed journal.

**Study timetable, including dissemination of results.** The summer student commences November 2023. Data collection will be completed by February 2024. Preliminary data analysis and write up will be completed by May 2024. Preliminary findings will be presented at the NZSSD (New Zealand Society for the Study of Diabetes) meeting, May 2024.

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