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TITLE Establishing a South Australian plasma biobank for biomarker identification related to diabetes-related foot ulcers

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ABSTRACT (maximum 450 words. Please use the following or similar headings: Background/Methods/Results/Conclusions)

Purpose: Despite the significant impact of diabetes-related foot ulcers (DRFUs), there is no precise diagnostic tool to predict healing trajectory or identify patients at risk of non-healing wounds. We need better tools to guide clinical management plans, before and after developing foot wounds. Establishing a biobank of plasma collected from patients with diabetes over time will enable us to discover different biomarkers associated with wound healing outcomes.
Methodology: Four different groups of patients with diabetes have been recruited from early 2023 and blood samples, clinical information and wound measurements collected at enrolment and approximately every 6 months for up to 3 years in follow-up appointments. Clinical information includes clinical history, medications, and where appropriate, ankle-brachial index, toe perfusion pressure, clinical estimation of wound areas, and wound description using the WIfI (Wound, Ischaemia, foot Infection) scoring system. A single blood sample was also collected from non-diabetic patients to serve as a control group. The levels of different biomarkers in the plasma were measured using enzyme-linked immunosorbent assays.
Results: To date, samples have been collected from 42 non-diabetic and 141 diabetic patients, with 27 of these at low risk of developing a DFU, 19 at high risk of developing a DFU, 54 with an existing DFU and 41 with a healed wound within the 12-months prior to recruitment. Biomarker quantification has been performed and correlated with the respective clinical information, with initial results demonstrating links between candidate biomarkers and total wound area and the WIfI scoring system. Ongoing analyses is underway to determine utility for the prediction of healing or development of new ulcers in the patients now 24 months from recruitment.
Conclusion: This biobank is a unique resource that will be valuable for creating novel diagnostic tools for risk assessments in people with diabetes and non-healing foot ulcers.