

Samoa's solution to the burden of diabetic foot complications

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In 2015 the [International Diabetes Federation](#) reported the astonishing statistic that Pacific island countries or territories accounted for eight of the top ten in the world for diabetes prevalence. A recent [blog](#) highlighted the “long term ramifications both for individuals, who suffer the damaging clinical effects of diabetes (including blindness and amputations), and for governments, who struggle to fund the services needed to adequately prevent and treat people with diabetes”. With prevalence [estimated to grow](#) in the coming decades, the burden of treating long-term chronic conditions such as diabetes and its complications will only multiply.

Foot ulcers are amongst the most common complications of uncontrolled diabetes. People with diabetes are more susceptible to developing foot ulcers that are slower to heal and more prone to infection. Currently in many Pacific countries, untreated, infected diabetic foot ulcers are leading to multiple amputations and sometimes death. Indeed an estimated [17 per cent of Pacific islanders with diabetes will require amputation](#).

However, the World Health Organisation [estimates](#) that 50 per cent of all hospital admissions and amputations as a result of diabetes can be prevented with appropriate foot care. The International Working Group on the Diabetic Foot (IWGDF), utilising evidence from around the world, [reports](#) that the number of diabetes related amputations reduces with the implementation of a multidisciplinary Diabetic Foot Clinic (DFC). Recognition of the need for mutual respect and understanding is highlighted as an essential aspect of the success of the clinic.

Within Samoa's Tupua Tamasese Meaole (TTM) hospital in Apia, there were more than 105 lower limb amputations of clients with diabetic foot wounds in 2014. Further to this, the majority of patients on the medical ward in TTM hospital have diabetic related foot wounds and infections that are at high risk of leading to amputation or death. The structure of the health systems in many Pacific island nations makes promoting multidisciplinary treatment challenging, as each professional group tends to work in isolation, with little collaboration and co-ordination. This was seen at TTM Hospital where the outcomes for clients with a diabetic foot wound were generally poor, due to lack of awareness of and training in evidence based or best practice principles.

In June 2015, [Motivation Australia](#), in partnership with the Samoa National Health Service (NHS), established a Diabetic Foot Clinic (DFC) as part of the DFAT funded [Samoa Integrated Mobility Device Service](#) project. The DFC was developed to integrate treatment from key health specialties in order to improve outcomes for clients with diabetes. The NHS DFC was established with a core team comprising of a podiatrist, nurse and orthotist, with support from doctors from the TTM medical ward. The DFC has also been a way to strengthen the capacity of nursing personnel through on-the-job clinical exposure and practice

in specialised foot care, under the guidance of a podiatrist. The clinic focuses on primary wound care, orthotic offloading, provision of ongoing diabetes and foot care education, and referrals to appropriate allied services.

An evaluation of the DFC project was undertaken six months after implementation. In this period, the clinic was held two mornings per week, for a total of 276 half-hour appointments. A total of 42 clients were seen multiple times in this period. At each appointment clients received diabetes and foot care education, wound care and orthotic offloading if required. A number of these clients presented with very serious foot wounds and infections, which affected the length and number of appointments. It is hoped that as awareness of the clinic improves, clients will present earlier for treatment, improving potential client outcomes and reducing both the time required for healing and treatment, and the materials and resources required by the DFC.

Some of the key findings of the evaluation process were:

- Enhanced wound healing for clients,
- The value of orthotic offloading for wound healing,
- Improved multi-disciplinary cooperation between NHS staff involved in diabetic care,
- High client attendance rates,
- Anecdotal evidence from the surgical team reporting fewer bilateral amputations.

One unexpected but very promising outcome noted during the evaluation was the demonstration of behaviour change in the 42 clients who attended the clinic in its first six months. Many of the clients presented to the DFC with very high blood glucose levels. These clients were eating poorly, not taking medication as directed, not attending medical appointments and not undertaking appropriate self-care. The consequences of these behaviours greatly affected the ability of their wounds to heal.

The DFC team noted that these behaviours changed markedly as the clients' treatment continued. Clients' blood glucose levels continued to decrease over time and reported self-care behaviours improved. These changes coincided with improved healing rates and general health and well-being.

The changes in behaviour were attributed to:

- Improved understanding: Effective and sustained client education enabled clients to understand the effect of diabetes on their body.
- Regular blood glucose testing: The feedback received from regular testing allowed further insight into the effect of diet and medication on their body.
- Positive outcomes: Seeing reductions in their own and other's wound sizes and sharing of stories between clients also helped clients to see what was possible.
- Encouragement and positive support: DFC clients commented on the importance of the support of the DFC team in helping them to make changes in their behaviour. They specifically commented that the positive support and encouragement given by staff, rather than a judgemental attitude, helped them to change their behaviour. As one client of the DFC stated:

"With their advice on controlling my blood sugar levels in order for my ulcers to heal, it has changed my diet a lot too. Not only do they focus on my foot wounds, but they're concerned about my health in general as well."

There has been very strong support from NHS management for the continuation and expansion of the DFC. The clinic has shown that through carefully planned development projects, with appropriate resource allocation, utilisation of locally available human resources where possible, and integration within existing health services, the prevention of amputation and related disability may be achieved in Samoa. Whilst the long term effects of the clinic are yet to be reported in data on amputation rates, early indicators suggest that this model has the potential to be used in other parts of the Pacific which are facing similar challenges and a high burden of diabetes.

In addition to ongoing clinic data collection, Motivation Australia is currently hosting a Health Sciences student from the University of Twente (The Netherlands) who is undertaking a retrospective study to determine the costs and benefits of treating clients with diabetic foot ulcers within the DFC, compared to treating such clients in the NHS prior to the DFC's implementation. It is hoped that the findings of this research will help to guide NHS decision-making in relation to the further development of DFC services in Samoa.

We also hope that the results of this research will assist in obtaining funding and support to initiate similar services across the Pacific region. Motivation Australia is also currently in the process of seeking funding for a Regional Amputation Prevention project, utilising Australian Volunteers for International Development through Scope Global to initiate and support DFCs in five target countries in the Pacific region (details of the volunteer positions and updates on the project will be posted to our [website](#) and [Facebook](#)). The goal of the project is to use the learning from Samoa's successful DFC and build on existing services in other Pacific island nations, to reduce the number of amputations and deaths associated with diabetic foot ulcers and improve the quality of life for people with diabetes.

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