

# Building Better Diabetes Care in Vanuatu

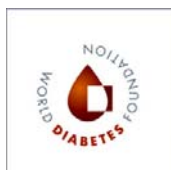
## Report on the World Diabetes Foundation Project National Stakeholder Forum

June 5<sup>th</sup> – 6<sup>th</sup> 2007

Port Vila



**GOVERNMENT  
OF THE REPUBLIC OF VANUATU**



**The University of Sydney**



**The National Stakeholder Forum**  
**“Building Better Diabetes Care in Vanuatu”**  
**Port Vila June 5<sup>th</sup> – 6<sup>th</sup> 2007**

The Forum was convened as part of the WDF Diabetes Project  
“Building Capacity – Reducing Diabetes Complications: A Pacific Islands Model”

**by:**

The World Diabetes Foundation and the Vanuatu Ministry of Health  
with the assistance of a local grant from WHO Vanuatu

**and organised and conducted by:**

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**The World Diabetes Foundation Project in Vanuatu**  
is conducted under a collaboration between  
The Diabetes Unit – Australian Health Policy Institute at the University of Sydney  
and the Ministry of Health, Vanuatu  
with assistance from the  
International Centre for Eye Care Education at the University of New South Wales and the  
Australian and New Zealand Society of Nephrologists

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# Foreword

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Three out of four deaths in the Pacific Island Countries are due to non-communicable diseases (NCDs) and diabetes is a significant underpinning factor in this.

The precise prevalence of diabetes in Vanuatu is not known but is likely to be comparable to that of other Pacific Islands such as Samoa (22%), Tonga (15%) and Nauru (16%). The 2005 NCD risk factor survey in Vanuatu found that a significant proportion of the population were overweight or obese and had high blood pressure which can only contribute to an increasing NCD burden.

In addition to the human suffering caused by diabetes, the cost to society is huge. Diabetes is increasingly affecting people in their productive years (ages 35-64). This decreases productivity, increases costs and threatens economic growth and development – particularly in countries like our own. Late last year, the United Nations passed a Resolution recognising the global threat of the diabetes epidemic. For the first time, governments have acknowledged that a non-infectious disease poses as serious a threat to world health as infectious diseases like HIV/AIDS, Tuberculosis and Malaria. From this year onwards, World Diabetes Day on 14 November will be observed as a United Nations Day with the UN Resolution calling for raised public awareness on prevention and the care of diabetes through education and the mass media.

Vanuatu has already begun to raise the awareness of diabetes through community engagement by establishing the Vanuatu's Diabetes Association and by holding a "Walk for diabetes" rally on World Diabetes Day in Port Vila in both 2005 and 2006. But there is much more to be done and now is the ideal time for the development and implementation of national policies focusing on sustainable improvements in diabetes care and in preventing diabetes and/or its complications.

The World Diabetes Foundation (WDF) project Stakeholder Forum represents an important milestone in the WDF diabetes project and is a first of its kind for Vanuatu. The Forum brought together representatives of key stakeholder groups to review the current situation and to build a model of diabetes care through which Vanuatu can achieve the best possible health care and outcomes for people with diabetes within the constraints of the resource limitations. I encourage all who participated in the Stakeholder Forum to engage fully, and to encourage their colleagues, peers and the community at large to work together to build a system of Better Diabetes Care in Vanuatu and reduce the suffering caused by the largely preventable eye, foot and kidney complications that are currently attributable to diabetes.

Myriam Abel



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# Background

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## *“Building Capacity – Reducing Diabetes Complications: A Pacific Islands Model”*

The March 2007, Pacific Health Ministers’ meeting which was held in Vanuatu was informed that chronic diseases are the cause of three in four deaths in all Pacific Island countries except Papua New Guinea where these diseases account for two in three deaths<sup>1</sup>.

### **Why diabetes?**

Type 2 diabetes is a major and growing component of the chronic disease burden in Vanuatu. Globally, it has reached epidemic proportions and is taking its biggest toll in developing countries where it is increasingly found in people in the productive years of life (35-64) and where some 70 % of the global increase is predicted to occur<sup>2,3</sup>. It is estimated that almost 4 million people per year die of diabetes<sup>4</sup>. However, this in no way conveys the magnitude of the suffering of individuals who may live for many years with the debilitating consequences of diabetes – eg amputation, blindness, kidney disease, heart disease and stroke – before they die. Neither does it convey the financial impact on individuals and families who may be doomed to a life of financial hardship and even poverty as the result of diabetes. Nor does it convey the huge impact of diabetes on workforce participation and productivity, not to mention direct health care costs.

As it is everywhere, diabetes is threatening both the personal health of the people of Vanuatu and the economic health of the nation and its prospects for sustainable growth and development. The question is how can Vanuatu best prepare itself to meet and overcome the challenges posed by diabetes? Answering this question is the main thrust of the Vanuatu World Diabetes Foundation project and the Stakeholder Forum which is the subject of this Report.

Currently, diabetes services in Vanuatu are predominantly centralised to the two referral hospitals, Vila Central Hospital and Northern Districts Hospital. However, for people living in the rural or isolated areas of Vanuatu, the health workers in the provincial hospitals, the community health centres and dispensaries are frequently the first point of contact for people with a health problem.

The current ‘hub and spoke’ system of hospitals, health centres, dispensaries and village aid posts in Vanuatu is an excellent platform from which to improve the care of diabetes but needs strengthening. By increasing the capacity of the health centre and dispensary health workers to play an important role in the everyday care for people with diabetes or at risk of developing diabetes, the services will become less centralised to the tertiary health sector thus paving the way for significantly improved community access to good quality diabetes care.

### **The diabetes project**

The World Diabetes Foundation (WDF) has provided three years funding for The Diabetes Unit at the University of Sydney to work with the Vanuatu Ministry of Health and Australian collaborators (Australian and New Zealand Society of Nephrology and the International Centre for Eyecare Education) on a building capacity project which has been designed around the following:

**Goal:** To reduce the burden of diabetes complications in Vanuatu.

**Aim:** To design, develop and implement locally relevant and sustainable models to increase the capacity of Vanuatu to manage, monitor and improve diabetes care and reduce eye, kidney and foot complications resulting from diabetes.

**Focus:** Secondary and tertiary prevention of diabetes complications through service and systems development and capacity building, with a particular emphasis on primary care and referral networks, documentation and communication systems. The focus is on the health system – specifically health professionals and systems of care; health services management, governance and research ie monitoring outcomes, quality improvement and evaluation. The project seeks to skill local staff in these areas as well as in clinical skills.

**Primary Objective:** To improve the quality, accessibility and effectiveness of diabetes care.

**Secondary Objectives:** To build up and/or improve:

- a suitably skilled workforce (including clinical, management and research skills)
- stronger systems and networks of referral and care (information systems, guidelines and protocols)
- the quality of care and access to health care services (upgrade staff skills and equip services)
- earlier detection and better management of diabetes and its associated complications

**Project design:** The diabetes project was designed primarily as a secondary / tertiary prevention intervention. As described in Practical Diabetes International<sup>5</sup>, this three year project follows a relatively simple ‘recipe’ of:

▪ *Measuring the problem*

Conducting a baseline situation analysis involving collating available data on diabetes risk factors, hospital admissions and amputations; assessing quality of care and complications rates; reviewing the status of diabetes related policy and health services; conducting a root cause analysis of amputations; and conducting a cost of illness survey.

▪ *Building the model*

The central approach is on empowerment for self determination and aims to address the identified problems through full engagement of health care providers, public health practitioners, health care planners, administrators and decision makers, relevant professional and non-government organisations and community and business leaders.

▪ *Making a difference*

Implementing the model to improve the quality and accessibility of diabetes care will revolve around strengthening Vanuatu’s existing ‘hub and spoke’ model of hospitals, health centres, dispensaries and village aid posts. This investment will focus on provider training and competencies, clinical governance, information, and upgrading and delineating service roles.

▪ *Measuring the difference*

This will require repeating the baseline assessments at the end of the project and comparing the results. Due to the relatively short timeframe of the project, tangible reductions in eye and kidney complications are not expected and progress towards these will be assessed by improvement in care processes and practices. However, it is feasible to expect a reduction in diabetes related amputation rates. Other parameters of interest will be the penetration of the project ie number of patients and staff reached, and the upgrading of diabetes services.

The first year of the diabetes project concentrated on establishing the project processes and undertaking the baseline assessments. The Stakeholder Forum was held as the project entered its second year and relates to the second phase of the project “building the model”.



Opening Ceremony of the Stakeholder Forum



Presentation of “Why Diabetes? Why Vanuatu?”



Participants engaging in small group discussions



Disseminating the results of the small group discussions

## References

1. Tukuitonga, C. *Pacific Health Ministers Meeting*. World Health Organization, Secretariat of the Pacific Community, Vanuatu. 2007.
2. Amos A, McCarty D, Zimmet P. *The rising global burden of diabetes and its complications: estimates and projections to the year 2010*. *Diabetes Medicine* 14(Suppl 15): S1-S85, 1997.
3. King H, Aubert R, Herman W. *Global burden of diabetes: 1995-2025 prevalence, numerical estimates and projections*. *Diabetes Care* 21:1414-1431, 1998.
4. Roglic G, Unwin N, Bennett PH, Mathers C, Tuomilehto J, Nag S, Connolly V, King H. *The burden of mortality attributable to diabetes: realistic estimates for the year 2000*. *Diabetes Care* 28(9): 2130-2135, 2005.
5. Colagiuri R. *Building capacity to reduced diabetes complications in the Pacific: the Vanuatu experience so far*. *Practical Diabetes International* 23(8):343-346, 2006.

# Forum Agenda Day 1 – 5<sup>th</sup> June 2007

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## Introduction

8.30am	Welcome	Mr Len Tarivonda
8.35am	Opening Remarks	Mr Bernard Fabre-Teste
8.40am	Prayer	Pastor Shem Tema
8.45am	Official Opening	1 <sup>st</sup> Political Advisor to the Minister for Health
9.00am	The WDF and the purpose of the Forum	Ms Sanne Frost Helt
9.15am	Why diabetes? Why Vanuatu?	A/Professor Ruth Colagiuri

10.00am *Morning Tea*

## Session 1 –What’s happening now in Vanuatu?

10.30am	NCD-Steps Survey	Mr Len Tarivonda
11.00am	WDF Project Baseline Assessments	Dr Alexandra Buckley Mr John Tasserei Dr Samuel Kemuel

## Session 2 –What’s should be happening?

11.30am	The international evidence for combating diabetes	A/Professor Ruth Colagiuri
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12.00pm *Lunch*

## Session 3 – Developing a framework for closing the gap -

1.30pm	SWOT Analysis - small group discussions to identify strengths, weaknesses, opportunities and threats for improving diabetes care in Vanuatu.	All Participants
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2.30pm	Plenary review and discussion of the results of the SWOT analysis - turning weaknesses into strengths and threats into opportunities	All Participants
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3.00pm *Afternoon Tea*

3.30pm	Plenary discussion of what the Framework should look like	All Participants
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4.00pm Close of Day 1

## Forum Agenda Day 2 – 6<sup>th</sup> June 2007

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### Closing the Gap

8.45am	Prayer	
8.50am	Overview of Day 1	
9.00am	<p>Strengthening the Health Workforce</p> <ul style="list-style-type: none"> <li>- competencies &amp; guidelines</li> <li>- training</li> </ul> <p>Strengthening Health Services</p> <ul style="list-style-type: none"> <li>- role delineation &amp; referral pathways</li> <li>- equipment</li> </ul> <p>Strengthening Health Policy</p> <ul style="list-style-type: none"> <li>- planning</li> <li>- information</li> <li>- co-ordination</li> </ul>	<p>All Participants led by:</p> <p>Dr Samuel Kemuel Mr John Tasserei</p> <p>A/Professor Ruth Colagiuri Dr Alexandra Buckley</p> <p>A/Professor Ruth Colagiuri Dr Alexandra Buckley Ms Theto Moses</p>
10.00am	<i>Morning Tea</i>	
10.30am	Small group discussions on strengthening health workforce, health services and health policy	All Participants
12.00pm	<i>Lunch</i>	
1.30pm	Plenary discussions on strengthening health workforce, health services and health policy	All Participants
2.30pm	Plenary discussion on identifying priorities and recommendations	All Participants
3.00pm	Closing Remarks	Mr Len Tarivonda
3.15pm	Close of Forum	

# Overview of the Forum

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The Stakeholder Forum was a major deliverable of the Diabetes Project and so was entitled “*Building Better Diabetes Care in Vanuatu*”. The Forum represented a milestone in the history of health care in Vanuatu in that it commenced a process of whole-community engagement in health system reform aimed at improving the quality and accessibility of diabetes care and support services. In line with the objectives of the WDF project, the Forum concentrated on developing and aligning the workforce and health services, information, funding and health policy with the needs of people with diabetes.

## **Aim of the Forum:**

The overall aim of the Forum was to bring together representatives of key stakeholder groups (see list of participants at Appendix 1) to review the current situation, identify opportunities, and propose a model of diabetes care through which Vanuatu can achieve the best possible health care and outcomes for people with diabetes within the constraints of its resource limitations. Consultation undertaken by the Australian Project Team and Ministry of Health (MOH) staff in the course of the first year of the project had already identified that building the model would need to include consideration of:

- Strengthening the use of guidelines for diabetes care
- Introducing agreed competencies for the various levels of health workers and facilities
- Developing referral and clinical pathways to support the existing ‘hub and spoke’ model of health centres, dispensaries and aid-posts
- A national foot care training model or ‘National Foot Campaign’ to reduce related amputations.

## **Forum proceedings**

Following the opening ceremony, the Forum commenced with presentations introducing the WDF, and explaining the purpose and progress to date of the Vanuatu’s diabetes project “*Building Capacity – Reducing Diabetes Complications: A Pacific Islands Model*”.

To thoroughly consider the issues and to set them in the broader political and socio - demographic context the Forum proceedings were designed to create an environment in which participants could freely express their views and share their expert knowledge of the Vanuatu health and social system and map this against needs and opportunities to identify a way forward. Consequently, the process was interactive and relatively informal and utilised a mix of formal presentations, small group work and plenary discussion. As shown on the agenda, the Forum was divided into three main areas which engaged participants in reviewing and analysing:

### ***1. What is happening now?***

- what is the status of diabetes
- what is the current situation with diabetes care and services

### ***2. What should be happening?***

- what do people with diabetes need?
- what kinds of health services produce the best outcomes?

### ***3. How can we close the gap?***

- what needs to be done in Vanuatu to closer to what should be happening?

## ***1. What is happening now?***

In order to provide an empirical basis for making objective judgements about needs and solutions, on Day 1 the Forum participants were presented with the results of the WHO STEPS Risk Factor and the findings of baseline assessments undertaken as part of the WDF project.

### *WHO STEPS survey*

The 2005 Steps survey was a risk factor survey not a diagnostic study and was not undertaken on Efate and not in the more rural areas. Nonetheless, the results of this survey (Appendix 2a) highlighted that a significant proportion of the population were overweight or obese and had high blood pressure which can only contribute to an increasing NCD burden if nothing is done.

### *Baseline assessments from the WDF project*

The baseline assessments from the WDF project are listed below and the full details shown in Appendix 2b:

- i. **Situation analysis** – an electronic tool used to assess the current priorities, policies and programs relating to NCDs, the current status of diabetes and the available resources for managing diabetes and the associated complication.
- ii. **Mapping of the health services** – used to establish the number and location of the various health facilities (referral hospitals, provincial hospitals, health centres, dispensaries and aid posts) around Vanuatu.
- iii. **Diabetes related hospital admission and amputation rates** – collated from the 2001 - 2005 medical ward and surgical ward admission books from the referral and provincial hospitals.
- iv. **Amputation root cause analysis** – a survey conducted on 36 diabetes patients who had had an amputation in the past 5 years to determine what preceding events led to the amputation and to identify key intervention points that may have prevented the amputation.
- v. **Complication screening** – an Australian clinical team and local diabetes clinic staff undertook a comprehensive complication screening on approximately 200 patients with diabetes. These patients will be followed up throughout and at the end of the project as a means of evaluating the success of the project.
- vi. **Cost of Illness survey** – an adaptation of the Australian DiabCo\$t survey was conducted on the 200 patients who underwent the complication screening and used to determine the cost to people with diabetes, cost of treatment and the general impact diabetes has on individuals, family, community and Vanuatu as a whole.

Further information about what is happening now was provided through a descriptive “patient journey” presentation outlining case studies on what a person with diabetes might encounter when trying to access the health system and how where they lived might impact on their diabetes care.

This session provided important quantitative and qualitative information, and the insights of local health professionals, to paint a comprehensive picture of what is currently happening in relation to diabetes and diabetes care in Vanuatu as a prelude to considering what should be happening and how to move closer to this.

## ***2. What should be happening?***

This segment of the Forum outlined the current internationally recognised recommendations for diabetes prevention and care, highlighting the excellent evidence for primary prevention and detailing which processes and practices of care lead to the best outcomes. The ‘take home’ message from this session strongly emphasised that:

- there is irrefutable evidence from several countries that diabetes can be prevented or significantly delayed through simple lifestyle interventions
- there is even stronger evidence that the complications of diabetes can be prevented or significantly delayed through early diagnosis and timely and appropriate treatment and care
- not only is the prevention of diabetes and its complications effective, it is known to be cost effective
- improving the prevention and care of diabetes is relatively inexpensive and is within the power of Vanuatu to achieve

## ***3. How can we close the gap?***

Determining how best to close the gap between what is actually happening now and what should be happening was achieved by working through a three-step process.

### *Step 1*

As a first step, participants undertook a SWOT analysis (see results page 11 - 12) to assist them to gain an overview of, and analyse Vanuatu’s strengths and weaknesses in relation to any perceived deficiencies and opportunities for addressing them, and any threats that may be encountered along the way. It was recognised that Vanuatu has many strengths and that there are a number of both internally and externally mediated opportunities for refocussing the diabetes care system. One example of the latter is the UN Resolution on Diabetes. An internal example is the support of the MOH and the fact that Vanuatu has a national diabetes association.

### *Step 2*

The next step was to think about the components of a framework for closing the gap. A skeletal framework of goals and area on which a cohesive strategy could be built was identified. This discussion resulted in agreement that the mission was to build a better system of diabetes care in Vanuatu. Two goals were identified. The first centred on improving the quality and accessibility of diabetes care in order to reduce complications ie morbidity and early mortality in people with diabetes. Implicit in this was attention to and a focus on strengthening the systems and infrastructure that underpin health care and service delivery ie the skilling the health workforce, clinical policy, planning and guidelines, and information systems.

Although it was agreed that prevention was not strictly within the remit of the WDF project, both the participants and the Project Team felt very strongly that the framework must include a goal and consideration of primary prevention of diabetes.

### *Step 3*

On Day 2 of the Forum participants engaged in series of small group discussions and plenary debate to populate the framework with details and work through potential solutions for strengthening the existing system to improve diabetes care.

### *Recommendations*

Participants were asked to suggest priorities and recommendations for taking a model of optimal diabetes care, as closely aligned to the internationally recognised standards as possible, forward in Vanuatu. This resulted in some major recommendations which are detailed on Page 16 along with the full set of recommendations from the Forum. The major recommendations were:

- listing diabetes as a national health priority
- developing a comprehensive national strategy for the prevention and care of diabetes
- establishing a formal network of diabetes co-ordination through the existing provincial health managers and the existing NCD Strategy
- the establishment in Vila Central Hospital of a national NCD centre to act as a centre for expert clinical treatment and patient self-care education; clinical policy; and training of health professionals

Much of the above discussion was predicated on building up and strengthening the existing ‘hub and spoke’ system of health services that already exists. This was based around agreement about the need for defining and delineating the roles and services provided by the different levels of the clinical health care system. It was agreed that there was a particular need to improve primary and secondary services and that the tertiary hospitals should remain dedicated to treating referrals and complex cases, and supporting the health professionals in the health centres and dispensaries.

It was also agreed that a national diabetes training campaign should be launched throughout the provinces to upskill the local health workforce and that this would include the distribution of some basic equipment and criteria to identify people who may have undiagnosed diabetes and to identify who, among people already diagnosed with diabetes, may have problems which require referral to a hospital. Six “Diabetes Kits” (Figure 1) containing such equipment were demonstrated to participants and issued to the Provincial Health Managers who were present.



**Figure 1.** “The Diabetes Kits” which were introduced at the Stakeholder Forum and will be implemented in all health centres throughout Vanuatu.

It was agreed that, subject to the Director General’s approval, the training program would be initiated within three months and completed by the end of 2007 and would include the distribution of the Diabetes Kits to all health centres nationally.

The Forum was closed by the Director of Public Health, Mr Len Tarivonda, who thanked the participants for their active engagement in the Forum discussions and gave his support and encouragement on behalf of the Ministry of Health for the participants to use the outcomes of the Forum to immediately take up the challenge of “*Building Better Diabetes Care in Vanuatu*”.

The remainder of this Report summarises and presents the main focus of the discussions and lists the main priorities and recommendations arising from the Stakeholder Forum.



Mr Len Tarivonda, Director of Public Health, closing the Stakeholder Forum.



“Building Better Diabetes Care in Vanuatu” - the banner for the Stakeholder Forum

# SWOT Analysis

The SWOT analysis was an important component of the process of engaging participants in exchanging and applying their collective expert knowledge of their own health system and community. The Forum participants divided into 4 small groups and each group was allocated one of the following headings: **S**trengths, **W**eakness, **O**pportunities or **T**hreats and asked to brainstorm and discuss issues of their allocated heading in relation to diabetes care in Vanuatu. Each group then presented the results of their discussions and brainstorming to the Forum and plenary discussions followed so as to finalise a list of points under each heading which were representative of all Forum participants. The results of SWOT discussions and brainstorming are set out below.

<b><u>Strengths</u></b>	<b><u>Weaknesses</u></b>
<ul style="list-style-type: none"> <li>• Extended family (support)</li> <li>• Existing policies (foot and nutrition; NCD)</li> <li>• Vanuatu Diabetes Association (VDA)</li> <li>• National health events / (health promotion eg World Diabetes Day; Walk for life; National Food Day)</li> <li>• NCD clinics in hospitals and other health facilities</li> <li>• Antenatal clinics</li> <li>• Promoting local food – Year of Custom Economics</li> <li>• Food security</li> <li>• Nursing school curriculum includes NCDs</li> <li>• Commitment of MOH</li> <li>• NCD Coordinator</li> <li>• Baseline surveys</li> <li>• Donor assistance</li> <li>• Some equipment</li> <li>• NGO assistance</li> <li>• Christianity</li> <li>• Hub and spoke health system</li> <li>• Healthy country</li> <li>• National eye care program</li> <li>• Happiest and luckiest country in the World</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of resources (human and material)</li> <li>• Maintenance of equipment</li> <li>• No laser equipment for retinopathy treatment</li> <li>• Lack of knowledge transfer from health workers to community</li> <li>• Inadequate follow-up when patients sent home from hospitals</li> <li>• Shortage of man power</li> <li>• Improper diagnosis – late treatment</li> <li>• Lack of communication between health facilities</li> <li>• Language differences – makes communication difficult</li> <li>• No continuing diabetes education for health workers</li> <li>• Lack of transport – patients can't get to health facilities for proper treatment and nurse from facility to see patients</li> <li>• Lack of funds for fuel even though transport may be available</li> <li>• No diabetes / diet guidelines</li> <li>• No support for orthopaedic clinic.</li> <li>• Amputees feel “helpless”</li> <li>• Lack of patient education and counselling</li> <li>• No guidelines for diabetes patients to follow</li> <li>• VDA needs strengthening from MOH</li> <li>• No ni-Vanuatu pictures reflecting diabetes</li> <li>• No law on junk food</li> <li>• Lack of understanding of healthy food and healthy living</li> <li>• Health workers not being role models and setting good examples</li> <li>• Lack of health worker involvement in diabetes programs</li> <li>• No linkage of what already exists</li> <li>• Lack of program ownership</li> <li>• Duplication / lack of coordination among programs</li> </ul>

<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none"> <li>• WDF project</li> <li>• WHO support</li> <li>• MOH and NZAid tobacco cessation program</li> <li>• National NCD Strategy 2004 – 2009</li> <li>• Health promoting school program</li> <li>• Physical activities Vanua kids and youth program</li> <li>• Eye care program</li> <li>• Existing health networks</li> <li>• NCD clinics</li> <li>• Antenatal clinics</li> <li>• Central medical stores</li> <li>• Provincial medical stores</li> <li>• Vanuatu Diabetes Association</li> <li>• NGO health network – raising awareness</li> <li>• Peace Corps</li> <li>• Wan Smol Bag</li> <li>• Food security</li> <li>• Village health worker program</li> <li>• UN Resolution of Diabetes</li> <li>• World Diabetes Day – now a UN day</li> <li>• World Food Summit sponsored by FAO</li> <li>• ICN</li> </ul>	<ul style="list-style-type: none"> <li>• Cheap imported food</li> <li>• Trade Agreements / Food Policies</li> <li>• Lack of food transport / food supply</li> <li>• High cost of food transport / food supply</li> <li>• Imported cigarettes</li> <li>• Urbanisation – more social problems due to more people living in towns</li> <li>• Lack of knowledge from different areas/ levels of health services</li> <li>• No regular continuing education / refresher courses for health workers</li> <li>• Not enough medical resources (BP machines, Blood Glucose Meters)</li> <li>• High population growth rate (2<sup>nd</sup> highest in the Pacific region)</li> <li>• Low income combined with a high cost of living – end up buying the cheap imported foods.</li> <li>• Expensive food production</li> <li>• Local food very expensive</li> <li>• Transfer of trained staff to other health areas</li> <li>• Sale of land to ex-pats</li> <li>• Limited access to natural resources</li> <li>• Changes of lifestyle</li> <li>• Lack of knowledge on food preparation</li> <li>• Nursing student intake only every 2-3 years – nursing shortage threat</li> <li>• Lack of hygienic environment (especially in rural area)</li> </ul>

## Summary

The results of the SWOT analysis demonstrated that numerous strengths and opportunities with potential to achieve optimal diabetes care already exist in Vanuatu.

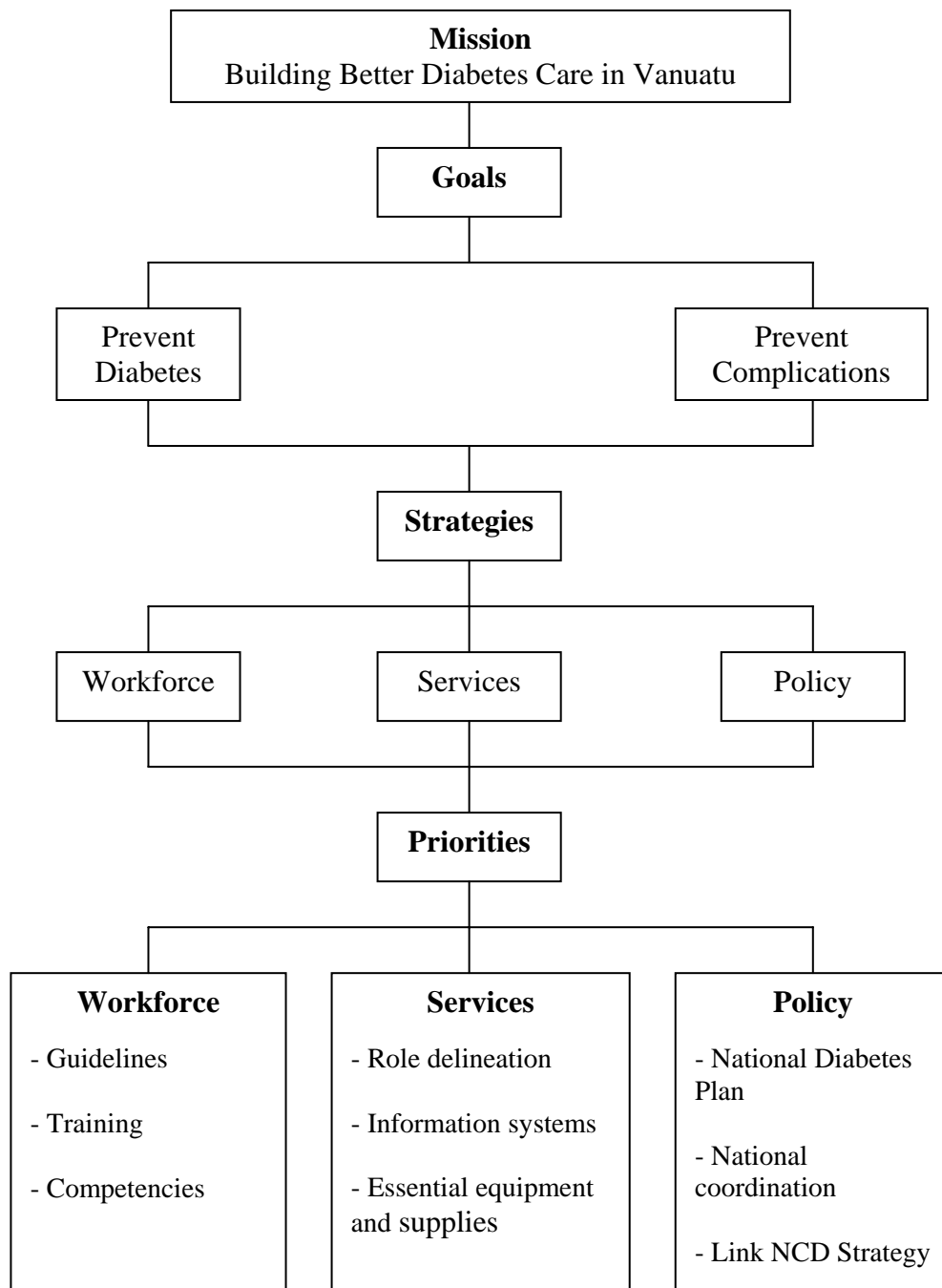
For clinical care, the existing hub and spoke health system, together with the NCD clinics already being run in each of the provinces, were seen as obvious strengths and provide an excellent platform and ample opportunity for building up the level of diabetes care nationally. Additionally, NCD policies and health promoting programs have been developed and it was felt that now is the time to capitalise on these strengths and to put them into practice. It was also thought essential to utilise both the newly established Vanuatu Diabetes Association and other similar groups to raise and promote diabetes awareness, particularly on World Diabetes Day as was done in Port Vila in both 2005 and 2006 by engaging the local community in “Walk for diabetes” rallies.

The discussions raised a number of crucial weaknesses and threats which need to be urgently addressed. These included the current high cost of local food compared to the cheap cost of imported processed foods, the lack of both human and medical resources, and the inadequate access to optimal care, particularly for those living in the rural areas and/or on the outer islands. Fortunately, with the implementation of well thought out policies and programs, most of the identified weaknesses and threats can be turned into strengths and opportunities and thereby assist in the building of better diabetes care in Vanuatu.

# Populating the Framework

A framework is a conceptual pathway which is designed to show how a vision and mission can inform the identification of strategies and priorities, and guide efforts to operationalise the goals in order to achieve the desired results if better access and improved health outcomes for all people in Vanuatu with, or at risk of diabetes.

On the morning of Day 2 of the Forum, examples of strategies for strengthening health workforce, health services and health policy were presented to the participants (Appendix 3). Plenary discussions were then held to establish a Framework (Figure 2) and identify strategies which would enable Vanuatu to close the gap between what is happening now and what should be happening in relation to diabetes care.



**Figure 2.** Framework for Building Better Diabetes Care in Vanuatu

The detail of the developed framework for Building Better Diabetes Care in Vanuatu is presented below:

## **Mission**

- Building Better Diabetes Care in Vanuatu

## **Goals**

- To reduce diabetes-related kidney, eye and foot complications
- To prevent Type 2 diabetes

## **Strategies**

- Strengthening Health Workforce
- Strengthening Health Services
- Strengthening Health Policy

Details of these 3 strategies are outlined below.

### ***Strategies for Strengthening Health Workforce***

It was suggested that the existing structure of the workforce needs to be strengthened and this could be accomplished by establishing a National NCD Centre where workforce training could be conducted. This workforce training should be implemented as a national standardised training program endorsed by the MOH and be aimed at all levels of health workers and based on the existing diabetes guidelines (competencies, clinical targets and referral criteria). This training program, together with the diabetes guidelines could also be included as part of the nursing school curriculum and the village health worker manual. The introduction of Provincial NCD Coordinators, who could provide support and supervision for the health centres, dispensaries and village health workers, was another proposed strategy for strengthening health workforce as was the introduction of full-time NCD nurses at the provincial hospitals as well as at the referral hospitals. It was noted that human and financial resources were a barrier to strengthening the health workforce and these issues need urgent attention, particularly the stability of the health workforce.

### ***Strategies for Strengthening Health Services***

The establishment of a National NCD Centre was again raised, as was the identification and appointment of Provincial NCD Coordinators. Training was again a main focus and it was suggested that NCD clinics should be established and/or strengthened in all health centres with existing staff trained in diabetes. There also needs to be a fair way of selecting the health workers to participate in the overseas and local diabetes training programs. Basic diabetes training should be also provided to the village health workers and as part of this training it was suggested that the implementation of follow-up and referral pathways needs to be improved. Additionally, the current intake of new nursing students is only every 2 years and it was suggested that this should be changed back to a yearly intake to avoid facing nurse shortages in the future.

The other main focus for strengthening health services involved resources. Diabetes kits should be implemented in all health centres and beta-check strips should be available in all dispensaries. In addition to being available at the referral hospitals, it was also suggested that DCA Analysers

should be introduced at the provincial hospitals. There is an urgent need to develop nationally consistent Information Education Communication (IEC) material relevant to Vanuatu and to hold national diabetes events in all the provinces to raise diabetes awareness. It was also suggested that health services could be strengthened by strengthening the food security program to all provinces.

### ***Strategies for Strengthening Health Policy***

It was agreed that diabetes needs to be listed as a formal National Priority area and that a national diabetes strategic plan as a model for implementing the NCD strategy needs to be developed, as do national policies specific for diabetes. Vanuatu has already established a diabetes association which needs to be strengthened and supported. Supporting the existing services such as the orthopaedic clinic and the orthotists is also required. Establishing a National NCD Centre and incorporating diabetes training and guidelines (competencies, clinical targets and referral criteria) into the nursing curriculum and the manuals for both the health workers and the village health workers were again raised. It was suggested that this be done at the next curriculum and manual reviews. Regular refresher courses for diabetes and NCD topics are also needed for the existing staff and that diabetes / NCD trained staff need to remain in positions until replaced by another trained staff. Additionally a coordinated approach is needed for NCD prevention and care activities and should involve various disease areas and health departments, as well as people from other sectors. Existing policies which aim to prevent and reduce prevalence of food related diseases by promoting local food (production, preparation and consumption) need to be strengthened and price control of island food is also required.

### **Summary**

The majority of the potential strategies that were discussed addressed the issue of lack of human resources and the inadequate access to optimal diabetes care, particularly for those living in the rural areas and/or on the outer islands. The suggestion that there should be a NCD coordinator for each of the 6 provinces of Vanuatu and a full-time NCD nurse at each provincial and referral hospital was enthusiastically supported, as was the implementation of a national standardised diabetes training program to ensure that all health workers were working towards the same level of care. To promote future sustainability it was suggested that the material from the training program become incorporated into the nursing curriculum and the village health worker manual. Sustainability also relies on the retention of trained staff, so it was suggested that the constant transferring of staff needed to be monitored so that areas were not suddenly unable to receive optimal diabetes care. A common strategy proposed for strengthening health workforce, services and policy was the establishment of a national NCD centre where clinics for patients with or at risk of diabetes complication, patient education sessions and some health worker training could be held. Such a strategy would certainly help build better diabetes care in Vanuatu by improving the quality and access to diabetes care.

# Priorities and Recommendations

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The main outcome of the Forum was a set of agreed priorities and recommendations for a model of diabetes care that is appropriate, applicable and manageable in Vanuatu.

Following on from the discussion of the strategies required to strengthen health workforce, health services and health policy, the Forum participants enthusiastically engaged in discussing and framing recommendations for priority action in order to successfully achieve the mission of Building Better Diabetes Care in Vanuatu. These are listed below:

1. List diabetes as a formal National Priority Area
2. Develop a National Diabetes Plan which will be used as a model for implementing the National NCD Strategy
3. Strengthening Health Workforce by:
  - i) developing guidelines (competencies, clinical targets and referral criteria) to ensure consistency of the diabetes care provided throughout the country
  - ii) conducting a national, standardised diabetes training program for health workers which will be run by trained local ni-Vanuatu staff
  - iii) incorporating the developed guidelines into the nursing curriculum and the existing village health worker manual
4. Strengthening Health Services by:
  - i) establishing a national NCD centre
  - ii) identifying a NCD Coordinator for each of the 6 provinces of Vanuatu
  - iii) developing national consistent information, education and communication material which is relevant to Vanuatu
5. Strengthening Health Policy by:
  - i) reviewing the NCD and diabetes material currently in the village health worker manual and incorporating the developed guidelines into it at the next review
  - ii) ensuring an inter-sectoral approach in implementing diabetes care at all levels

**These priorities and recommendations are being submitted to the Director General of Health in Vanuatu for formal endorsement by the Ministry of Health.**

# Appendix 1

## List of Forum Participants

**Forum Participants**

<b>Name</b>	<b>Position</b>
Andorine Aki	ENT Nurse Vila Central Hospital
Annie Bong	Eye Nurse Vila Central Hospital
Alexandra Buckley	WDF Project Manager The Diabetes Unit University of Sydney Australia
Siula Bulu	KPH Manager Wan Smal Bag Theater, NGO
Ruth Colagiuri	Director The Diabetes Unit University of Sydney Australia
Agnes David	Department of Youth and Sports Ministry of Youth Development
Philippe Emile	Head Nurse Medical Ward Vila Central Hospital
Jasmine Frasier	Peace Corps Volunteer Paunagisu Health Centre Shefa Health
Sanne Frost Helt	Program Manager World Diabetes Foundation Denmark
Hilary Garae	WDF Project Support Officer Department of Public Health Ministry of Health
May Ho	Optometrist International Centre for Eye Care Education Australia
Hannah Kanas	Nurse Practitioner, NCD Clinic Vila Central Hospital
Samuel Kemuel	Resident Medical Officer NCD Clinic Northern Districts Hospital
Suzanne Kissel	Senior Registered Nurse Lenakel Hospital
Austin Langon	Orthotists & Prosthetics Technician Vila Central Hospital
Massing Lauru	Chairman Vanuatu Diabetes Association
Leipakoa Matariki	Hospital Manager Vila Central Hospital
Angela Mento	Antenatal and Family Planning Clinic Vila Central Hospital
Theto W. Moses	National NCD Coordinator Department of Public Health Ministry of Health
Esau Naket	Acting Provincial Health Manager Nurse Practitioner Lenakel Hospital
Lucy Norman	Assist. Manager, Central Medical Stores Vila Central Hospital

Kathleen Rarua	Gender Planner Department of Women's Affairs
Seyha Ros	Malaria Scientist World Health Organization
Thomas Sala-Vurobaravo	Senior Obstetrician Vila Central Hospital
Sunil Senanayake	Medical Officer World Health Organization
Rossie Silas	Provincial Health Manager Provincial Health Office, Norsup
Annick Stevens	Food Security Officer Department of Agriculture
Mathias Tabeva	Acting Provincial Health Manager Nurse Practitioner Lolowai Hospital
Graham Tabi	In-country Co-ordinator PAHP
Jean Tabibang	Health Promotion Officer Provincial Health Office, Lolowai
Monique Tahi	Eye Nurse Vila Central Hospital
Len Tarivonda	Director Department of Public Health Ministry of Health
John Tasserei	WDF Project Coordinator Department of Public Health Ministry of Health
Harriet Tavoia	VCH Dietician Vila Central Hospital
Grennthy S. Tavunwo	Health Promotion Officer Provincial Health Office, Norsup
Shem Tema	Pastor and Chairman Vanuatu Christian Council
Markson Tetaun	Reproductive Clinic Vila Central Hospital
Jennifer Timothy	National Nutritionist Department of Public Health Ministry of Health
Shirley L. Tokon	Food Security Officer Department of Public Health Ministry of Health
Christine Van Hooft	Program Officer-Health AusAid
Adeline Welin	Principal Nurse Educator Vanuatu Centre for Nurse Education
Bertrand Wersets	Registered Nurse and Public Health Officer Provincial Health Office, Norsup

# Appendix 2

## What's happening now

### **Appendix 2A – NCD Steps Survey**

### **Appendix 2B – WDF Baseline Assessments**

- Situation Analysis
- Mapping of the health services
- Diabetes related hospital admissions
- Diabetes related amputations
- Amputation root cause analysis
- Complication screening
- Cost of illness survey

# NCD STEPS Survey

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In August – September 2005, Vanuatu's Public Health Department conducted an assessment of the risk factors for non-communicable diseases (NCD) in Vanuatu by adapting the WHO STEPS questionnaires. The results of this work are presented below.

## Background

NCDs are becoming an increasing public health burden, both in developed and developing countries. Similar to other Pacific Islands Countries, Vanuatu has noticed an increased burden of NCD in the population, particularly diabetes and cardio-vascular diseases. This results to a certain extent, from an imbalance between the aggressive marketing of potentially unhealthy foods and lifestyles, and the living environment of the islanders.

## Objectives of the NCD STEPS Survey

The main purpose of the survey was to determine the extent of NCD risk factors in the population and to use this baseline information for further planning and intervention strategies.

## Methodology

The survey was limited to the island of Efate as the target population due to limited resources. Multi-stage stratified cluster sampling method was used. Total of 1,200 persons, aged between 15 and 60, were selected from both urban and rural settings to participate in the survey. The main risk factors assessed were behavioural information and physical activities adapted from WHO STEPS questionnaires. The Public Health Department in Vanuatu conducted the study in August-September, 2005.

## Results

Overall, a total of 1,450 respondents were obtained in the survey. Of these, 11.2% were currently smoking tobacco daily, with significantly more men (21.3%) compared to women (3.1%). However, the average age of starting smoking was slightly earlier in women (22) than men (24.8) and the average daily number of cigarettes smoked was higher in women (11.1) than men (5.6).

Likewise, 66.8% of respondents reported drinking alcohol during the last year, slightly more predominant in men (64.8%) compared to women (61.5%). In addition, 2.3% of those who drunk alcohol during the last year reported they currently drunk alcohol on 4 or more days during the previous week prior to the survey (2.5% men; 1.7% women).

The median time spent in work-related activity per day was 25.7 minutes and there were no differences between men and women. However, women seemed to spend more time per day in recreational physical activity (38.6 min.) compared to men (25.7 min.).

Physical and medical examination indicated that 50.9% of respondents, aged 25 to 60, were overweight or obese (BMI  $\geq 25\text{kg/m}^2$ ) or 28.8% was obese (BMI  $\geq 30\text{kg/m}^2$ ). More women were obese (25.8%) or overweight or obese (57.8%) compared to men (obese 14.4% and overweight or obese 42.1% respectively). The average waist circumference was 88.1 cm, with men (85.3cm) and women (88cm).

The average systolic blood pressure (SBP) and diastolic blood pressure (DBP) were respectively 128.8mmHg and 78.4mmHg, with no major different between the two sexes. The percentage of moderately raised blood pressure (SBP $\geq$  140mmHg and/or DBP $\geq$  90mmHg) was 10.5%, slightly more observed in women (11.7%) than men (9%). Similarly, the percentage of significant raised blood pressure ((SBP $\geq$  160mmHg and/or DBP $\geq$  100mmHg) was 5.5% with more women (6.7%) affected compared to men (4%).

### **Discussion and Recommendations**

The data is limited to Efate Island in the sampling process and may not be relevant to make any comparison with other surveys in different areas. However, the pattern of urban and rural setting was taken into consideration in the sampling process to reflect the country setting and to optimise the information for the other outer islands.

Although biological factors were not collected and measured in this survey, given the significant proportion of overweight, obesity and raised blood pressure in the population, the public health concern on increasing NCD burden should not be overlooked.

The challenges of conducting a nationwide study, especially with regard to resource constraints, should be reviewed and planned ahead for the future so that the STEPS survey may be repeated within a reasonable period.

### **Conclusion**

Despite the limitation of information obtained from this survey as it only involved a sub-population of the country, the results can be used to guide national policies and planned strategic interventions on NCDs.

# Baseline Assessments of the WDF Project

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As part of the WDF Project a number of baseline assessments have been completed by the local in-country Project Staff with assistance from the Australian Project Manager and the Australian Collaborators. These assessments included:

1. Situation Analysis
2. Mapping of the Health Services
3. Diabetes related hospital admissions
4. Diabetes related amputations
5. Amputation Root Cause Analysis
6. Complication Screening
7. Cost of Illness Survey

Details of these assessments can be found in the following pages.

# Situation Analysis

The “situation” prior to the commencement of the project in June 2005 was analysed using an electronic program which was completed by Ministry of Health Staff and assessed:

1. Priorities, policies and programs relating to diabetes, obesity, nutrition and physical activity.
2. Status of diabetes and associated complications as well as the cost of diabetes medications and care.
3. Available resources for managing diabetes and associated complications.

## 1. Priorities, policies and programs

Is diabetes <b>formally</b> listed as a national health priority?	No
Is diabetes <b>informally</b> listed as a national health priority?	Yes
Is there a national diabetes plan/program (NDP)?	No
Is there an NDP being developed?	No
Are clinical management guidelines routinely used?	No
Are any other guidelines for other aspects of diabetes care in use?	No
Are any other disease related guidelines available?	No
Is there a national <b>policy</b> on food and/or nutrition?	No
Is there a national <b>program</b> on food and/or nutrition?	No
Is there a national prevention <b>policy</b> ?	Yes
Is there a national prevention <b>program</b> ?	Yes
Is there a National Diabetes Association?	No
Is there a Diabetes Centre?	No

## 2. Current status of diabetes

<p>Is the incidence and/or prevalence known for:</p> <ul style="list-style-type: none"> <li>• Type 1 diabetes</li> <li>• Type 2 diabetes</li> <li>• Gestational diabetes</li> </ul>	<p>No No No</p>
<p>Are complication rates known for:</p> <ul style="list-style-type: none"> <li>• Blindness</li> <li>• End stage renal failure</li> <li>• Lower limb amputations</li> <li>• Heart disease</li> <li>• Stroke</li> </ul>	<p>No No No No No</p>
<p>Are diabetes prevalence and outcomes measured and monitored?</p>	<p>No</p>
<p>Is there a nationally agreed and standardised diabetes data set?</p>	<p>No</p>
<p>Is the cost of diabetes available for:</p> <ul style="list-style-type: none"> <li>• Cost of oral agents</li> <li>• Cost of insulin</li> <li>• Cost of supplies</li> <li>• Hospital costs</li> <li>• Cost of complications</li> </ul>	<p>No No No No No</p>
<p>How is diabetes medical treatment financed?</p>	<p>99% funded by Govt 1% funded by Patient</p>
<p>How is diabetes hospital treatment financed?</p>	<p>99% funded by Govt 1% funded by Patient</p>
<p>How is diabetes medications financed?</p>	<p>100% funded by Govt</p>
<p>How are diabetes laboratory tests financed?</p>	<p>100% funded by Govt</p>

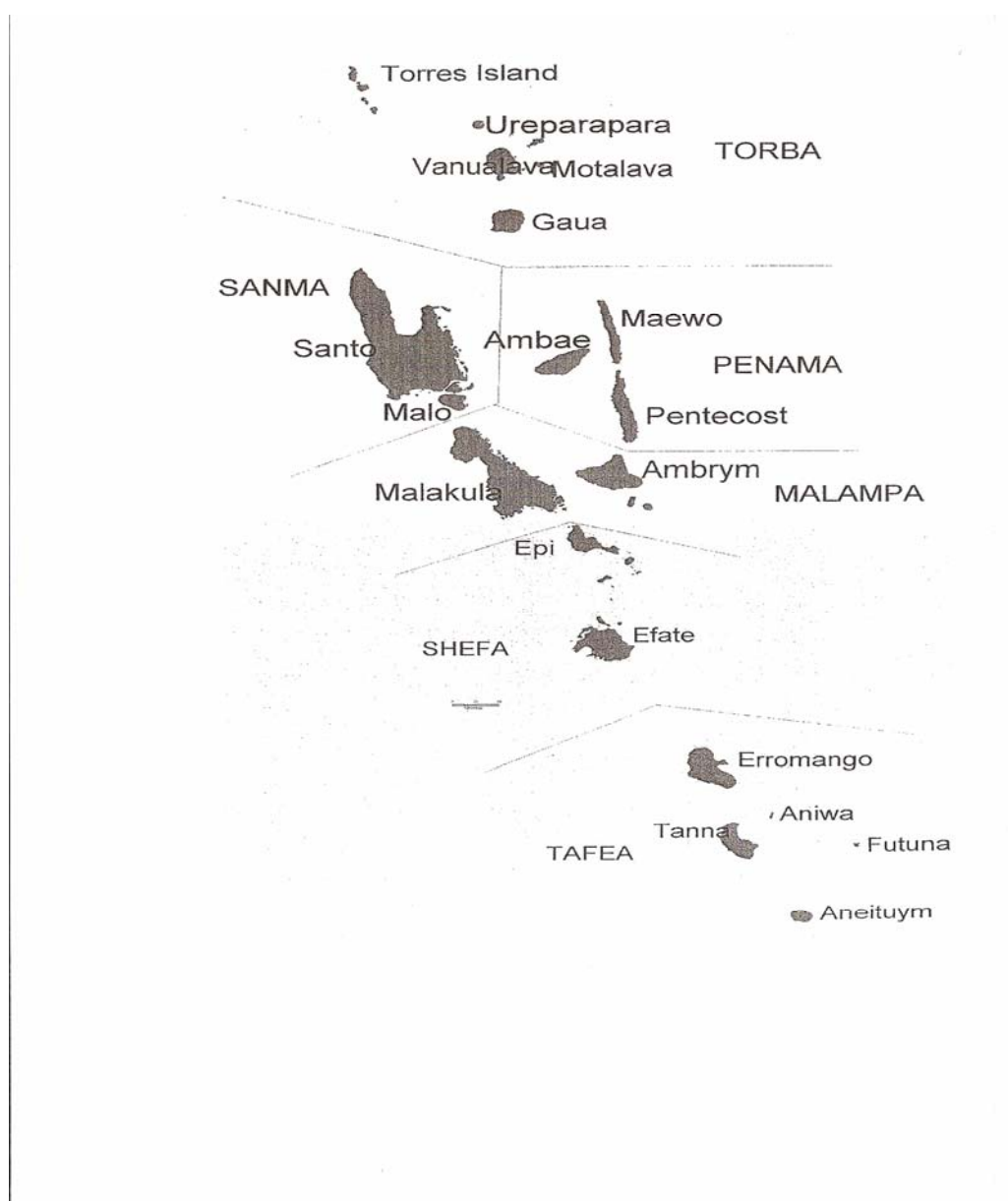
### 3. Available resources for managing diabetes

What type of health professionals are available to care for people with diabetes?	Specialist GPs, Ophthalmologists, Advanced Nurse Practitioners, Physiotherapists
What type of diabetes training programs are available in-country for the health professionals?	One-off workshops for nurses
Is multidisciplinary care available to people with diabetes?	No
What laboratory assessments are available? Fasting blood glucose Oral glucose tolerance test HbA <sub>1c</sub> Total cholesterol Triglycerides HDL Microalbumin Creatinine	Yes No No No No No No Yes
What equipment is available? DCA analyser and reagents Blood glucose meters ECG machine Monofilament Biothesiometer Doppler Slit lamp Retinal camera	No Yes (limited supply) Yes No No No Yes No
What medications are available? Insulin – short acting Insulin – intermediate acting Insulin – long acting Insulin – pre-mixed Oral diabetes agents Anti-hypertensive agents Lipid lowering agents	Yes Yes No Yes Yes Yes No
What facilities / systems available? Computer Recall system Diabetes database Diabetes register Documentation system Referral criteria Clinical protocols	Yes (limited supply) Yes No No Yes No No

## Mapping of Health Services

The local in-country Project Staff collated information on the number and location of Health Facilities available in each of the six provinces around Vanuatu.

	Torba	Sanma	Penama	Malampa	Shefa	Tafea	Total Facilities
<b>Hospitals</b>	0	1	1	1	1	1	<b>5</b>
<b>Health Centres</b>	1	7	6	3	3	2	<b>22</b>
<b>Dispensaries</b>	10	12	17	24	14	12	<b>89</b>
<b>Total Facilities</b>	<b>11</b>	<b>20</b>	<b>24</b>	<b>28</b>	<b>18</b>	<b>15</b>	<b>116</b>



## Diabetes Related Hospital Admissions

The medical ward admission books from 2001 to 2005 were used to determine the annual number of diabetes related admissions in each of the two referral hospitals and the three provincial hospitals, as well as the average length of hospital stay for these admissions.

### Number of Diabetes Related Hospital Admissions

	2001	2002	2003	2004	2005
<b>Vila Central</b>	57	60	93	109	63
<b>Northern Districts</b>	44	59	54	52	30
<b>Lenakel</b>	No Data	3	2	7	1
<b>Norsup</b>	20	19	15	19	No Data
<b>Lolowai</b>	9	14	11	5	3

### Average Length of Stay (in days) for Diabetes Related Hospital Admissions

	2001	2002	2003	2004	2005
<b>Vila Central</b>	12.2	17.8	13.2	14.4	15.2
<b>Northern Districts</b>	22.3	5	16.7	10.5	4.1
<b>Lenakel</b>	No Data	6	16.5	13.1	57
<b>Norsup</b>	18.5	10.3	6.4	7.3	No Data
<b>Lolowai</b>	35.7	10.1	16.1	11.8	8

## Diabetes Related Amputations

The surgical ward admission books from 2001 to 2005 were used to determine the annual number of diabetes related above knee, below knee, foot, half foot and toe amputations, as well as the annual number of major debridement of diabetic foot ulcers requiring general anaesthesia.

### Number of Diabetes Related Hospital Admissions

	2001	2002	2003	2004	2005
<b>Above Knee</b>					
<b>VCH</b>	No Data	No Data	3	1	5
<b>NDH</b>	1	0	0	0	0
<b>Below Knee</b>					
<b>VCH</b>	No Data	No Data	11	7	5
<b>NDH</b>	3	2	7	5	8
<b>Foot</b>					
<b>VCH</b>	No Data	No Data	1	0	0
<b>NDH</b>	1	0	0	0	0
<b>Half-Foot</b>					
<b>VCH</b>	No Data	No Data	0	1	0
<b>NDH</b>	0	0	0	4	0
<b>Toe</b>					
<b>VCH</b>	No Data	No Data	4	2	2
<b>NDH</b>	1	2	9	3	2
<b>Debridement</b>					
<b>VCH</b>	No Data	No Data	27	38	17
<b>NDH</b>	15	12	12	26	7

# Amputation Root Cause Analysis

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The Amputation Root Cause Analysis survey aimed to determine what preceding events led up to the amputation and was used to identify key intervention points that may have prevented the amputation.

The surveys were administered by the in-country project staff to a sample of diabetic patients who had had an amputation in the last 5 years. In total 36 diabetes patients were surveyed - 17 patients were from around Port Vila and 19 patients were from outside the Port Vila area including 8 patients from around Luganville.

The patients were asked a series of structured questions relating to their:

1. Diabetes status
2. Diabetes medication being taken
3. Place and frequency of receiving treatment for their diabetes
4. Amputation
5. Perceptions of what caused the amputation
6. Foot care knowledge prior to and after the amputation

Demographics / Diabetes Status	PORT VILA AREA			OUTSIDE PORT VILA AREA		
	Females (n=7)	Males (n=10)	Total (n=17)	Females (n=9)	Males (n=10)	Total (n=19)
Average age (years)	56.4 ± 3.18	57.0 ± 3.71	<b>56.8 ± 2.05</b>	56.3 ± 3.24	61.5 ± 3.42	<b>59.2 ± 2.40</b>
Average Duration of Diabetes (years)	6.4 ± 2.00	8.6 ± 3.39	<b>7.7 ± 1.67</b>	4.6 ± 1.38	7.2 ± 1.28	<b>5.9 ± 0.96</b>
Average Duration of Diabetes (years) before having amputation	4.4 ± 1.53	4.3 ± 2.75	<b>4.4 ± 1.39</b>	3.8 ± 1.27	4.4 ± 1.31	<b>4.1 ± 0.89</b>
Blood Sugar Level						
- below 7mmol/L	0	0	<b>0</b>	0	0	<b>0</b>
- between 7 and 10mmol/L	2	5	<b>7</b>	3	3	<b>6</b>
- between 10 and 15mmol/L	1	2	<b>3</b>	1	1	<b>2</b>
- above 15mmol/L	1	1	<b>2</b>	4	3	<b>7</b>
- don't know	3	2	<b>5</b>	1	3	<b>4</b>

Diabetes Medication	PORT VILA AREA			OUTSIDE PORT VILA AREA		
	Females (n=7)	Males (n=10)	Total (n=17)	Females (n=9)	Males (n=10)	Total (n=19)
Nil (diet only)	1	1	<b>2</b>	2	2	<b>4</b>
Tablets	4	9	<b>13</b>	5	5	<b>10</b>
Insulin only	1	0	<b>1</b>	2	2	<b>4</b>
Insulin & tablets	1	0	<b>1</b>	0	1	<b>1</b>

Diabetes Treatment	PORT VILA AREA			OUTSIDE PORT VILA AREA		
	Females (n=7)	Males (n=10)	Total (n=17)	Females (n=9)	Males (n=10)	Total (n=19)
Hospital Outpatients Clinic	6	10	<b>16</b>	4	5	<b>9</b>
Health Centre	0	0	<b>0</b>	3	1	<b>4</b>
Dispensary	0	0	<b>0</b>	1	1	<b>2</b>
No where	1	0	<b>1</b>	1	2	<b>3</b>
Visits						
- weekly	1	0	<b>1</b>	0	0	<b>0</b>
- fortnightly	0	0	<b>0</b>	0	1	<b>1</b>
- monthly	5	5	<b>10</b>	3	2	<b>5</b>
- every 2-3 months	0	4	<b>4</b>	3	4	<b>7</b>
- yearly	0	1	<b>1</b>	0	1	<b>1</b>
- nil	1	0	<b>1</b>	0	2	<b>2</b>
- don't know	0	0	<b>0</b>	3	0	<b>3</b>

<b>Amputations</b>	<b>PORT VILA AREA</b>			<b>OUTSIDE PORT VILA AREA</b>		
	<b>Females (n=7)</b>	<b>Males (n=10)</b>	<b>Total (n=17)</b>	<b>Females (n=9)</b>	<b>Males (n=10)</b>	<b>Total (n=19)</b>
What first led to this amputation?						
- infected wound	1	2	3	0	0	0
- injury	5	2	7	8	7	15
- blister	1	5	6	1	3	4
- foot ulcer	0	1	1	0	0	0
What did the patient first do about this?						
- nothing	2	3	5	3	4	7
- washed	3	1	4	1	1	2
- incision of injury/blister site	0	0	0	3	1	4
- cleaned and dressed	0	6	6	1	2	3
- applied ointment	0	0	0	1	0	1
- traditional medicine	2	0	2	0	2	2
Time before getting professional help						
- nil (got help immediately)	0	1	1	0	0	0
- the next day	0	0	0	0	2	2
- after a few days	2	3	5	2	0	2
- after 1 week	3	1	4	1	4	5
- after 2-3 weeks	1	4	5	4	2	6
- after 1 month	0	1	1	2	1	3
- after a few months	1	0	1	0	1	1
Place of professional help						
- dispensary	1	1	2	3	1	4
- health centre	0	0	0	1	1	2
- provincial hospital	0	1	1	1	0	1
- main hospital	6	8	14	4	8	12
Ease of getting professional help						
- easy	4	9	13	5	9	14
- difficult	3	1	4	4	1	5

<b>Amputations (continued)</b>	<b>PORT VILA AREA</b>			<b>OUTSIDE PORT VILA AREA</b>		
	<b>Females (n=7)</b>	<b>Males (n=10)</b>	<b>Total (n=17)</b>	<b>Females (n=9)</b>	<b>Males (n=10)</b>	<b>Total (n=19)</b>
Initial Treatment by professional						
dressing	0	1	<b>1</b>	1	0	<b>1</b>
dressing & pain relief	0	0	<b>0</b>	2	1	<b>3</b>
oral antibiotics	1	3	<b>4</b>	2	2	<b>4</b>
IV antibiotics	6	6	<b>12</b>	3	5	<b>8</b>
nothing	0	0	<b>0</b>	1	1	<b>2</b>
don't know	0	0	<b>0</b>	0	1	<b>1</b>
Reason why amputation was performed						
- due to wound not healing in response to treatment	5	10	<b>15</b>	5	8	<b>13</b>
- after refusing further medical treatment and opting for traditional medicine	1	0	<b>1</b>	0	0	<b>0</b>
- wound too infected by time of presentation	0	0	<b>0</b>	4	2	<b>6</b>
- following recurrence of infection	1	0	<b>1</b>	0	0	<b>0</b>

Foot Care Knowledge	PORT VILA AREA			OUTSIDE PORT VILA AREA		
	Females (n=7)	Males (n=10)	Total (n=17)	Females (n=9)	Males (n=10)	Total (n=19)
<b>Taught about foot care <u>prior to amputation</u></b>						
- yes	6	7	13	6	3	9
- no	1	3	4	3	7	10
<b>If yes, what were you taught</b>						
- clean and dry feet	5	4	9	5	1	6
- check feet regularly	2	0	2	1	0	1
- wear good fitting shoes	2	4	6	4	2	6
- massage with oil	0	1	1	4	0	4
- cut nails	1	0	1	0	0	0
- early presentation of injury	0	1	1	0	2	2
- cannot remember	1	2	3	1	0	1
<b>Taught about foot care <u>after amputation</u></b>						
- yes	4	3	7	3	8	11
- still nothing taught	0	1	1	2	1	3
- nothing new taught	3	6	9	4	1	5
<b>If yes, what have you been taught</b>						
- clean and dry feet	3	2	5	1	3	4
- check feet regularly	2	0	2	0	1	1
- wear good fitting shoes	3	0	3	2	5	7
- massage with oil	0	0	0	1	3	4
- cut nails	1	0	1	0	1	1
- early presentation of injury	1	1	2	0	0	0
- cannot remember	0	0	0	0	1	1
<b>Perceptions of what caused the amputation</b>						
- not having regular check-ups	1	1	2	2	2	4
- home/traditional treatment	1	3	4	1	0	1
- delayed medical treatment	5	6	11	5	5	10
- incorrect medical treatment	1	0	1	4	2	6
- not treated with antibiotics for sufficient time	0	4	4	0	0	0
- insufficient diabetes knowledge	1	4	5	2	2	4
- cannot think of anything	1	0	1	1	3	4

## Complication Screening

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An Australian clinical team visited Port Vila in June 2005 and November 2006 and completed a thorough complication screening on a subset of known diabetic patients. The results of these screening visits are presented below.

	<b>PIP Screening 2002</b>	<b>WDF Screening 2005</b>	<b>WDF Screening 2006</b>
<b>n =</b>	?	199	114
<b>HbA<sub>1c</sub> (mean)</b>	9.8	8.1	8.0
<b>Microalbuminuria (%) (Based on Ratio &gt;3.5)</b>	55	50	45
<b>Retinopathy (%)</b>	44	42	50
<b>Foot Ulcer (%)</b>	5	5	8
<b>Amputation (%)</b>	9	11	9

As 105 of the 114 patients seen in the 2006 screening visit had also been seen during the 2005 screening it was possible to complete some paired patient data analysis. These results are presented below.

	<b>Retinopathy</b>	<b>Foot Ulcer</b>	<b>Amputation</b>
<b>n =</b>	105	105	105
<b>% Unchanged</b>	72.4	91.4	99.0
<b>% Deteriorated</b>	19.0	5.7	1.0
<b>% Improved</b>	8.6	2.9	N/A

## Cost of Illness Survey

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The Australian DiabCo\$t survey was adapted to be locally relevant to Vanuatu.

The patients were asked a series of structured questions aiming to provide information relating to the:

1. Cost to people with diabetes
2. Cost of treatment
3. General impact of diabetes on individuals, family, community and the country

The survey was administered by the in-country project staff to the cohort of 199 patients who underwent the initial WDF complication screening in 2005.

Approximately 180 surveys (90%) were completed. From the time between the initial complication screening in June 2005 and the time when the surveys began being administered in June 2006, 5% of the cohort had died. Due to some patients moving away from Port Vila it was difficult to follow up and administer the survey to the remaining 5%. The data generated from these surveys is currently being analysed at The Diabetes Unit, University of Sydney with help from a Health Economist.

# **Appendix 3**

## **Strategies for Closing the Gap**

# Examples of how to strengthen the system

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## **Strengthening Health Workforce**

- Identifying agreed competencies for the various levels of health workers relating to diabetes prevention and risk reduction, early diagnosis, management and patient education.
- Disseminating agreed clinical targets so that health workers at all levels are working with a standardised level of care.
- Developing and implementing a national health worker training program.
- Developing and implementing a national foot campaign.

## **Strengthening Health Services**

- Role delineation and identifying who can do the job or who can be trained to do it.
- Developing referral pathways and identifying when and where a patient needs to be referred to.
- Implementing diabetes kits at all health centres.

## **Strengthening Health Policy**

- Collection of epidemiological, economic and clinical information.
- Implementation of a computerised diabetes database system.
- Planning and coordinating the implementation of a model of diabetes care.