

# Telehealth in the Pacific Islands: a perspective and update from the Fiji School of Medicine

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## Abstract

The Fiji School of Medicine (FSM) has increased participation with telehealth/telemedicine in general, and specifically with the Pacific Public Health Surveillance Network (PPHSN) and the Western Pacific HealthNet (WPHNet), through the establishment of a WPHNet Centralised Triaging Service (CTS). The FSM Telehealth/Telemedicine Unit (FSMTU) will oversee the development of the CTS which is being closely coordinated with existing clinical consultation services provided through Project Aamai and the Tripler Regional Medical Center (TRMC). While the WPHNet CTS will initially be concerned with distance clinical consultation, the FSM mission encompasses community health and professional health education in a wide range of disciplines. Currently, WPHNet only serves the jurisdictions of the US-associated Pacific islands but with WPHNet CTS there will be an opportunity to include new member jurisdictions that do not have political affiliation with the USA. (eg Cook Is, Kiribati, Niue, Samoa, Solomon Is, Tonga, Vanuatu etc). In addition, although Internet technology is expanding rapidly in the region, the capacity for outside communication throughout the Pacific is quite varied. Very remote areas may currently

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only be able to communicate by using short wave radio. Others have telephone and/or fax while some have E-mail but not full internet capacity. The FSMTU will implement mechanisms to field requests through any of these communication avenues and so the WPHNet CTS will serve as a proxy for regional healthcare providers that do not have internet access.

## Introduction

Over the past couple of years there has been a lot of discussion throughout the Pacific about *telemedicine* or, more broadly speaking, *telehealth*. For the isolated islands of the Pacific the prospect of a technological solution to the relative isolation of health personnel is inviting. However development in the area of telehealth has been slow, and perhaps rightly so. While the potential for telehealth in the Pacific is considerable, the isolation of the Pacific countries and territories (PICTs), both physical and intellectual, and the constraints presented by various other factors, make the appropriate and sustainable development of telehealth services particularly challenging. Yet, there are solutions that depend upon collaboration among the many partners with interest in this area of development, and that require attention to integration and soundness of purpose and action.

In this paper we will provide a brief overview of telehealth, discuss the reasons why telehealth should be developed in the Pacific, and explore the major developmental issues involved. Additionally, we will reveal our vision as to how the Fiji School of Medicine (FSM) will take part in the continued development of telehealth in the region.

## What is telehealth?

While telehealth may be defined in different ways, the definition provided by the U.S. Office for the Advancement of Telehealth provides a definition that encompasses the breadth of activities envisioned within the Pacific.

Telehealth is the use of electronic information and telecommunications technologies to support long-distance:

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- clinical health care (*this alone might be defined as telemedicine*);
- *patient and professional health-related education* (and information);
- public health; and
- health administration.

This definition includes a variety of activities using different levels of information tools:

- contacting a distant specialist consultant on the telephone for an opinion,
- communicating with a health assistant on an outer island via high-frequency radio regarding a difficult clinical situation,
- seeking the critique of a research proposal from a public health professional through electronic mail,
- using a webpage on the Internet dedicated to the reception and triaging of clinical consult requests at a referral site,
- performing a search of the medical literature through the Internet,
- taking part in a live audio or video-conference as part of a distance education or distance consultation process, etc.

Clearly, while the type of telehealth activity dictates to a certain extent the level of sophistication required technologically, there are many different ways to accomplish a similar activity (e.g. contact a distant specialist by telephone, through email, via a dedicated webpage on the Internet, or via a live video-conference through a proprietary communications network). The choice taken depends on many factors e.g. available resources, services, and technical support; the interest, knowledge and skill of the user; the level of development of the health system, etc.

## Why should telehealth be developed in the Pacific?

There are a number of reasons why telehealth should be developed in the region. In general, these reasons relate to the isolation of health personnel in the Pacific, current limitations to the processes of distance consulting and distance education, the evolution of an enabling environment in the region for telehealth, regional telehealth networks that are ripe for expansion, and existing systems and patterns of consultation and referral that can be further developed.

Health professionals in the Pacific are challenged by both physical and professional isolation. The **physical isolation** in terms of distance from more developed jurisdictions is compounded by their populations being widely distributed on hundreds of small islands located in an immense expanse of ocean. Clearly, the physical isolation alone makes the provision of adequate health services to this scattered, mostly rural population, especially challenging.

Additionally, inadequate and/or inappropriate resources for the continuing education of health personnel, and for consultation with other health providers, results in **professional isolation**. Medical and surgical sub-specialty services and expertise is entirely unavailable in many Pacific countries. In general, local health providers in the region struggle within a system where communications are generally difficult, with significant barriers to obtaining information or specialty support to assist them in their attempt to address the problems that they confront. There are often significant barriers to what you would expect to be simple processes. Tasks that would be relatively simple for most health professionals in a developed setting (e.g. getting a specialist consultant on the phone, obtaining current treatment recommendations from a recent medical journal or text, accessing relevant continuing education opportunities, etc.) are virtually impossible for health professionals in some of the PICTs. These every-day limitations adversely affect the capacity to provide adequate and appropriate care, with an undoubtedly negative impact on the health of the community.

The challenges of the physical and professional isolation of Pacific health personnel often translates into specific **limitations to the processes of distance consulting and distance education**, namely inadequate professional contacts and excessive communication costs. Many health providers in the Pacific are unsure as to where or from whom they can seek specialist consultation or access distance education services. While there are existing patterns of consultation and referral in the Pacific, and some available distance education resources, individual providers are often unfamiliar with the mechanisms involved in accessing these potential resources. Additionally, excessive telecommunication costs (US\$2-4 per minute) often translate into administrative or fiscal barriers to telehealth.

While these limitations provide an argument for the development of telehealth in the Pacific, there are also several **positive factors encouraging the advancement of telehealth activities** that are contributing to the evolution of an enabling environment in the region for telehealth. These factors include existing regional networks that are ripe for expansion, existing systems and patterns of consultation and referral that can be further developed, and an increased awareness and interest in telehealth among regional and donor agencies.

A significant factor encouraging the advancement of telehealth in the region is the fact that there are two **regional telehealth networks** that have successfully provided services over the past few years, PACNET and WPHNet (Western Pacific HealthNet). Both of these networks work closely to encourage the appropriate and sustainable development of telehealth services in the region. Coordinators of both networks work closely in future planning and are committed to further mutual development. Both networks

co-sponsored the first Pacific Telehealth Conference in December 1998. A draft report on the conference can be found at [http://202.27.101.194/hcro\\_articles/9901/vol3no1\\_001.htm](http://202.27.101.194/hcro_articles/9901/vol3no1_001.htm).

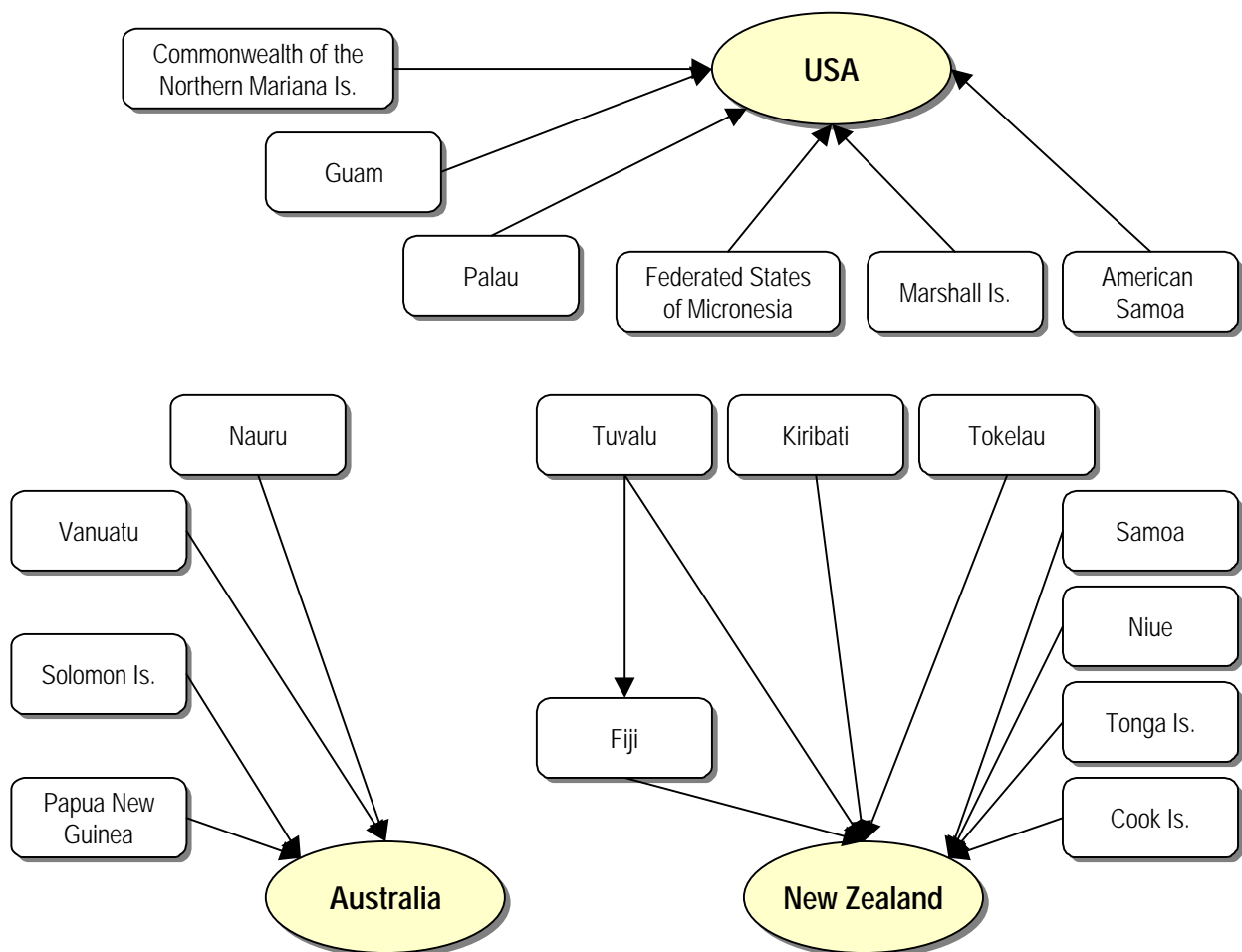
PACNET has served as an early warning system for communicable disease outbreaks in the region, and as a venue for discussion and assistance in broad areas of public health. PACNET is the communication tool of the Pacific Public Health Surveillance Network (PPHSN) which is a consortium of governmental and non-governmental entities dedicated to the development and support of public health surveillance activities in the Pacific. Members of the PPHSN include Pacific Ministries and Departments of Health, the World Health Organization (WHO), the Secretariat of the Pacific Community (SPC), the Fiji School of Medicine (FSM), regional laboratories, etc.

In contrast to PACNET, the WPHNet has primarily served as a source for distant consultation in clinical medicine for the U.S.-associated Pacific island (USAPI) jurisdictions. WPHNet is a telehealth initiative of the Pacific Basin Medical Association (PBMA) and is designed to promote distance

consultation and continuing education for health professionals in the Pacific. It works primarily through a webpage developed by Project Akamai at the Tripler Regional Medical Center (TRMC) in Honolulu and has proved itself as a responsive and viable service for the remote health providers of the USAPI. A demo of this web-based system can be accessed at <https://sweb.tamc.amedd.army.mil/pihcp/>.

Another factor encouraging the development of telehealth in the Pacific are **existing systems and patterns of consultation and referral** that can be further developed. As noted in Figure 1, the major Western powers in the Pacific – Australia, New Zealand and the USA - have functional mechanisms supporting consultation and referral in clinical medicine. Each of these countries spends millions of dollars each year in supporting these activities. As such, they are keen to find ways to improve the efficiency of these services. Indeed, the WPHNet/Akamai/TRMC web-based clinical consultation system noted above was a specific effort designed to do just that. It is anticipated that the need for further efficiency in providing these consultation and referral services will provide an impetus for the advancement of telehealth in the region.

Fig. 1. Existing patterns of consultation and referral in the Pacific



One other factor lending to an enabling environment for the further development of telehealth in the Pacific islands is the **increased awareness and interest in telehealth among regional and donor agencies...** the list of interested "players" grows steadily. Telehealth seems to be the "flavor of the week"! The rapid evolution of information technology, both globally and throughout the Pacific, is being looked at as a tool for development in the region and this enthusiastic perspective translates into considerable interest in the development of telehealth services. Just in the past two there have been a variety of conferences and meetings emphasizing the expansion of telehealth services in the region.

## What are the major developmental issues?

It is envisioned that telehealth can expand into a network of appropriate and sustainable services for the health professionals of the region. But what are the major developmental issues that must be addressed to make this a reality for the Pacific?

An initial consideration is that **developments in telehealth must be realistic in terms of current capacity.** The capacity for health providers and systems in the Pacific to take advantage of developments in telehealth is quite variable. However, there are clearly some general characteristics that must be kept in mind when planning development in this area.

Firstly, there is a significant degree of *computer illiteracy* among health personnel in the Pacific. The majority of health personnel in most of the Pacific countries are NOT computer literate. Many of them have absolutely no experience in using computers. While physicians are probably the most computer literate group of health professionals, we have found that as many as 50% of them are computer illiterate in any given jurisdiction.

This high proportion of computer illiteracy obviously has implications in regards to the development of telehealth in the region. Any development must have as its foundation the strengthening of capacity relative to basic computer skills and literacy. *Relevant training* in this area cannot be overemphasized. If the target personnel don't have the basic skills to use the equipment, and the specific skills to use the relevant applications, they obviously will be unable to take full advantage of any related developments.

Secondly, there is generally *very limited accessibility to computer equipment* among health personnel in the Pacific. Most health systems in the Pacific islands do NOT have computers accessible to their health personnel. The computers that are available tend to be *strictly* available to administrators only. Hence, even if health personnel have the necessary computer skills, they rarely have access to

computer resources within their work environment. Hence, any effort to make substantive advances in the area of telehealth must make a provision for *dedicated equipment* to be used by the health personnel that are being targeted.

It is also very important that developments address **fundamental needs of health personnel as they perceive them.** The perceived needs of the health personnel of the Pacific countries must be addressed if they are expected to take advantage of relevant developments in telehealth. Our experience has shown that these perceived needs, and most probably the actual real needs, are very much related to the relative isolation of health personnel in the Pacific... the need for *consultation* with other health professionals, often those with expertise not locally available, and the need for *education and information resources* not locally available.

Hence, telehealth resources must be developed that specifically address these needs... *distance consultation and distance education/information.* Both of these broad areas of support are applicable to health personnel in any area, be it health administration, public health practice or management, health-related research, nursing care, allied health provision, or clinical medicine.

We also believe that **developments in telehealth must be coordinated and integrated.** The existence of multiple developmental projects in telehealth throughout the region, or for that matter in any area of development, creates a very real potential for *duplication of effort* and the development of *incompatible technologies or activities.* The smallness of the Pacific countries and their subsequent tendency to network amongst themselves to gain operational efficiencies, makes these potential problems a very important consideration.

In order to avoid these problems it is essential that specific efforts be taken to coordinate and integrate efforts in the development of telehealth. We hope that WHO-WPRO (Western Pacific Regional Office) can play a key role in this area. Indeed, given its regional mandate, WHO-WPRO is ideally positioned to take on this task, perhaps through the organization and support of some sort of *regional coordinating or advisory committee* comprised of key individuals who are actively involved in telehealth activities, especially in the Pacific islands.

Obviously, it is important that any coordinating activity should involve the two major networks already involved in telehealth, the Pacific Public Health Surveillance Network (through PACNET and coordinated through SPC), and the Western Pacific HealthNet (WPHNet) coordinated through the Pacific Basin Medical Association (PBMA). We also think that the FSM, given its intimate links with both networks, and its active planning and development in telehealth, would also be represented in such an activity. Through this

type of coordination and integration we are likely to see a "networking of networks" in the Pacific that will increase the efficiency and utility of all related developments.

Finally, **developments in telehealth in the region must be sustainable.** There is a legacy in the Pacific of raised expectations and unsustainable development. These unfortunate occurrences are usually the result of poorly planned initiatives from the outside that do not *realistically consider the true needs* of the islands or the *capacity for maintenance and sustainability* of the initiative. To avoid such problems, local and truly collaborative involvement in the planning and implementation of the initiative is vital.

As suggested above, addressing *the fundamental needs of the target group* will enhance the sustainability of any initiative. If the initiative addresses the users needs, they will become active users of the developments that are realized and they will be strong advocates for its continued maintenance and sustainable use.

Additionally, the *long-term maintenance and support* needed to maintain the initiative must be considered. In regards to telehealth developments in the Pacific, this maintenance and support involves the technical maintenance of the equipment used; the maintenance, growth, and quality control of the services provided in distance consultation and in distance education/information; and the availability of adequate fiscal resources to support the overall activity in an on-going fashion.

Attention to each of these areas is vital to the development of a sustainable initiative. We believe that the increasingly widespread use of the Internet, its cost efficiency relative to proprietary satellite-based telehealth systems, and the rapid development of Internet-based applications, make *the Internet an ideal medium for the development of telehealth activities in the region.* While there is a need to address services in the Pacific islands for those who will not be able to access computers or the Internet, we think that the Internet should be the basic medium through which services are developed. With some planning and the specific development of proxy mechanisms, those who are unable to directly access the Internet can be provided access to relevant services.

## Telehealth in the Pacific and the FSM

We at the Fiji School of Medicine (FSM) are very interested in playing a significant role in the development of appropriate and sustainable telehealth services in the region. We are interfacing with various regional entities in regards to these developments, most notably WHO, SPC and the PBMA. Additionally, we have established the **FSM Telehealth Unit** and are actively seeking fiscal support to allow us to organize specific distance consultation services (in public health, allied health and clinical medicine) and specific

distance education and information opportunities for health personnel throughout the Pacific.

Through the FSM's establishment of a **centralized triaging system** that calls upon the services of specialist consultants from a variety of institutions throughout the Pacific, it is hoped that we will be able to expand the services of the WPHNet to the many Pacific jurisdictions not currently served. Furthermore, it is planned that the FSM will use the expanded range of the WPHNet as a venue for the provision of expanded services to the remote Pacific island jurisdictions that are the homes of many of its graduates. This expanded scope of services is planned to include consultation in the areas of public health, research methodology, and the allied health fields, as well as a variety of other distance learning and continuing medical education activities.

As part of our planning we are specifically working with WPHNet and PITA (the Pacific Islands Telecommunications Association) to develop a **FSM/WPHNet/PITA Pilot Telehealth Project.** This pilot project provides a "proof of concept" of a conceptual system for the provision of telehealth content, and of a technical delivery system. The initial Pacific countries being targeted for this pilot project are Fiji, Tonga, Samoa, the Cook Islands, and perhaps Niue.

The proposed content for this project will involve a "**telehealth backbone**" that will be Internet-based and will be designed around a "**one-stop-shopping webpage**" through which users will be able to access services in three main areas distance consultation services, distance education services, and distance health information services. The proposed technical delivery system for the FSM/WPHNet/PITA Pilot Telehealth Project involves the assessment of a variety of mechanisms to provide Internet access to the potential users of the system. While Internet services in the region are becoming increasingly available, there is still considerable variability as to their availability, cost and associated bandwidth. Ideally, services would be made available to health providers in a variety of settings, with a clear attempt to provide services in areas where they are currently unavailable (e.g. more remote hospitals/health centers/dispensaries with or without electricity where there currently is no Internet service).

## Conclusion

There is a significant potential in the Pacific for the development of appropriate and sustainable telehealth services. If we are able to work collaboratively, and fully consider the various factors involved, we can work together for the benefit of the region... may it be so.

## References

Available from the authors on request

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