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Review Article

Establishing pediatric surgical services in emerging countries: What the first world can learn from Vanuatu

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ABSTRACT

Introduction: Conventional surgical aid to emerging countries often does little to build capacity or infrastructure. An evolving model in the South Pacific has been designed to promote local expertise by training local surgeons to a high standard and helping establish sustainable pediatric surgical services in those regions. This review identifies the key elements required to improve and expand local specialist pediatric surgical capacity in Vanuatu. It highlights some of the challenges that face external agencies in helping to create sufficient local infrastructure to achieve these goals and describes how the impediments can be overcome.

Methodology: We conducted a review of the program that provides a sustainable pediatric surgical service to the small and poor Pacific nation of Vanuatu through the involvement and support of the Pacific Island Project administered by the Royal Australasian College of Surgeons.

Results: A needs assessment must be done from the recipient's perspective and can be achieved by collaboration between an external agency and existing local surgeons. The key to a sustainable service is identifying and training high quality young indigenous doctors early and providing mentorship and support, including after their return. A sustainable and viable service requires an adequately resourced position for the new surgeons(s) within a framework of a long term strategic plan for the specialty and adequate infrastructure in place on their return. Development of rapport with government and influencing strategic health priorities is a prerequisite of a new national specialty service.

Conclusions: (1) Establishing long term viable pediatric surgical capability can only be achieved through the local health system with local leadership and ownership. (2) Internal capability includes governance, alignment with ministry of health priorities and policies, and effective clinical leadership. (3) Selection of person(s) to be trained is best done early, and he/she must be supported throughout training and afterwards. (4) Long term dependence on a single person makes the service vulnerable. (5) Ultimately, a service configuration that ensures children have timely access to quality specialist advice and which reflects the needs of the population is the main determinant of clinical outcomes.

There are huge inequities in the percentage of GDP (Gross Domestic Product) devoted to health and even larger differences in the dollar amounts provided to health services (Table 1) [1]). In low income countries, all specialties are affected, including pediatric surgery. Not surprisingly, these inequities influence clinical outcomes. But the problems affecting the poorer and emerging nations extend well beyond resourcing of services and the facilities and equipment that they require [2]. Some of the factors that influence clinical outcomes in pediatric surgery (and every other surgical specialty) are outlined in Table 2—many of these are taken for granted by first world countries but elsewhere they may be critical determinants of success. Many wealthier nations have been generous in offering support to less privileged nations in the form of financial aid, donation of equipment, and aid visits to conduct surgery and on site teaching. Yet, in recent years, the value of much of this support has been questioned [3,4], and led to some refinements in the paradigm around which support is offered and how its effectiveness and value is measured [5,6].

Vanuatu is geographically remotely located between the Solomon Islands and New Caledonia. It is comprised of 83 islands spread over a broad area of the Pacific (Fig. 1). Travel between many of the islands is difficult and mainly reliant on sea transportation, often in small boats and non-passenger vessels. It may take several days for children with acute surgical conditions to reach its capital Port Vila, where the main hospital is located. The country has a small GDP, and as a consequence has a modest health budget (Table 1). Its population is 264,000, of which 40% are under 15 years of age. The population growth rate is 2.6% per annum (third highest in the South Pacific) and the infant mortality 34/100,000. The population is sufficient to necessitate secondary services in pediatric surgery, but probably insufficient to be able to

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Table 1
Health expenditure as a percentage of GDP and in $US per capita in 2011.

Country	%GDP	$US/capita
USA	17.9	8233
Sweden	9.4	3758
Australia	9.0	3670
Vanuatu	4.1	210
Sri Lanka	3.2	149
Pakistan	2.2	57
Somalia	? > 0.0	? > 0

support a full scope of independent tertiary services, such that some ongoing reliance on Fiji or New Zealand for the more complex cases is likely. Vila Central Hospital is the main hospital in the country, and is situated about 1 km from the business district of Port Vila on the island of Efate. It has two indigenous surgeons and two small operating theater. Despite limited equipment they function well and are sufficiently equipped to do most pediatric surgical procedures. Linked services, such as pathology and imaging are more rudimentary. There is no emergency transport system. An hour to the north by plane, there are good operating facilities at Santo (a more modern facility built by the French), but these are underutilized and not currently equipped to perform surgery in children, and there are no resident surgeons. This report reviews the principles behind an initiative to improve the capability of pediatric surgical services in Vanuatu.

1. Methodology

We conducted a review of the program that provides a sustainable pediatric surgical service to the small Pacific nation of Vanuatu was conducted, through the involvement and support of the Pacific Island Project administered by the Royal Australasian College of Surgeons.

This review identified the key issues and impediments that affected provision of a long term viable pediatric surgical service, and proposes some solutions on how the problems (which are not unique to this nation) may be overcome.

2. Results

The Royal Australasian College of Surgeons Pacific Island Project (PIP) has been offering surgical support to the South Pacific since 1995 under funding support of the Australian Government. Between 1995 and 2013, PIP has provided 799 clinical visits to Pacific Island countries, including the Cook Islands, Fiji, Kiribati, Nauru (from 2001), Micronesia, Marshall Islands, Papua New Guinea (between 1995 and 1998 only), Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Between 1995 and 2013 PIP has provided 36 pediatric surgical visits to Fiji, Solomon Islands and Vanuatu. During this period, there were 694 consultations and 465 operations on children as part of PIP visits to these three countries. The main achievement has been to establish one or more Pacific surgeons with an interest in pediatric surgery as a sub-specialty in each of these countries, a consequence of the priority of all PIP pediatric surgery visits which has been to provide mentoring/skill development for identified local counterparts.

Table 2
International determinants of clinical outcomes in pediatric surgery.

GDP (gross domestic product) of country
Dollar amount spent on health
Quality of undergraduate and postgraduate training programs
Need for local trainees to acquire some training overseas
Availability of specialist positions in home country once training is completed
Quality of linked services, e.g., radiology, pathology, and anesthesia
Political commitment, alignment of services with national priorities and policies, governance
Professional collegial support (often absent or limited in emerging countries)
Staffing levels in related specialties and linked services
Support of clinical leadership
Equipment and resources
Configuration of regional services (including accessibility of service to community)

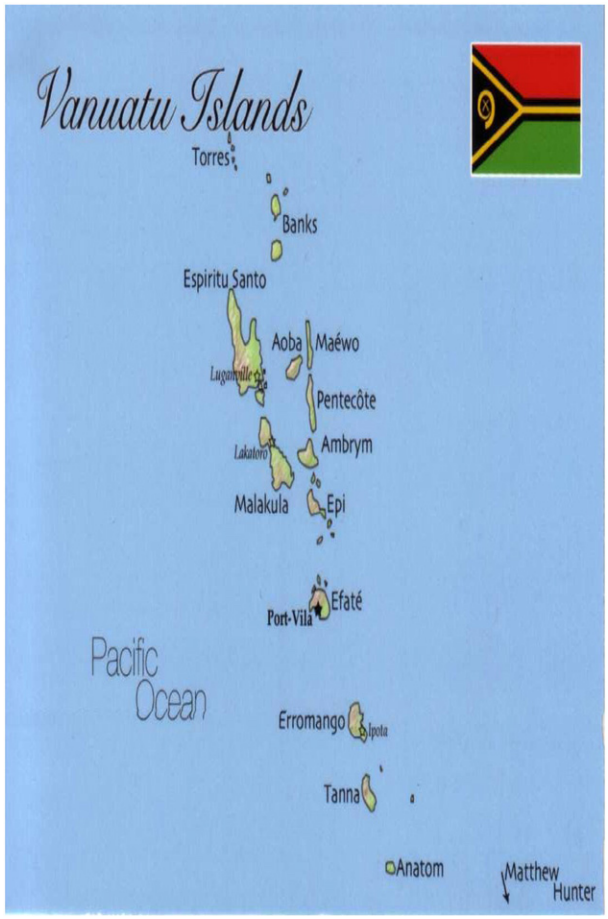

Fig. 1. The islands of Vanuatu cover a broad area of the South Pacific. It may take several days (or longer) for a child with a surgical condition from Torres or Banks to reach Port Vila by boat.

Vanuatu provides a typical example: the basic infrastructure required to provide a locally-led pediatric surgical service has included the training in New Zealand of a highly talented Vanuatu surgeon who has recently returned to the country. The strategic plan for Vanuatu makes provision for a second surgeon to be trained in pediatric surgery, as well as the overseas training of a pediatric anesthetist, and a further 3 pediatric nurses. The newly established service will provide regular 2–3 monthly clinics (and training) to the outer islands, initially to Santo in 2014 and subsequently to Tanna also. It is proposed to establish a high dependency unit at Port Vila. Clear referral pathways and clinical guidelines for use throughout the country are being developed and modified from Canterbury District Health Board guidelines for house surgeons and registrars Ref 373, clinical pathways in pediatric surgery and parent information brochures from the Child Health Web site [7].

3. Discussion

It is not easy for lower income countries with limited health resources to provide high quality specialty services with equity of access and consistently good clinical outcomes. For a start, they may have no or only a rudimentary specialty training program. Indeed, the country may have neither the population nor the resources to even have its own undergraduate program: the University of the South Pacific and now the Fiji National University, based in Fiji, provides the undergraduate medical training for students from Vanuatu. As a consequence, for countries with a similar population and resources to Vanuatu,