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Surgical capacity building in Timor-Leste: a review of the first 15 years of the Royal Australasian College of Surgeons-led Australian Aid programme

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Abstract

Background: Timor-Leste suffered a destructive withdrawal by the Indonesian military in 1999, leaving only 20 Timorese-based doctors and no practising specialists for a population of 700 000 that has now grown to 1.2 million.
Methods: This article assesses the outcomes and impact of Royal Australasian College of Surgeons (RACS) specialist medical support from 2001 to 2015. Three programmes were designed collaboratively with the Timor-Leste Ministry of Health and Australian Aid. The RACS team began to provide 24/7 resident surgical and anaesthesia services in the capital, Dili, from July 2001. The arrival of the Chinese and Cuban Medical Teams provided a medical workforce, and the Cubans initiated undergraduate medical training for about 1000 nationals both in Cuba and in Timor-Leste, whilst RACS focused on specialist medical training.
Results: Australian Aid provided AUD$20 million through three continuous programmes over 15 years. In the first 10 years over 10 000 operations were performed. Initially only 10% of operations were done by trainees but this reached 77% by 2010. Twenty-one nurse anaesthetists were trained in-country, sufficient to cover the needs of each hospital. Seven Timorese doctors gained specialist qualifications (five surgery, one ophthalmology and one anaesthesia) from regional medical schools in Papua New Guinea, Fiji, Indonesia and Malaysia. They introduced local specialist and family medicine diploma programmes for the Cuban graduates.
Conclusions: Timor-Leste has developed increasing levels of surgical and anaesthetic self-sufficiency through multi-level collaboration between the Ministry of Health, Universidade Nacional de Timor Lorosa'e, and sustained, consistent support from external donors including Australian Aid, Cuba and RACS.

Introduction

Timor-Leste only achieved independence in May 2002, following 400 years of colonial occupation by Portugal and 24 years of military occupation by Indonesia that ended with destruction of infrastructure. Few nations in recent times have had the opportunity to build a health service on what was effectively a blank canvas. With strong internal leadership and many supportive international partners, Timor-Leste has taken substantial steps towards creating a new independent health system.[1] Australia has been a major long-term partner in surgical capacity building with an Australian government funded programme managed by the Royal Australasian College of Surgeons (RACS) since 2001. This article reviews the progress that has been made in surgical capacity building in Timor-Leste, the contribution of the Australian Aid programme and illustrates the value of consistent and sustained support over a 15-year period in achieving outcomes and making an impact.

Methods

The information contained in this article is based upon programme reports of the Australian East Timor Specialist Services Project (AETSSP) and Australian Timor-Leste Program of Assistance for Specialty/Secondary Services (ATLASS), the inception report of the initial scoping mission and Timor-Leste Ministry of Health (TLMOH) documents including health sector planning strategy documents. Additional reference material includes surgical log books, personal documents, correspondence, presentations and an honours thesis.[2] These were reviewed for details of inputs, outputs and outcomes.

The discussion and conclusions are based upon these sources and personal reflections of the authors. The opinions of many individuals who were directly involved with the AETSSP Project and ATLASS Programs have been sought to support the discussion and conclusions.

As an indicator of capacity building outcomes, we document the career progression of Timorese personnel who have received training support under the Australian Program. We also reviewed logbooks of the clinical service provided including the supervision level of national doctors in specialist training. A person is considered to have received significant preparatory clinical support if they performed clinical work under the direct supervision of the ATLASS specialists in the period prior to entering a training programme. Scholarship support is considered positive if significant funding was provided for the purposes of specialist training. Post qualification mentoring is considered positive if an individual receives collegial support for ongoing skill development once they return to Timor-Leste and/or financial support for ongoing education such as participation at conferences or further training courses.

Results

RACS involvement in surgical care delivery and surgical training in Timor-Leste

History reveals that in the 400 years preceding 1999, Timor-Leste had been a self-governing nation for a mere 9 days. After 24 years of resisted occupation and the abrupt destructive withdrawal of the Indonesian military, Timor's health system was largely disrupted and dysfunctional. Whilst hospital buildings were still intact, the majority of the skilled mainly Indonesian medical workforce had fled the country and medical equipment had been either removed or fallen into disrepair. In a country recovering from the ravages of human conflict it was important to quickly establish a civilian medical service which was initially provided by the International Committee of the Red Cross in Dili and Médecins San Frontières in Bacau. When International Committee of the Red Cross exited in 2001, they handed responsibility of the health system to the United Nations Transitional Administration for East Timor.[1]

Australia had already been prominent by leading the United Nations Peacekeeping force into Dili, but was now embarking on establishing longer-term assistance programmes. The initial scoping mission tasked to the RACS identified a medical workforce of only 20 doctors for the entire country and no specialists undertaking clinical work. The population then was estimated to be 700 000, now grown to 1.2 million. The AETSSP was one of five health projects initiated during that time; the others addressed needs in HIV, oral health, mental health and ambulance services.

Since gaining independence, Timor-Leste has evolved through three overlapping phases of health system development. The first phase (2001–2004) was one in which specialist services were largely delivered by expatriates, the second phase was characterized by expanded international support to send Timorese doctors for specialist training (2005–2010), and a third phase (since 2011) when specialist trainees returned to provide clinical services and assume leadership positions within their health service.

The period of early independence was characterized by surgical support from two major programmes, the AETSSP and the Catholic Organization for Relief and Development Aid, a Dutch-based Catholic Organization, which also provided a resident surgeon to Dili Hospital. The Australian surgeon and the late Dr Taco Walbheim provided surgical service in Dili for the entire country. There was an Australian military hospital but this did not provide service to the Timorese population except in circumstances of dire need as a humanitarian act. From 2002, Dr Philip, employed directly by the TLMOH, provided a surgical service in Bacau in the eastern part of the island.

The next period of expanded international support was characterized by the contributions of the Cuban Medical Brigade and Chinese medical teams, which brought specialists to Dili National Hospital and almost overnight increased the specialist workforce in surgery from two surgeons to over 20 including subspecialists. The Cuban contribution at its peak included over 200 doctors to all regions. Such an expanded international workforce provided both opportunities and challenges during this period. Timor-Leste became a cacophony of different languages, medical cultures and health paradigms, though the additional workforce freed up the national Timorese doctors to pursue specialty training outside their country. It was challenging for case note documentation, and for Timorese junior doctors to comprehend advice and explanations in so many languages.

The third phase from 2011, the period of returning Timorese specialists, saw a transition in health care leadership as Timorese doctors returned as specialists. During this phase, the Timorese specialists started to provide independent clinical services and assume managerial roles in the health system.

The key elements in the first 5 years of RACS engagement (AETSSP) were the two resident clinical specialists, a surgeon and anaesthetist, supported by a series of short-term visits of subspecialty teams aimed at dealing with elective surgery (Tables 1,2); flexible funding to provide support for equipment, biomedical engineering and capacity building and a short-term focus on clinical service with a longer-term intention of capacity building. The capacity building focus identified national doctors and nurses suitable for training by the Australian specialists, and supported through further educational programmes. AETSSP was funded by AusAID with $3.6 million over 5 years (2001–2006). Two independent reviews of the project led to redesign and renaming: as the ATLASS Program from 2006 to 2012 (with $8.1 million for 5 years and 9 months), and ATLASS 2 from 2012 to 2016 ($8.7 million for 4 years). The term ATLASS will be used hereafter to refer to the entire period of AETSSP and ATLASS 1 and 2.

Table 1 Resident specialist activity

Category of specialist	Number of specialists contributing	Number of procedures	Cumulative time of clinical service (weeks)
Resident Dili general surgeon (LTA)	10	5449	726
Resident Dili orthopaedic surgeon (LTA)	3	384	113
Resident Dili anaesthetist (LTA)	4	9844	726
Resident Dili obstetrician and gynaecologist (LTA)	3	713	200
Resident Dili emergency physician (LTA)	3	NA	317
Resident Dili paediatrician (LTA)	1	NA	200
Ophthalmology (LTA)	3	991	156

LTA, at least 2 months or more over 15-year period, including those who did multiple locums.

Over the 15 years, Australia's assistance programme has undergone considerable change, with greater focus on both delivery of and developing local capacity for postgraduate medical education with increased teaching activities and clinical service better utilized for training. To support in-country postgraduate education, the ATLASS specialist contingent was expanded to include an emergency physician, orthopaedic surgeon (for 1 year), an obstetrician and a paediatrician to focus on specialty training.

Throughout the 15 years, the uninterrupted presence of a long-term resident surgeon and anaesthetist meant that there was full time, consistent and sustained teaching and mentoring in an apprenticeship style manner with a favourable teacher to student ratio. The Timorese doctors worked alongside the international specialists in the role of registrars. During the early phase, there was significant skills transfer to national doctors and nurses and in many ways this was a highly successful component of the programme. However, with so few doctors in Timor, selecting specialist trainees from such a small pool meant that there was no competitive process, and any doctor expressing an interest in surgery was given an opportunity.

During the early years, the higher educational sector of Timor-Leste had not yet developed with no recognized universities or other educational institutions providing postgraduate education. There was no medical board established and a national workforce strategy was yet to be developed by the Ministry of Health.

Table 2 Visiting specialist teams to Timor-Leste from Australia and New Zealand

Surgical specialty	Number of trips	Procedures	Cumulative weeks
Ophthalmology	60	4313	53
Plastic	37	1212	33
Orthopaedic	28	355	24
ENT	29	410	26
Paediatric surgery	14	154	12
Paediatric cardiothoracic surgery	8	29	7
Urology	9	112	8

Later, enrolment in established training programmes outside the country was seen as the best option, and was facilitated by international assistance, and the arrival of Cuban doctors who took on much of the burden of clinical work in both Dili and the districts. The external training had to be appropriate for the tropical disease spectrum and resources for treatment encountered in Timor-Leste, as well as being provided in an appropriate language and culture. For many of these reasons, Australia was not a good fit for specialty external training, although certain courses such as the RACS Surgical Skills (Australian and New Zealand Surgical Skills Education and Training) and the Australian and New Zealand Burns Association burns courses were useful. Papua New Guinea, Fiji and Malaysia were the most appropriate but the training was conducted in English. In Malaysia, Bahasa Melayu was similar enough to Bahasa Indonesia to overcome language barriers, but the academic standard was often difficult for Timorese doctors to meet. Indonesia was appropriate for language and social culture but medical training is provided in a very hierarchical approach that challenged the Timorese trainees so that some of the 12 doctors, who pursued specialty training in Indonesia, gave up.

From 2010, many Timorese doctors, trained in Cuba's Latin American Medical School (Escuela Latinoamericana de Medicina), started entering the health system with 819 new doctors graduated to date, and there will be just over 1000 by the end of 2017.[3,4] With this rapid increase in doctor numbers there was a need for ATLASS to develop in-country training pathways and more broadly address the postgraduate medical training requirements of Timor-Leste. Starting from postgraduate diplomas in Surgery, Anaesthesia and Paediatrics at Hospital Nacional Guido Valadares in 2013, an integrated programme was developed based on a common foundation year (Family Medicine Programme Year One) focussing on prevocational clinical skills leading directly to mid-level postgraduate diploma programmes. Postgraduate diplomas are available in Surgery, Anaesthesia, Paediatrics and Family Medicine with the first Family Medicine graduates due to graduate in 2016. In-country specialist training (4 year MMed) is underway in paediatrics. In parallel with the training of individual doctors ATLASS has been able to work closely with the returned Timorese specialists to develop their skills as medical educators, which along with the range and number of training programmes underway has contributed to the development of Hospital Nacional Guido Valadares as a teaching hospital and to the ability of Universidade Nacional de Timor Lorosa'e to deliver postgraduate medical training.

Discussion

Measuring the success of an aid programme is not easy. Recent literature supports the metrics of disability-adjusted life years or quality-adjusted life years, which endeavour to compare the benefits of health interventions as diverse as surgical procedures and immunization programmes.[5–7] However, the value of an entire programme is far more challenging to quantify when the intervention involves the training of practitioners who may go on to give a lifetime of independent service to their country and who in turn may

Table 3 Timorese doctors achieving specialist training with support of ATLASS Program

Specialty type	Number of candidates	External training country	Current position
General surgery	4	PNG (two), Fiji and Indonesia	One clinical director HNGV Two general surgeon HNGV One general surgeon Baucau
	1	PNG	Currently in training UPNG: 2 years in PNG and 2 years in HNGV
	1	Indonesia (withdrew from specialist training and received local in-country specialist training in burns and cleft surgery)	Clinical practitioner with special skills in HNGV-burns and cleft lip surgery
Ophthalmology	1	Australia	Consultant ophthalmologist
Anaesthetics	1	Fiji	Director of anaesthetics HNGV and supervisor of anaesthetic diploma course
	2	Fiji	Currently in training with Fiji National University but 2016 posting to Dili
O&G†	1	Malaysia then PNG	Training currently incomplete
Orthopaedic	1	Malaysia	Head of surgery HNGV Orthopaedic surgeon HNGV

†Also Dr José Antonio Gusmão Guterres obtained MMed O&G from UPNG in 2011 (WHO funding) and is currently the director of HNGV. ATLASS, Australian Timor-Leste Program of Assistance for Specialty/Secondary Services; HNGV, Hospital Nacional Guido Valadares; O&G, obstetrician and gynaecologist; PNG, Papua New Guinea; UPNG, University of Papua New Guinea.

be responsible for training others. When assessing the outcomes of ATLASS there are a number of other measurable outcomes that point to success in capacity building.

ATLASS has been instrumental in the training of a number of Timorese doctors and nurses to achieve specialist qualifications (Table 3). The contributions from the AETSSP/ATLASS Program include supervising preparatory clinical experience, in-country postgraduate training, scholarships for training through external training institutions and post qualification mentoring. ATLASS has contributed to over 100 enrolments into postgraduate medical education. Seven doctors were fully funded throughout their training, achieving postgraduate specialty qualifications and have returned to take up clinical and leadership roles.

A retrospective audit looking at three 1-year periods revealed a significant increase in the number of surgical procedures under the supervision of ATLASS involving a Timorese trainee, from 10% (2001) to 51% (2006) to 77% by 2010.[2] In 2016, Timorese involvement exceeds 90%.

ATLASS led the establishment of a nurse anaesthetic training programme in 2004/2005 under the auspices of the TLMOH and the National Institute for Health Sciences. Over 4 years, the programme trained a total of 21 nurse anaesthetists, 18 of whom remain in post 10 years later. Currently, there is a nurse anaesthetist in each hospital in Timor-Leste where surgical capacity is required and over 95% of all anaesthetic procedures given in Timor-Leste during 2010 were administered by these nurse anaesthetists. This is a significant achievement of sustainable capacity building, meeting the country's expressed priorities and strengthening its institutions.

The equivalent in-country training programme for surgery and the other areas of need have been more challenging to achieve. Four diploma courses have now been developed in the specialities of Surgery, Anaesthetics, Ophthalmology and Paediatrics. These are 18-month training programmes offered through the Faculty of Health by Universidade Nacional de Timor Lorosa'e, supported by the TLMOH. The ATLASS Program specialists with Timorese and Cuban counterparts developed the curriculum. External examiners from University of Papua New Guinea and the Fiji School of Medicine (Fiji National University) ensure standards. One or 2 years of the University of Papua New Guinea and Fiji National University Master of Medicine Programs may now be done in Dili, because the returning successful specialist graduates are able to supervise candidates.

All aid programmes ultimately should aim to improve the long-term health of the country's population. Today Timor-Leste only has a low surgical volume of 634/100 000,[8] and there is much progress to be made if most of the population of 1.2 million is to access safe surgery and anaesthesia when needed.[9] The surgical anaesthesia obstetric trained physician provider number, one of the recommended Lancet Commission for Global Surgery metrics, is a low 1/100 000 though this would almost reach three with the addition of the 21 nurse anaesthetist graduates.[10] However, it is only in very recent literature that an assessment tool for assessing the surgical burden of a country's population has been developed and piloted in low income countries such as Sierra Leone and Rwanda.[11–13] This work has yet to be done in Timor-Leste but should form an important part of the monitoring and evaluation for future programmes and can contribute to the body of evidence regarding the global burden of surgical disease that has hitherto been underestimated.[14,15] Whilst the capacity building outcomes of an aid project are difficult to quantify, the issue of cost effectiveness is even more difficult. Has Australia received good value for its aid dollar under this programme? How many disability-adjusted life years averted or quality-adjusted life years should be attributed to the training of a fully qualified specialist or the development of a sustainable training programme? A meaningful quantified comparison is not yet possible but qualitatively it appears the ATLASS Program has been successful through the independent specialists who are both able to provide clinical services and to contribute to the training of the another generation.

The provision of just over 1000 medical graduates through the Cuban Escuela Latinoamericana de Medicina training

programmes[3,4,16] both in Cuba and Timor-Leste has generated a substantive junior medical workforce. Many of these will serve their nation as generalists, but there will also be some who become specialists in the future.

In conclusion, the first 15 years of independence Timor-Leste has increased capacity in surgery and anaesthesia as well as developing a Timorese-led clinical service. A decade of Cuban-directed medical training has produced almost 1000 doctors. Australia's Aid programme, funded by the Australian government and delivered by RACS, has made a significant contribution to specialist capacity building with tangible outcomes in the form of trained Timorese specialists as well as access to and the development of postgraduate training programmes. During the delivery of the ATLASS Program, there have been many challenges and these may provide salient lessons for the future delivery of health capacity building and health workforce development programmes in low and middle-income countries.

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