



# Capacity building in emergency care: An example from Madang, Papua New Guinea

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## Abstract

- Background:** Divine Word University (DWU) is an emerging national university of Papua New Guinea (PNG) based in the provincial capital of Madang, providing training for Health Extension Officers (HEOs). HEOs form the backbone of healthcare delivery in PNG as clinicians, public health officers and health centre managers. Both campus-based and clinical teaching at the nearby Modilon Hospital is limited because of significant resource constraints.
- Objective:** This article describes a visiting clinical lecturer programme in which Australasian emergency physicians and emergency registrars deliver teaching to HEO students at DWU and Modilon Hospital.
- Methods:** Volunteer doctors are briefed pre-departure and given prepared educational tools. Visits are from 2 weeks to 3 months, and include the possibility of accredited training for emergency registrars through the Australasian College for Emergency Medicine. DWU provides secure accommodation and assistance with travel and visa logistics. Tasks for visiting lecturers include delivering campus-based teaching on emergency medicine (EM) topics, structured and opportunistic bedside tutorials, and clinical teaching and assistance with ED care alongside local EM clinicians.
- Discussion:** Programme evaluation has relied on qualitative feedback, which has been positive from all stakeholders. Visiting lecturers gain teaching skills and insights into the challenges of emergency healthcare delivery in an international, resource-constrained setting. Local staff receive assistance and support as well as learning new teaching skills. Students receive increased interactive learning opportunities.
- Conclusion:** This programme provides positive models of both emergency care capacity building in a resource-constrained setting and training in international EM for Australasian clinicians.
- Key words:** *capacity building, educational activity, emergency medical service, international educational exchange.*

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## Background

### Country context, health issues and the Divine Word University

An estimated 80% of Papua New Guinea's (PNG) 6–7 million people live in rural and remote areas and encompass great cultural and linguistic diversity.<sup>1</sup> Health challenges include some of the worst maternal and infant mortality in the world, low life expectancy, rapidly increasing rates of HIV/AIDS and still unacceptably high mortality from tuberculosis, malaria and simple infections.<sup>2</sup> Violence and trauma is a leading cause of death and disability, although significantly underreported.

Divine Word University (DWU) is an emerging national university of PNG based in the provincial capital of Madang, with smaller campuses in Port Moresby, Mt Hagen and Wewak.<sup>3</sup> DWU Health Faculty offers a 4-year Bachelor of Rural Health, graduating approximately 60 Health Extension Officers (HEOs) annually. HEOs are fundamental to clinical healthcare delivery in PNG, servicing rural hospitals and health centres, often working as sole clinicians, public health officers and health centre managers.

The Rural Health Department within the DWU Health Faculty is responsible for delivery of the HEO training. Senior Medical Officers (SMOs) at Modilon Hospital (Madang, PNG) assist with bedside and clinical teaching. Both these tasks face significant resource challenges, such as insufficient staff number and skills, heavy clinical workload and limited educational tools.

Modilon Hospital is the key referral hospital for Madang Province and serves as the teaching hospital for the Rural Health degree. Aside from clinical teaching, the hospital's core work of clinical service delivery to the people of Madang town and provincial areas is also challenged by limited resources. A PNG emergency physician (VA) is currently developing the ED at Modilon supported by the broader network of PNG and Australasian emergency physicians (EPs).<sup>4</sup> A DWU-employed doctor (CM) is responsible for coordinating clinical teaching delivered at Modilon Hospital as well as the emergency medicine (EM) component of the Rural Health curriculum, which includes lecturing in EM as well as other medical sciences.

Students enrolled in the Rural Health degree at DWU come from all regions of PNG. The university prides itself on prioritising access for students from rural areas and for inclusive selection policies. As edu-

cation at all levels in PNG is becoming increasingly expensive and therefore exclusive, access to higher learning for the rural poor is unfortunately limited. Fees for the Rural Health degree are around PGK 7000–8000 per year (approximately A\$4000), with only partial government and university subsidisation for a proportion of students. Acceptance into the Rural Health degree is competitive with most students selected after a successful final secondary school year, and some already having achieved an undergraduate science or nursing degree. Students are under pressure to succeed at DWU because of the expense of the course (which many families endure poverty to finance) and because of the limited access to higher education in PNG.

Emergency medicine has developed as a specialty in PNG with the assistance of Australasian EPs<sup>5,6</sup> with the aim of producing skilled hospital generalists.<sup>7</sup> An understanding of EPs as 'specialist generalists' provides a useful framework for broader activities that build capacity in emergency care in PNG.

### Impetus for programme

The visiting clinical lecturer programme (VCLP) emerged from a sabbatical placement by GAP at DWU in 2009, during which a comprehensive analysis and development report on the Rural Health degree was undertaken.

A precedent for collaborative support in EM at DWU had been established since 2005 with the development of the Advanced Diploma in Emergency Medicine by Dr Sandra Rennie<sup>8</sup> and first successful graduates in 2008.<sup>9</sup> As a result of this programme, as well as other EM short-course delivery programmes,<sup>10,11</sup> a large number of Australasian EPs have assisted in teaching and peer-support activities.

The DWU campus is both secure and beautiful, and therefore provides a good site for introducing clinicians unfamiliar with PNG to this unique yet potentially challenging environment.

### Proposal development and key stakeholders

The VCLP was devised and implemented in 2010, with plans for ongoing support and expansion in 2011 and beyond. EPs and advanced trainees in EM (emergency registrars – ERs) visit for durations from 2 weeks to 3 months. For ERs visiting for 3 months, time can be

accredited towards training (as Special Skills Category C), with VA acting as the local supervisor alongside the remote FACEM supervisor.

At DWU, responsibility for visiting doctors rests with the Health Faculty Dean, Rural Health Head of Department and Clinical Unit Coordinator in EM (CM). At the Modilon Hospital, responsibility is taken by the SMO for EM (VA).

As one of the key principles underlying this programme is to not deplete already stretched local resources, the visiting doctors do not take a salary from DWU, and provide their own travel expenses. DWU is required to provide secure accommodation and if no kitchen is provided, then to assist with provision of meals at the staff dining room.

## Aims

The VCLP has the principal purpose of improving capacity for emergency care through the dual aims of supporting education and clinical service in PNG as well as providing opportunity and experience in international EM for Australasian clinicians. Specific objectives for both of these aims are included in Boxes 1 and 2.

**Box 1. Objectives of the visiting clinical lecturer programme for emergency care capacity development in Papua New Guinea**

- Delivery of high-quality, evidence-based and contemporary teaching of basic and clinical health science topics for Rural Health students, including hospital-based clinical skills teaching
- Provision of professional development opportunities for Health Faculty staff to update and enhance their own knowledge and teaching skills
- Provision of practical support and assistance with the heavy teaching and clinical workload for both Divine Word University and Modilon Hospital staff, therefore allowing them greater time and flexibility for other work-related tasks
- Assistance with the further development of the ED and other clinical services
- Provision of teaching and exam preparation for local advanced trainees in emergency medicine (through the University of Papua New Guinea, Masters of Medicine, Emergency Medicine (MMedEM) programme based at Modilon Hospital)

**Box 2. Expected outcomes for visiting clinical lecturers**

- Expansion and enhancement of academic and clinical teaching skills and experience
- Exposure to new academic, clinical and cultural environments
- Professional and personal satisfaction and refreshed attitudes and practice
- Opportunities to develop long-standing friendships and professional networks

## Programme delivery (methods)

### Structure

The majority of EM teaching for HEO students occurs during the second and third years of the 4-year Rural Health Bachelor degree. In the second semester of the second year, students learn the theory of EM by covering topics introducing EM systems (such as triage) and the diagnosis and management of common medical and surgical emergencies with a particular emphasis on locally relevant conditions, such as infectious diseases and snakebite. The third-year students spend their entire year based at Modilon Hospital, where they integrate their theoretical knowledge with practical experience. They rotate around the key areas of paediatrics, obstetrics and gynaecology, medicine, surgery and EM, spending 6–8 weeks based in each ward/department. The teaching that students receive at the hospital is extremely variable, largely because of already stretched resources focusing on service provision rather than teaching tasks. Often, students are left to their own devices or used by busy hospital staff for mundane tasks, such as transporting patients or chasing laboratory results. For this reason, VCLP has placed an emphasis on hospital-based tutorials and bedside teaching of clinical skills. As knowledge gaps emerge during rigorous teaching sessions, the visiting lecturers are frequently asked to extend their tutorials beyond conventional EM topics to include basic anatomy and physiology updates.

Tasks for each visiting lecturer are determined by Rural Health Department staff and ED SMO at Modilon Hospital. As visiting lecturers develop lectures and tutorials around the EM curriculum, these resources are shared with DWU staff and future visiting doctors, so that teaching is consistent and a substantial body of teaching material can be established and stored for ongoing use.

If visits coincide with the Advanced Diploma in Emergency Medicine delivered through the Faculty of Flexible Learning, then the visiting doctors will assist with delivering this course content.

## Participants

Visiting doctors are mostly scheduled for the second semester, when the lecturing tasks are more substantial. Participating EPs and ERs are sourced by St Vincent's Hospital (Melbourne, Australia) ED, the Royal North Shore Hospital (Sydney, Australia) ED through the leadership of Dr John F Kennedy (JFK) and through the wider International EM Special Interest Group network of the Australasian College for EM (ACEM). An EP from Melbourne (JH) was the inaugural visiting clinical lecturer for 2010 alongside an ER from Royal North Shore Hospital.<sup>12</sup> In 2011, three EPs and six ERs volunteered a total of 24 weeks of their time, providing coverage for nearly the entire semester two period. Two ERs have had this time accredited by ACEM towards their training.

Participants are self-selected, but are extensively briefed before confirming involvement by the key Australian collaborators, GAP and JFK. Volunteers are responsible for their own insurance and personal security, which is emphasised to participants before departure.

## Delivery of programme

Flexibility and responsiveness to local needs is fundamental to VCLP. As teaching tasks vary significantly over the course of the academic year and are reliant on staff, hospital and university resources as well as curriculum, the visiting faculty are encouraged to be led by their DWU and Modilon hosts. Conventional modes of teaching are used through didactic PowerPoint-based lectures, but interactive, 'hands-on' teaching at the hospital is emphasised. DWU students receive very little skills-based and simulation-based teaching, despite the known advantages of these methods,<sup>13</sup> and the Rural Health curriculum shuns problem-based learning in preference for a more traditional structure.

Although the university library is extensive within the PNG context, health textbooks are poorly supplied and other teaching aids virtually absent. Online access to journals and medical textbooks is building; however, student skills in negotiating such resources need to be developed. Visiting clinical lecturers are encouraged to

bring relevant textbooks with them that they can leave with their PNG hosts both in the hospital and on campus.

## Logistics

Accommodation on the DWU campus is limited and competitive, even for permanent staff, and has required regular and clear communication from the key Australian facilitator (GAP) to the DWU administrative staff about the timetable for scheduled visits, accompanying persons and expectations. Confirmation of housing is required before visiting lecturers book flights, which has led to some uncertainty in the lead-up to visits. Again, as often in the Pacific region, flexibility is the key.

As the visiting lecturers are not taking a salary for their work and do not take prime responsibility for the subjects they teach, there has been no requirement to obtain a work permit. In the hospital, visitors do not take responsibility for patient care, are not taking a salary for their assistance and are working in a supervised environment, so medical registration has not been sought. For the ERs who are participating in an accredited 'Special Skills' rotation, the PNG EP (VA) acts as the local supervisor and therefore takes responsibility for the patients they treat.

Australians can enter PNG on a 2-month visitor's visa, which can be extended by application for an additional month. DWU has assisted with the visa extension application, providing a relatively smooth process for a longer stay.

## Evaluation

In PNG, where data are rarely recorded and information technology limited, it is difficult to make objective judgements on the value of an educational programme. Given the ad hoc nature of the teaching and lack of standardised groups for comparison, it is not possible to statistically compare grades of students who did or did not receive teaching from the VCLP. Qualitative methods are therefore used to gain feedback from all stakeholders.

In end-of-year evaluation, the students overwhelmingly report receiving useful and relevant teaching that improved their knowledge and skills. Comments include: 'we would actually go and examine a patient', 'a chance to discuss more freely and learn more', 'excellently prepared with knowledgeable explanations',

‘involving all of us in discussions ... made it more interesting and motivating’. All requested additional teaching sessions covering many aspects of clinical and preclinical medicine.

From the perspective of the Modilon Hospital staff, VCLP has been both a welcome additional clinical and educational resource and crucial professional morale booster. This contributes significantly to the functioning and reputation of the ED at Modilon Hospital. The hospital Chief Executive Officer has received positive feedback from community members who experienced high-quality and systematic ED care and observed Australian doctors working alongside PNG colleagues in the ED.

Divine Word University Rural Health staff increased knowledge and skills and found more time for research and other activities. Through collaboration and friendship, lasting personal relationships are formed and a positive disposition towards repeat visits is created.

With regard to opportunity and training in international EM, visitors have found the experience professionally rewarding and personally enjoyable. Aside from excellent exposure to a wide range of clinical EM and enhancement of teaching skills, they have gained fresh insights into emergency care in a resource-depleted environment, which has provided alternative perspectives on ED care in their home hospitals. ERs who have had their VCLP time accredited towards their training have reported increased interest in continuing international EM activities throughout their careers.

## Discussion

### Positive lessons learnt

The success of the VCLP, as judged by the appreciation of the students, lay in emphasising clinical skills and diagnosis and de-emphasising information content, to avoid cognitive overload.<sup>14,15</sup> Many graduates have to rely on their clinical skills, as they will practise with little or no access to laboratory tests or radiology. Physical examination was not being taught elsewhere in the curriculum and was therefore included in the EM curriculum, initially in lectures and small-group tutorials and then in a clinical context. Treatment dealt mainly with what was available in PNG, with only brief mention of treatment options used overseas.

The short-term visitors focused on undergraduate students and had a positive impact on the teaching load by relieving local staff and in providing a different voice and perspective for students.

Modilon ED staff derived more benefit from the longer visitors in terms of a structured teaching programme that could involve local ED residents and registrars as well. Visiting ERs could see patients, do procedures and do a somewhat normal ED registrar job when not teaching. They formed friendships and learned something of the local culture and language.

Obtaining accreditation for the 3-month rotations represents a significant development for ACEM in recognising the clinical knowledge and skills gained by trainees in challenging resource-depleted intercultural environments.

### Challenges and sustainability

Continuity and consistency are the key challenges arising from this programme, for both visiting lecturers and DWU/Modilon Hospital staff.

Longer visits enable Australasian EPs and ERs to settle in to their role, adapt teaching to better suit particular local needs and form deeper relationships, networks and attachments. Longer and repeat visits also develop perspective on the teaching programme and students' progress through a rotation or semester, which gives insight during assessment periods.

Sustainability is reliant on a steady stream of Australasian EPs and ERs volunteering their time and skills. Enthusiasm for international work is growing among emergency clinicians and VCLP provides opportunities for introductory international experiences in a safe environment. In the larger PNG context, personal safety and fear of violence remains a long-term threat to sustainability of the programme.

A significant barrier for ERs is the financial outlay for flights, insurance and other living expenses and the salary sacrifice of 3 months' voluntary work. In recognition of this, negotiations with the DWU executive for a living allowance for longer-term visitors are a priority.

Limited local staff capacity presents an ongoing challenge to the programme. Having a PNG EP (VA) and other SMOs stationed at Modilon Hospital is crucial, as is engagement of DWU Health Faculty staff.

### Impact on local/regional development and follow-on activities

It is hoped that improved knowledge and skills of HEO students will result in better Rural Health clinicians. Some DWU lecturers might have learnt new teaching techniques through modelling and observation, which will contribute to improved knowledge transfer in the future.

For the EM community of PNG, visits of Australasian EPs and ERs contribute to professional support through boosting morale, maintaining standards, sharing knowledge and skills, and aiding retention in the public sector.

Activities following on from VCLP visits can include short-course teaching and exam preparation for Masters of Medicine, Emergency Medicine (MMedEM) candidates. There is potential for expanded engagement with the PNG emergency nursing community and with the DWU Health Faculty.

## Conclusion

Despite the ad hoc timing of the visits and flexible nature of the programme, some quality teaching has occurred and been received positively by students, DWU and hospital staff and the university executive. Australian visiting EPs and ERs have gained new perspectives, skills and knowledge. VCLP provides a model of collaborative exchange in a resource-depleted context that contributes to improved clinical capacity for emergency care.

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## Author contributions

GAP and JH conceived of the paper. GAP primarily wrote the paper with input from JH, VA and CM. All authors were involved in the critical revision of the paper for intellectual content and final approval before submission.

## Competing interests

None declared.

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