

EXPANDED AND EXTENDED HEALTH PRACTITIONER ROLES: A REVIEW OF INTERNATIONAL PRACTICE

Background paper for the HRH Hub series
on 'Evidence and Policy Options' for
healthcare education and training in
Pacific Island countries

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ACRONYMS

AHP	allied health professional	NCEA	National Certificates of Educational Achievement
AP	advanced practitioner	NP	nurse practitioner
APRN	advanced practice registered nurse	NTRCS	Northern Territory Rural Clinical School
AMC	Australian Medical Council	OSCE	Objective Structured Clinical Examination
BMedSci	Bachelor of Medical Science	OUM	Oceania School of Medicine
CME	continuing medical education	PA	physician assistant
CNM	certified nurse-midwife	PBL	problem based learning
CNP	certified nurse practitioner	PIC	Pacific Island Country
CNS	clinical nurse specialist	PSA	Prescribing Skills Assessment
CPD	continuing professional development.	QAA	Quality Assurance Agency
CRNA	certified registered nurse anaesthetist	PRCC	Parallel Rural Community Curriculum
DOPS	direct observation of procedural skills	ROMPE	Rural Origin Medical Programme Entrants
DOPS	direct observation of procedural skills	SJT	Situational Judgement Test
ELAM	Escuela Latino-Americano de Medicina (Latin American Medical School)	SLE	supervised learning event
GAMSAT	Graduate Medical Schools Admission Test	QAA	Quality Assurance Agency
GEM	Graduate Entry Medicine	UKCAT	United Kingdom Clinical Aptitude Test
GEP	Graduate Entry Program	UMAT	Undergraduate Medical and Health Sciences Admissions Test
GMC	General Medical Council	UPNG	University of Papua New Guinea
GMP	Graduate Medical Programs		
MAPAS	Maori and Pacific Islanders Admissions Scheme		
MCQ	multiple choice question		
MBBS	Bachelor of Medicine, Bachelor of Surgery		
MMI	multiple mini interview		
MSF	multi-source feedback		
NCD	non-communicable disease		

A note about the use of acronyms in this publication

Acronyms are used in both the singular and the plural, e.g. NGO (singular) and NGOs (plural).

Acronyms are also used throughout the references and citations to shorten some organisations with long names.

SUMMARY

This review of complementary roles to those of traditional health workers, focussing on extended and expanded scopes of practice, has been prepared to inform a series of “Evidence and Policy Options” papers currently being developed by the Human Resources for Health Knowledge Hub (HRH Hub) at the University of New South Wales.

It explores international trends and approaches to the development and implementation of new workforce roles alongside doctors, midwives and nurses.

The review describes international trends and approaches to the planning and delivery of a health workforce that move away from a traditional siloed structure based on traditional roles and scopes of practice (e.g. nurse and doctor).

It includes a wide range of healthcare practitioner roles, which have emerged because they represent a better or more effective model of care, or because they represent a quicker way of addressing gaps in the health workforce.

It draws upon examples from countries whose cultural and geographical background may be of relevance and interest to the future development and strengthening of medical education in the Pacific Island Countries (PICs).

Two categories of expanded and extended health worker exist:

- a) those who have been developed as new roles, complementary to existing health professions, and
- b) those who are already professionally qualified but who have taken additional (usually master level) qualifications to equip them for an advanced practitioner role.

Nomenclature varies between countries, but examples of the former include ‘assistants’ such as physician, surgical, medical and anaesthetic assistants, and the latter roles are usually termed advanced or nurse (or other health professional) practitioner, nurse consultants or nurse specialists.

Common trends identified from the review include:

- These roles have been introduced either to substitute for doctors in certain specific roles or contexts or as complementary practitioners in supplementary roles.

- Planning the integration of assistants or advanced practitioners needs to be done as part of a whole workforce strategy.
- These roles can be of particular benefit in rural and remote areas; to meet local service needs and where there is existing or projected under-supply of doctors or nurses.
- Many models of successful implementation of these roles exist throughout the world which can be drawn and learned from.
- It is important to consider registration, regulatory and training implications to ensure these practitioners become an integral part of the workforce.
- The economic benefits of introducing these practitioners is not easy to quantify, therefore introduction should be based on service need and workforce planning and not for cost savings.
- Specific training programs need to be established, involving both doctors and other health professionals.

The development and integration of new or extended health professional roles has to be considered in the Pacific context where a particular issue concerns the re-integration of Cuban-trained medical graduates. Several PICs have sent medical students to be trained in Cuba in numbers that will more than double their existing medical workforces between 2014 and 2019.

The influx of these new medical graduates has additional implications for nursing, the scope of practice for which in many Pacific countries is still to be fully defined. This shift in the medical workforce may also risk displacing existing advanced practitioners where their role is already well established in some remote or outer island communities. The new graduates’ return will therefore need to be planned and managed very carefully – especially if they do not initially meet Pacific medical registration requirements.

BACKGROUND

The review aims to provide a synthesis of the available evidence to explore options for the future development and strengthening of healthcare education and training across the Pacific Island Countries. It is one of six review papers covering 1) medical education, 2) nursing and midwifery education, 3) extended and expanded health practitioners, 4) accreditation and licensing, 5) commissioning, and 6) overseas-trained graduates.

INTRODUCTION

The structure, composition and competencies of the 'ideal' health workforce, one that is fit for its purpose, has dramatically changed over the last few decades. These changes relate to a host of technical and social-political factors including demographic trends (of patients and health workers), the introduction of new technologies and patient expectations, as well as a highly fluctuating economic and health financing environment.

The 'traditional' health professions of medicine and dentistry have been subject to increasing standards and regulation in education, training and licensing¹ and are increasingly specialised in a range of medical disciplines, for example the medical workforce in high income countries typically includes over 60 medical specialities and sub-specialties.

Nursing and midwifery have also become more professionalised with an increasing emphasis on graduate degree programs as the initial qualification and evidence of continuous professional development (CPD) in order to remain on the professional register.

In parallel, a more regulated approach for the allied health workforce is also occurring, with further clarification and professionalisation of roles and scopes of practice. The range of allied health professionals (AHPs) currently includes: biomedical scientists, dental therapists/hygienists, dietitians, occupational therapists, pharmacists, physiotherapists and radiographers.

Additionally, many countries have introduced new health worker roles or extended the scope of practice (through training and registration) of existing health workers to meet specific healthcare needs.

The development of expanded and extended roles is generally driven by one of two aims:

1. to **substitute** for doctors in certain, specific roles or geographical areas as these health workers are generally cheaper due to differences in salary and training costs, and quicker to mobilise due to the shorter duration of their basic and/or post-basic training.

¹ McKimm J, Newton PM, Campbell J. An international review of medical education: Trends and approaches. HRH Hub.2012 [in press].

2. to develop new, **supplementary** roles arising from advances in medicine, for example new technologies, procedures and knowledge.

Examples include: addressing service priorities in rural and remote areas (e.g. Australia); the introduction or expansion of primary care (e.g. Canada, Cuba) and new service configurations (e.g. ambulatory care services in the UK). The roles and nomenclature for these new and different types of ‘mid-level’ health worker vary between countries and have generated much debate.

This short paper draws from key papers in this field [1] and provides a broad overview and examples of the different roles in various countries. It provides examples of why and how these have been implemented and highlights issues of potential relevance to PICs.

The table below captures the primary distinctions between the new roles and the extended scope of practice. These distinctions are further described in the following two sections.

TABLE 1. PRIMARY DISTINCTIONS BETWEEN NEW HEALTH WORKER ROLES AND EXTENDED/ADVANCED SCOPE OF PRACTICE

Rationale/practice	New health worker roles	Extended/advanced scope of practice
Service needs or changes	Designed to meet service needs (e.g. physician assistants) usually in specific contexts e.g. ambulatory care	Designed to meet service needs in specific contexts, or clinical specialities/client groups (e.g. diabetes, dialysis, primary care, perioperative care, eye care, ear care, basic anaesthesia)
Scope of practice	Entirely new roles for which individuals are directly trained, usually by completing a Bachelors-level degree with the option of further development/specialisation to Masters’ level	Extended roles can refer to narrow or broad scopes, e.g. nurses with prescribing rights or the right to provide advanced care in a speciality, service
Previous qualifications	Often from non-health backgrounds, such as bioscience	Always drawn from existing practitioners, predominantly nurses, but also from other AHPs (e.g. prescribing pharmacists, interventionist radiographers)
Supervisory and reporting relationships	Designed to act as generic assistants to physicians and to surgeons and anaesthetists in specific contexts. Always perform under medical supervision with the doctor taking responsibility for the assistant’s activities Primarily been developed to support doctors and perform routine tasks whilst under the supervision of a medical practitioner, thus freeing up the doctor to perform more specialised work	Usually autonomous practitioners with a defined scope of practice (and registered as such) and who often work independently in parallel with doctors, referring only to a doctor when needed (e.g. out of hours care). Advanced practitioners are registered and regulated by their professional body/council with a defined scope of practice (e.g. nursing councils)
Training requirements	Formal training programs and regulatory frameworks exist in some countries, in others the assistant roles are not yet formally defined and regulated	Advanced practice roles require postgraduate (typically PGDip or masters) level qualifications

FINDINGS

Physician and medical assistants

Physician assistants (PAs) perform more advanced tasks than non-medically-qualified health practitioners and often have a Master's degree. Their tasks are similar to those of nurse practitioners such as providing health check-ups and preventive care, diagnosing and treating minor illness, providing prenatal care and performing routine follow-up for illness and surgery.

The PA role was originally developed in the United States and has been rolled out in other countries, primarily as a response to medical workforce shortages. It is a more recent development in Canada, Ghana, Ireland, Kenya, the Netherlands, Nicaragua, South Africa and the United Kingdom [2, 3]. In the Pacific, practitioners in these roles are trained for four years as the Health Extension Officers of Papua New Guinea and the previous Primary Care Practitioner and Medical Assistant cadres of Fiji.

The role of medical assistants is especially popular in Germany, where they work in doctors' offices carrying out activities such as administrative duties and clinical tasks requiring basic technical competences (such as the removal of thread after stitching, dressing of wounds and taking blood samples). Three years of training is required.

In the United States medical assistants perform routine clinical and clerical tasks. In other contexts and countries, other roles such as surgical and anaesthetic assistants have been implemented. In this section, we use the term 'physician assistant' (PA) as an umbrella term to refer to all these health worker roles.

More than 200 studies to date have examined the quality and safety of patient care provided by PAs and have collectively demonstrated that they provide safe, high quality care, comparable to that of doctors while working within the framework of their delegated responsibilities [4]. Between 1974 and 2000, at least 10 studies also concluded that physician assistants are well accepted by patients [5–7].

A large study published in 2004 surveyed 150,000 patients and found there was no significant difference in patient acceptance of physicians, PAs or nurse practitioners (NPs) [6].

More than 200 studies to date have examined the quality and safety of patient care provided by physician assistants and have collectively demonstrated that they provide safe, high quality care, comparable to that of doctors while working within the framework of their delegated responsibilities.

History of the physician assistant workforce

The first PA graduated in 1967 from Duke University, North Carolina. This program was initiated as a response to combined physician and educator fears about shortages being experienced in physician ranks, particularly in rural areas within the US [8].

At the outset, the American Medical Association held discussions with the American Nursing Association regarding this new workforce as an opportunity for nurses to be upskilled as physician assistants, but the corresponding rise of the women's liberation movement in the US and fears that they "...would become handmaids of patronizing male physicians" [9] led to the proposal being swiftly rejected.

At the same time, a group of naval corpsmen who had received significant previous experience and training through their military service were enlisted into the initial PA program, but there was no avenue for utilising their skills within a civilian environment. The training program was based on that used to rapidly train wartime physicians [9].

PAs have been utilised within both military and civilian settings, and their growth and impact on service provision over the last 45 years has been significant. There are currently over 85,000 individuals eligible to practice as PAs in the US alone, of which around 75,000 are currently involved in clinical practice [8]. By 2015, total numbers are projected to exceed 100,000 [10].

Hooker proposes two primary factors that have impacted the growth of the PA profession: first, change in both society and models of health care

delivery; and second, the growing complexity and volume of medical activities that he believes “will necessitate the inclusion of additional trained personnel who share the domains of doctors but who remain dependent on doctors for directing care.” [10, pp.116].

The profession’s initial growth was predominantly in primary care, although other medical specialties are increasingly utilising PAs. The American Academy of Physician Assistants (AAPA) carries out annual surveys of both members and non-members who they believe to be eligible to practice as PAs and for whom they have contact details.

Of the 72,433 individuals that had been identified at the time of the 2009 census, 27% participated [11].

Of those PAs surveyed, over one-third identified primary care as their principal specialty, and over 20% work primarily within a surgical subspecialty (refer to Table 2 below).

Literature identifying the global utilisation of PAs within the specialty of anaesthesia is much more scant, documents available are limited primarily to case studies and project trial reports [10, 12].

At present, PAs working within anaesthesia and perioperative medicine have been identified in the US, England, Scotland and, most recently, in Australia where anaesthesia and respiratory technicians trained to Bachelor of Applied Science level have well-established roles in the operating theatre and intensive care unit environment.

TABLE 2. 2009 AAPA CENSUS RESPONDENTS, BY AREA OF SPECIALTY

PA Area of Specialty	Respondents (percent)
Primary Care	35.7%
General Surgery	2.7%
Surgical Subspecialties	22.4%
Internal Medicine Subspecialties	10.8%
Paediatric Subspecialties	1.9%
Emergency Medicine	10.3%
Other	16.3%

Physician assistant training

PA training programs have grown steadily within various universities in the US, and more recently in the UK and Australia. At the end of 2009, over 140 PA training programs existed in the US [13].

Training programs are typically of between 24 and 30 months duration, the majority of which are at postgraduate level. Access to training is through competitive entry, with prospective students requiring a health and/or science undergraduate degree often in association with clinical experience in the health sector prior to commencement.

Training is undertaken initially in areas such as clinical examination and advanced assessment techniques,

anatomy, pathophysiology and pharmacology [11]. Basic medical science classes are often run in conjunction with clinical programs (see Table 3 on page 8 for examples of programs).

Training programs are generalist in nature, and after initial theoretical subjects have been completed, programs take on a balance of theory and practical clinical placements in areas such as primary care, internal medicine, obstetrics and gynaecology, paediatrics, general surgery, emergency medicine, anaesthesia and psychiatry.

In total, students undertake approximately 2000 hours of supervised clinical practice prior to graduation [11].

TABLE 3. INTERNATIONAL EXAMPLES OF PA TRAINING PROGRAMS

		Program	
Terminology used to describe PA role	USA	UK (NHS)	Australia
	Physician Assistant (PA)	Physician Assistant (PA, or specialised in Anaesthesia PA(A)); Medical Care Practitioner (MCP); Anaesthetic Practitioner (AP)	Physician Assistant (PA)
Entry Criteria	<ul style="list-style-type: none"> • Minimum of 2 years fulltime clinical experience (director patient care); and • An undergraduate degree including: <ul style="list-style-type: none"> ◦ Min 10 quarters human anatomy and physiology and min 15 quarters other medical sciences (min 'B' grades in all) 	<ul style="list-style-type: none"> • Registered health professional with 3 years full-time clinical experience or a degree in a health-related subject; or • New-entrants to health with a biological science or biomedical science background (pref with second-class honours or better) 	<ul style="list-style-type: none"> • Min 1 year fulltime clinical experience (director patient care); and Undergrad degree in Bioscience /health sciences with a min GPA of 4.0; or • Graduate Certificate in PA Studies with minimum GPA of 5.0
Duration			
	Total	27 months fulltime (9 x 3 month quarters)	18 months full-time (or 36 months part-time)
	Non-clinical	11 months (hours unspecified)	Unspecified
	Clinical	<ul style="list-style-type: none"> • 26 weeks medical & surgical subspecialties • 16 week primary care preceptorship 	Rotations in General Practice, Internal Medicine, Aged Care, Surgical & Emergency and Elective (duration not specified)
Areas of Training	<ul style="list-style-type: none"> • Anatomy & physiology • Cell biology, genetics, & immunology • Pathophysiology • Clinical & technical skills • Professional role development • Behavioural medicine • Adult medicine and maternal child health • Emergency medicine • Drug therapy and administration • Organ systems • Investigative skills • Clinical clerkships 	<ul style="list-style-type: none"> • Introduction to clinical practice • Introduction to anaesthesia • Physics in anaesthesia • The anaesthesia machine and monitoring • The heart and circulation • Airways and lungs • Kidneys, liver, endocrine system and blood • Brain and nervous system • Clinical history and examination • Managing life-threatening emergencies 	<ul style="list-style-type: none"> • Pathophysiology • Medication administration and monitoring • Clinical presentation • Diagnosis and therapeutic management • Interviewing and physical examination skills • Fundamentals of health care delivery
Examination	Objective Structured Clinical Examination (OSCE) or Physician Assistant Clinical Knowledge Rating and Assessment Tool (PACKRAT) examinations	OSCE administered by the Royal College of Anaesthetists	At time of study no students had graduated from PA courses in Australia. No information on proposed assessment was available
Registration & Regulation	PA National Certifying Examination (PANCE). Then complete 100 hours CME every 2 years and take re-certification examination every 6 years	At time of study PAs were not a regulated profession within the NHS	At time of study PAs were not a regulated profession within Australia

Sources: The University of Queensland, 2010a; United States Department of Labour, 2010; University of Birmingham, 2010a+b; University of Washington, 2010a-c.

International review of physician assistant implementation

World-wide, PA workforces and education programs are at different stages of development reflecting different levels of both medical workforce shortage and political will. In recent years, the global spread of the PA workforce has been described in both scientific literature and professional commentary [14].

Studies indicate a general shift towards developing an expanded health workforce which includes

a mix of traditional roles as well as new roles in an ever-increasing range of specialities and sub-specialities. For example, a 2011 report from Health Workforce Australia indicated a broad endorsement of the widespread introduction of PAs as part of an integrated workforce, providing complementary health services to those of doctors and nurses. The need for recruiting and training PAs, and nurse practitioners was felt to be driven particularly in rural and remote areas and to address the future under-supply of doctors and nurses.

TABLE 4. INTERNATIONAL EXAMPLES OF THE INTRODUCTION OF PAs

State of development	Countries
Civilian PA training program in place	USA, England, The Netherlands, Canada, South Africa, Scotland, Taiwan, Australia
PA-like profession in place	India, Liberia, Haiti, Malaysia, Papua New Guinea
US-trained PAs in other national health systems	The Netherlands, England, Germany, South Africa, Taiwan, China, Ghana, Australia, New Zealand
Developing and establishing formal affiliation agreements with US PA programs for PA student rotation (i.e. from the US training institution to institutions in the partner country)	Brazil, Estonia, United Kingdom, Ghana, Thailand, Honduras, Ecuador, China, Costa Rica
Seeking information on PA profession	Ghana, Ireland, Jamaica, South Africa, Wales

Is there an economic benefit to a PA workforce?

An important consideration when evaluating the strengths of any new or expanded role is the value for money that the role brings to the system. A range of studies indicate that generic PAs are cost effective, in part because training expenditures and salaries are less than that of doctors.

Some studies have also concluded that PAs in the US are of significant economic benefit to practices that employ them [6, 15, 16], which may be related to their more limited use of prescribing, ordering clinical investigations and related indirect costs of care; the potential role of differential exposure to litigation between doctors and PAs has not been quantified.

While some work has been undertaken regarding PA cost-effectiveness in other specific sectors (e.g. anaesthetics), these programs have not been

running for long enough to yield meaningful results and transferability of results from the US to other contexts (in terms of costs of setting up programs, training and employing PAs and the long term cost-effectiveness of their work) has not yet occurred.

Some difficulties have been reported in estimating the economic benefits of PAs because different stakeholders perceive the value differently and it depends on whether PAs are seen as a doctor substitute (in which case they would be economically more efficient) or as a complementary role, which in turn depends on scope of practice and autonomy [17].

For example, deploying PAs to the rural and remote areas of the Pacific provides medical services in places where they may otherwise not exist, but the costs of patient referrals to higher level services

(which may be available in the PIC itself or overseas) has escalated.

Advanced practitioners

Advanced practitioners (APs) are health professionals (often nurses, but can be from a range of allied health professions or other subject disciplines) who have been trained in and, in most high income countries, granted registration in an extended or discrete scope of practice.

Advanced practice roles are found throughout healthcare. The enhanced knowledge and skills of these practitioners “complements those of medicine and, therefore increases both access to and the availability of healthcare” [18, pp.xiii]. The role of the AP is grounded in research and evidence-based practice, with the development of interpersonal, diagnostic, decision-making and treatment/care skills.

APs work at the interface of medicine and their profession and this has posed problems throughout the development and implementation of AP roles (e.g. in the US, Canada and the UK). These have included a refusal to provide training programs for APs (as doctors would be required to teach on them) and the roles and scope of practice not being recognised by the regulating or licensing body [19].

These problems arise partly from a lack of clear definition of the role as well as from political issues. Examples are where nursing staff wish to maintain the focus on nursing (i.e. advanced *nursing practice*) or the medical community requiring APs to work under the direction of doctors rather than as autonomous practitioners within nursing but on an equal level [18].

For APs, the general principle is that the professional trains for, and retains, all of the competencies required for basic qualification (e.g. in nursing) but has an advanced level of practice in a particular area (e.g. management of long term conditions; community mental health). This often involves a requirement for completion of a masters' level qualification which provides advanced clinical expertise and knowledge in that area (which may or may not be reflected in a separate or additional category of registration).

APs are also expected to acquire and use research skills to inform and implement evidence-based practice. There is a move (e.g. in the United States)

towards the final educational point for APs being at doctoral level.

Nurse practitioners

The International Council of Nurses (www.icn-apnetwork.org) has established guidelines, standards and core competencies for the regulation, education and socio-economic welfare of nurses in advanced practice roles. These are intended to assist countries during times of expansion of advanced roles.

The concept of nurses performing in advanced roles has been active for many decades, but the popularity of the roles has varied over time in different countries. Some extended scopes of practice are open to all nurses.

For example in the UK, all nurses can now take an additional short course on prescribing which allows them to prescribe drugs from a defined list under certain conditions. Currently the roles are expanding to cover wider scopes of practice and the field of advanced practice nursing has its own journal.

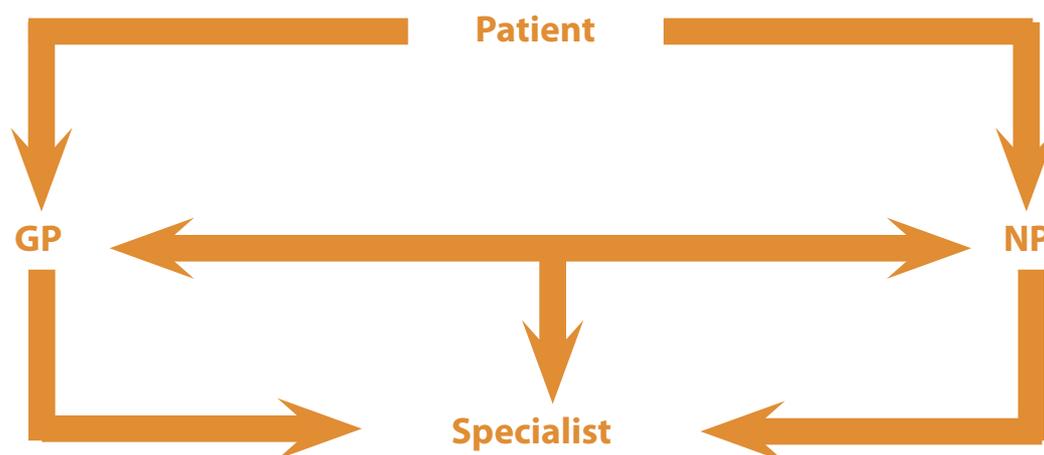
Nurse practitioners (NPs) are generalist clinicians who make assessments and diagnoses in undifferentiated conditions and who usually work in a family medicine/general practice/primary care role [20].

NPs have responsibility for a range of activities that may otherwise be performed by physicians/doctors, including radiological or laboratory diagnostics, screenings, prescribing drugs or ordering investigations, activities in the fields of prevention and health education, the monitoring of patients with chronic illnesses, and a general role in care coordination (alone or together with doctors) [21].

Characteristics of the advanced NP include [22]:

- Professional autonomy and accountability over a caseload
- Diagnostic skills that include the ability and authority to initiate investigations and referrals to other agencies
- Collaborative working with patients, other professionals and disciplines
- Extended knowledge and skill base for providing treatment and care
- Counselling and health education
- Clinical and professional leadership

FIGURE 1. ROLE OF THE NURSE PRACTITIONER (NP) IN FAMILY MEDICINE (GENERAL PRACTICE) IN THE UK (22)



Source: [22]

The role will usually have either a generalist focus – i.e. seeing patients with routine conditions in place of a doctor, or a specialist focus based upon particular primary care needs, such as mental health, paediatrics, geriatrics etc. Although the roles are often used to ease pressure on the demand for doctors, there is usually still a link to a doctor at some point.

Clinical nurse specialists or nurse consultants

The roles of clinical nurse specialists (CNS) or nurse consultants are similar to the NP (and in many countries the titles are used interchangeably), but are usually based in a secondary care/hospital setting.

Where there is differentiation, these nurses provide care where an initial diagnosis has already been made (as opposed to carrying out diagnostic functions). They typically have their own patient case load, run out-patient (ambulatory care) clinics and work with patients, families and other health workers on wards, emergency departments, secondary and primary care, bridging the gaps between services and helping to reduce overall healthcare costs.

They also help improve patient access to care, especially for remote and vulnerable populations. These nurses will have a specialist qualification in a

specific speciality or area of work (e.g. haemodialysis; paediatric surgery; cardiology; intensive care).

One example where the CNS role is working well is in Canada where the role has been established for almost fifty years. CNSs are registered nurses with postgraduate nursing education and expertise in a clinical speciality. They “contribute to three important aims for transforming the Canadian health system – better care for individuals, better health for populations and lower healthcare costs through their ability to initiate, implement and support innovation to improve the delivery of nursing and healthcare services” [23].

It has been demonstrated that CNSs reduce hospital admissions and visits to the emergency department, shorten hospital lengths of stay and decrease the use of unnecessary diagnostic tests. This occurs through improved case management of patients with high risk and complex conditions.

In the United States the Advanced Practice Registered Nurse (APRN) role enables nurses to advance in their level of patient care management and involvement, gain skills in physical assessment, knowledge of pharmacological and therapeutic interventions, and work collaboratively with physicians and other members of the healthcare team to promote best practice for patients and family members.

BOX 1 - THE ADVANCED PRACTICE NURSE (USA)

An Advanced Practice Registered Nurse (APRN) is a nurse:

1. who has **completed an accredited graduate-level education program** preparing him/her for one of the four recognised APRN roles;
2. who has **passed a national certification examination** that measures APRN, role and population-focused competencies and who maintains continued competence as evidenced by recertification in the role and population through the national certification program;
3. who has **acquired advanced clinical knowledge and skills preparing him/her to provide direct care to patients**, as well as a component of indirect care; however, the defining factor for all APRNs is that a significant component of the education and practice focuses on direct care of individuals;
4. whose **practice builds on the competencies of registered nurses (RNs)** by demonstrating a greater depth and breadth of knowledge, a greater synthesis of data, increased complexity of skills and interventions, and greater role autonomy;
5. who is **educationally prepared to assume responsibility and accountability** for health promotion and/or maintenance as well as the assessment, diagnosis, and management of patient problems, which includes the use and prescription of pharmacologic and non-pharmacologic interventions;
6. who has **clinical experience of sufficient depth and breadth** to reflect the intended license; and
7. who has **obtained a license to practice as an APRN in one of the four APRN roles**.

Source: Extracted from [24]

Four sub-registration roles are identified each with its own agreed scope of practice and competencies: certified registered nurse anaesthetist (CRNA); certified nurse-midwife (CNM); clinical nurse specialist (CNS), and; certified nurse practitioner (CNP).

Allied health professions

As the roles and skills mix of the health workforce changes, consultant, specialist and advanced practice roles have emerged in other health professions. The pattern of emergence has been slow and relatively unsystematic, relating more to local needs and individual practitioners' desire and abilities in developing and extending their scope of practice.

Most of the literature relating to this role development is case-based and very little is published, particularly in some of the professions.

The role of radiography in healthcare has changed enormously in the last generation and is an example of an area where advanced practice has emerged in new roles to complement, rather than replace, those of doctors. An example is provided by the Society of Radiographers in the UK, which has developed advanced practitioner roles to provide clinical input, as well as team/professional leadership, practice and service development, education and training and research and development.²

Other professions that have developed extended advanced practice roles (albeit for small numbers)

² SCR. Society and College of Radiographers [Internet]. Website. 2012 [cited 2012 Aug 10]. Available from: <http://www.sor.org/>

include dietetics, physiotherapy and occupational therapy [18].

Work is also being developed to define advanced practice roles in integrated care of the individual in workplace settings, such as occupational health and wellbeing, in which practitioners can be drawn from psychology, physiotherapy, occupational health and nursing.

The challenges that face some advanced practitioners in nursing are also relevant to allied health professionals wishing to extend their scope of practice. Issues relating to regulation and registration are still to be fully resolved and the scopes of practice are yet to be defined and agreed in many countries. Because these posts are on the management paycales, practitioners are often asked to take on management duties which defeats the purpose of establishing the posts.

Doctors and other health professionals are unsure as to role boundaries and responsibilities and this can lead to difficulties in managing patient care. This reflects a lack of clarity – common in health facilities – about the relationship between each individual health professional’s managerial roles and responsibilities and their clinical roles.

Despite these difficulties, each of the different health professions has started to define and agree role descriptors and competencies, largely based on those established in nursing.

Doctors and other health professionals are unsure as to role boundaries and responsibilities and this can lead to difficulties in managing patient care.

EXPANDED AND EXTENDED PRACTITIONER ROLES IN THE PACIFIC

A comprehensive WHO review carried out in 2001 [25] identified that mid-level and nurse practitioners in the Pacific were engaged in providing essential clinical (both curative and preventive) primary care in community-based health facilities in many PICs.

Where access to health care and doctors is difficult, either because of geography, culture or vulnerability of population, such practitioners play a vital role in meeting healthcare needs. However, in common with issues in other countries identified above, various inconsistent titles were in use; training programs and the level and quality of care provided also varied considerably.

WHO and other agencies have provided long term support to the development and training of mid-level practitioners in many PICs, including Kiribati, Marshall Islands, Solomon Islands, Fiji, Federated States of Micronesia, Cook Islands, Samoa, Vanuatu and Tonga, and more recently in Timor-Leste.

Graduates of mid-level training programs are given titles including physician assistant, medex, medical assistant, health assistant and health extension officer, with some practitioners undertaking very similar roles and training but with different titles in

different countries (see Figure 2 below and Table 5 on page 15).

Nurses who undertake advanced training are often called nurse practitioners, but not always; for example a medical assistant in Kiribati is a nurse with advanced training whereas a medical assistant in Fiji does not have a nursing background. The medical assistant program in Fiji is however no longer offered.

In common with the international evidence cited above, the two main models in the Pacific for training mid-level practitioners are those associated with nursing (nurse practitioners; nursing assistants, community health workers and health assistants) and those that are not (medex, health extension officer, medical assistants, health assistants), see Figure 2 below.

Some workers do not have a primary nursing qualification, but instead undergo a one or two year training program and work with and under the supervision of nurses (e.g. nurses aides, health assistants). In addition, many nurses working in rural areas function as nurse practitioners but have not undergone an advanced training program.

FIGURE 2: MODELS OF MID-LEVEL PRACTITIONERS IN THE PACIFIC

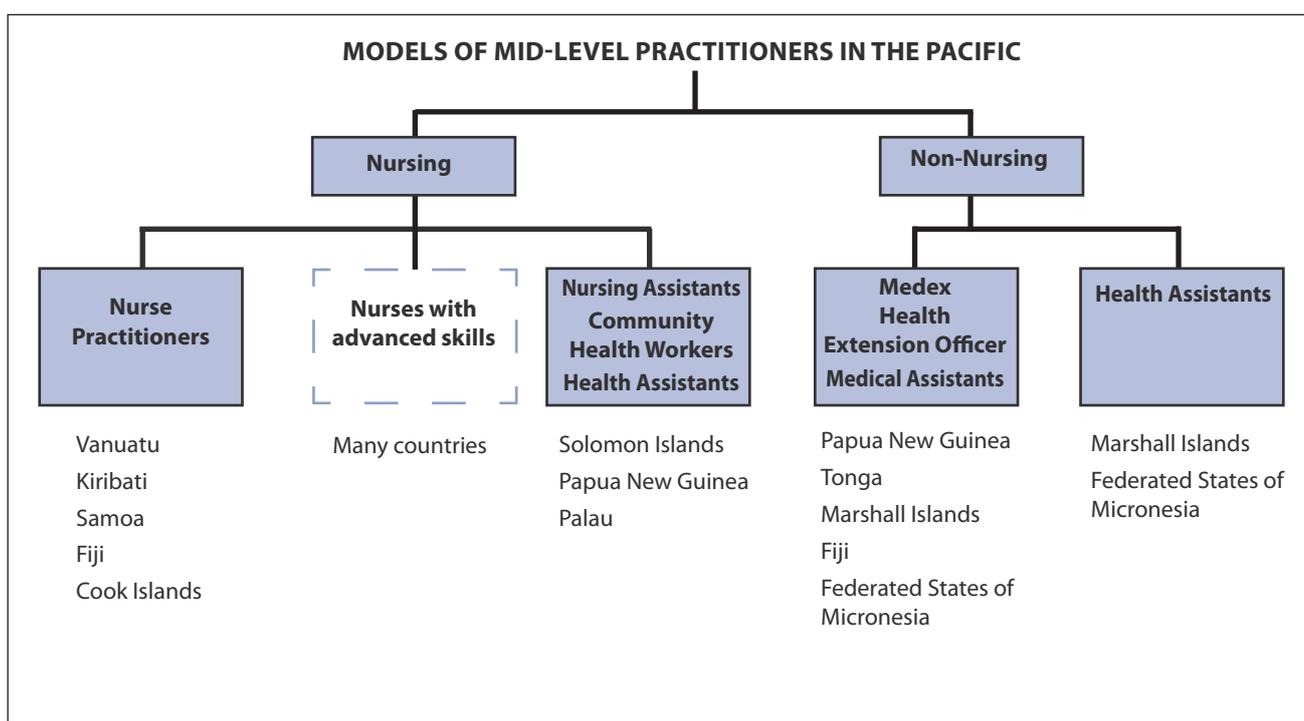


TABLE 5. ADVANCED PRACTITIONER TITLES, TRAINING PROGRAMS AND RETENTION IN THE PACIFIC¹

Mid-level Practitioner title	Cook Islands †	Fiji †	Kiribati †	Marshall Islands †	Chuk, Federated States of Micronesia	Pohnpei, Federated States of Micronesia	Papua New Guinea ‡	Samoa †	Solomon Islands †	Tonga †	Vanuatu †
Nurse Practitioner	✓	✓ [*]	✓	✓ [*]	✓ [*]	✓ [*]				✓	✓
Medical Assistant	✓	✓ ^b	✓								
Clinical Nurse Consultant							✓				
Health Extension Officer							✓				
Medex			✓	✓	✓						
Health Officer			✓	✓	✓					✓	
Health Assistant			✓	✓	✓						
Nurse Aide									✓		
Clinical Nurse Specialist	✓	✓	✓	✓				✓		✓	✓
Year program initiated² (NP unless stated)	1990 ^a	1975 ^b (MA) 1998 (NP)	1975 (MA)	Mid-1970s	Mid-1970s	1970s (NP) 1999 (HA)	1967 (HEO)	1993 (CNC)		1977	1983
Program duration (years)²	1	1 (NP)	1.5	1.5 (HA)	1 (HA)	Unknown	4	1		3	10 months

Source: Adapted from WHO [2001], using updated data from the HRH Hub [2013] †, World Bank [2011] ‡, and WHO [2011] ¶

Key: ¹ Graduate or registered nurses, midwives and public health and other speciality nurses, and/or enrolled or practical nurses also work in rural/remote areas in almost all countries.

² Data may be incomplete or unavailable

* Inclusive of graduates of overseas (regional or international) nurse practitioner training programs

^a Nurse practitioner training in 1990 only

^b MA training ceased in 1984

HA = health assistant; MA = medical assistant; NP = nurse practitioner

“Nurses with Advanced Skills” represent a large and poorly defined group of practitioners with a range of on-the-job training and informal or formal qualifications.

Specialised and tertiary services such as ophthalmic and ear, nose and throat surgery are often provided by visiting specialist teams from Australia, New Zealand and Taiwan, and these teams often provide advanced training to nurses in advanced primary ear and eye care (including minor procedures and the management of emergencies). However, most nurses working in specialised settings such as paediatrics, midwifery, anaesthesia or operating theatre have generally completed an accredited, certified course of postgraduate or post-basic training (e.g. at the Fiji School of Nursing).

The Fiji School of Medicine (FSMed; now part of the College of Medicine, Nursing and Health Sciences at Fiji National University) previously offered a one-year combined certificate in laboratory and x-ray technology. This was specifically addressing the skills needed by nurses working in smaller hospitals in outer island settings with basic laboratory and radiology equipment but a case load that was insufficient to justify the placement of a full-time laboratory worker or radiographer.

The evolving epidemic of non-communicable diseases (NCDs) in the Pacific [26] has seen the appearance of a new, expanded set of skills among community nurses and other cadres of health worker. Through training (generally informal and provided through donor-funded projects) such health workers can now provide point-of-care tests for the detection of latent NCDs, monitoring of disease progression or control, and the management of end-organ complications. The pervasive nature of the NCDs means that all health workers in a primary care role in the community will need to master these skills and functions.

AP cadres with specialised skills may (or may not) have a specific formal or informal title (e.g. community-based NCD workers in Tonga are now called “NCD Angels”) or conditions of employment (e.g. medical assistant). Generally only medical assistants have a specific category of registration.

The 2001 WHO report suggests that no one model can be adopted in the Pacific but that models

should be developed to suit the PICs demography, geography, health needs, resources and workforce mix. Where a nurse practitioner model can be most effective is in countries where:

- Nurses are an established category of the workforce – this gives career development opportunities for nurses and means that a new category of health worker does not have to be developed.
- There is a large pool of nurses as part of the health workforce.
- Nurses are already living and working in underserved areas.
- Nurses are providing a wide range of curative and preventive services.
- Training for nurses encourages them to be flexible and multi-skilled.

A model that introduces non-nursing practitioners might be used where there has been (or is) a shortage of nurses or where other training provision is on offer. For example, the Micronesian countries benefited from the Pacific Basin Medical Officer Training Program for some time, and the Marshall Islands developed its own cadre of mid-level health workers from military corpsmen (similar to the Canadian model), which later developed into the Medex training program with the University of Hawaii. These practitioners run out-patient clinics and provide basic primary healthcare facilities in the outer islands.

Other PICs have adopted both models. However, this has led to difficulties regarding line management, accountability and allocation of responsibilities and tasks, and careful attention needs to be paid to clarifying the roles, career structure, training and compensation of all mid-level practitioners.

The WHO report set out the essential features of practitioner training programs as follows:

1. Training program of at least 12 months
2. Core clinical competencies and core content defined
3. Early introduction of practical clinical experience
4. Adequate clinical teaching and supervision

5. Robust assessment of performance against defined competencies
6. Doctors involved in teaching and assessment
7. Teachers need faculty development to maintain skills in curative primary care

To maintain the workforce, the WHO report identified the importance of legal protection and defining equitable conditions of service and practice (such as safe accommodation and working conditions and good supply of equipment); adoption of standard treatment guidelines or protocols; ongoing clinical and professional supervision and performance review; CPD and training (including upgrading skills by short period working in hospitals); and a defined career structure.

These recommendations and strategies are still relevant today in delivering healthcare to underserved populations with a shortage of doctors across the Pacific. The 2006 Strategic Action Plan for Nursing and Midwifery Development in the Western Pacific Region [27] identified the importance of maintaining and further developing the role of mid-level practitioners as a key part of not only the nursing and midwifery workforce, but of the total health workforce in the Pacific. It notes:

“In the Pacific island countries, advanced practice nurses and other non-physician primary health care providers meet the health needs of widely dispersed populations living in small island communities spread over enormous expanses of the Pacific Ocean. These primary health care providers have received further advanced education and skill-development to function as primary health care providers in rural and remote communities, providing the full range of community based services, including community development activities; health promotion and disease prevention; the diagnosis and management of acute and chronic diseases; the performance of minor surgeries; pre-natal, post-natal care as well as deliveries, in addition to 24-hour emergency care” [27, p.34].

An emerging priority is the imminent return of more than 200 medical graduates who have been sponsored to study at the Escuela Latino-Americano de Medicina (ELAM; Latin American Medical School) in Cuba under bilateral arrangements with PIC

governments [28]. This trend will see the medical workforce at least double in Kiribati, Nauru, Solomon Islands, Tuvalu and Vanuatu between 2014 and 2019.

The Cuban curriculum and style of medical training is strongly aligned with a medically-implemented system of primary healthcare functions that, in Pacific communities, are currently often filled by community nurses or health practitioners with expanded or extended primary care roles.

Nevertheless, the PICs that have engaged most strongly with the Cuban system have indicated an intention to eventually absorb the new graduates into their medical workforce (rather than engaging them as advanced practitioners) – including through systems for assessing knowledge and skills and enhancing the capacity of internship programs, as necessary.

This is where coordinated work across the Pacific on standards, registration and licensing will be highly beneficial. Planning for the re-integration of the new graduates from ELAM into Pacific health systems will need to take particular care to avoid the displacement of advanced practitioners who are well established in their communities while, at the same time, maximising the opportunities that arise from being able to fill vacant community medical officer positions in outer island hubs.

Further implications for registered nurses and midwives arise from the often poorly defined scope of practice, “better defined in some countries than others” [29].

As a case in point Solomon Islands recognises nurse practitioners but has no defined scope of practice or registration. In the Cook Islands nurse practitioners are defined in education programs, but they are not legislated for or registered. In Western Samoa progress has been made on the development of new roles and the definitions of the scope of practice for advanced specialist nurses is in progress, while in other PICs there is no distinction between the scope of practice for nurses and midwives.

POLICY IMPLICATIONS FOR THE PACIFIC

Based on the international experience and regional trends presented, Pacific Island countries using advanced practitioner models would also benefit from specific policies on:

1. Adoption of standard scope of practice guidelines including treatment and referral protocols, responsibilities and tasks, including in relation to the medical workforce.
2. Career structures that allow progression in public service, clinical education roles or graduate entry into medical training.
3. Clinical supervision, performance review and CPD (including opportunities for maintaining and upgrading skills through short in-country or overseas hospital placements).
4. Medico-legal protections and defining equitable service and practice conditions (e.g. safe accommodation and working conditions, minimum equipment supplies).

CONCLUSIONS

Physician assistant roles are well established in Canada and the US, and to a lesser extent in the Pacific, although the nomenclature used varies. Advanced practice roles (specifically those of nurses) have been established for many years in some countries (e.g. the United Kingdom, Canada and the United States) initially in the primary care sector, but more recently in hospitals.

This is also the case in the Pacific region. In many other countries, the roles are relatively new, although a large number of pilot or small-scale projects exist throughout Africa, Australasia, Europe and South America, often as part of health service redesign and reconfiguration, for example towards more community or primary care based services.

Assistant roles can also help support more extensive utilisation of services with less reliance on doctors, who may be in short supply, for example through the introduction of surgeon and anaesthetic assistants or nurses with specialised skills.

As services are reconfigured, opportunities may arise for the development of new roles that support new ways of working and delivering services. These may well need to be specifically designed to meet local, regional or national structures and needs, although lessons can be learned from the experience of other countries.

The 2001 WHO report on mid-level roles suggests that roles should be tailored to meet PICs specific needs, and that a 'one-size fits all' approach will not be appropriate; the NCD epidemic in the Pacific presents particular challenges and skill needs for nurses and other health practitioners in the community.

The 2011 Health Workforce Australia Report on PAs sets out the benefits of a widespread introduction of PAs as follows:

- o supporting and extending the career span of our existing rural and remote medical workforce
- o providing medical services in regional, rural and remote areas of Australia where it is difficult to attract and retain Australian-trained doctors
- o supporting health services for Indigenous Australians, through multidisciplinary teams, that include Aboriginal health practitioners for whom

Assistant roles can also help support more extensive utilisation of services with less reliance on doctors, who may be in short supply, for example through the introduction of surgeon and anaesthetic assistants or nurses with specialised skills.

the PA profession may be an advanced practice career option

- o slowing clinical health workforce attrition among experienced paramedics, allied health workers, and nurses and midwives for whom the challenge of a career as a medically trained PA may be attractive and therefore beneficial to the health system
- o reducing emergency department waiting times by adding another staffing option for both fast-track services for low acuity patients and experienced paramedics in PA roles for trauma patients
- o reducing elective surgery waiting lists by enhancing the productivity of surgeons and medical practitioners in public and private practice, as demonstrated in the international research literature
- o reducing escalating health care costs by providing a new workforce group who are qualified and can provide safe and effective services at lower cost
- o increasing the productivity of other health professionals and doctors by releasing them from routine and repetitive tasks to allow them to work at the top of their licence [30].

Many of these benefits are very relevant to the Pacific context.

Using APs can also be seen as a way of containing costs, as tasks can be carried out by less expensive professionals than doctors and lower utilisation of diagnostic and pharmaceutical services may help to contain indirect costs to the health system.

More intensive care, monitoring and management of follow up (for example in long term conditions or with

patients with complex needs) leads to a reduction in overall health spending as patients are less likely to utilise expensive secondary care resources for primary care and monitoring purposes. It is not easy to calculate costs, and evaluations that have tried to do so have considered whether costs can be saved by these roles substituting for doctors (where there are cost savings or cost is neutral) whereas if this involves supplementary tasks then (at least in the short term) establishing these roles can be seen as more expensive [1].

Current thinking is that cost reduction alone should not be a primary driver, but that these new and expanded roles should be introduced to meet service and healthcare needs. In the Pacific, the development and extension of these roles could help to substitute for the lack of general practitioners in the workforce, especially in rural and remote areas.

A number of barriers to introducing and expanding new roles have been identified relating to (often competing) professional interests; care organisation and funding; legislation, regulation and licensing; and education organisations' capacity to educate and train.

In order to overcome these barriers, adopting and implementing advanced practice and new roles needs to involve high level stakeholders from ministries, educational organisations, regulation and licensing bodies and professional groups as, to be successful, this needs to be carried out at a 'whole system' level.

Scope of practice, competencies and roles need to be made clear and agreed and specific training and education programs (which ideally should be at Postgraduate Diploma or Master level for advanced practitioners and Bachelor level for Assistants) developed.

Funding also needs to be provided to incentivise health care organisations to develop and introduce these roles, partly because in the short term, the benefits may not be apparent and there will be costs associated with the development of the role and then to support (through networks or other mechanisms) practitioners working in these new roles.

Such support includes a safe living and working environment, sufficient medicines and other resources, supervisory outreach and mentoring, and career development. Regular upskilling through

return to larger healthcare centres will also be required.

Consideration of how these roles could fit into the next stages of developing the Pacific health workforce (particularly in rural, remote and underserved areas) is warranted.

This includes the integration of medical graduates trained outside the Pacific's usual sources of medical education (who may not immediately meet medical registration requirements in the Pacific) and the need to maintain an effective nursing and allied health workforce to support existing secondary and primary care services.

REFERENCES

1. Delamaire M, Lafortune G. Nurses in Advanced Roles: A Description and Evaluation of Experiences in 12 Developed Countries, OECD Health Working Papers, No. 54 [Internet]. OECD Publishing; 2010. Available from: <http://dx.doi.org/10.178/5kmbrcms5g7-en>
2. Hooker R, Hogan K, Leeker E. The globalization of the physician assistant profession. *Journal of Physician Assistant ...* [Internet]. 2007 [cited 2012 Oct 31];18(3). Available from: <http://www.paeaonline.org/ht/action/GetDocumentAction/i/25227>
3. Ludbrook G, Peischl T. Physician Assistants in Perioperative Medicine. In: Riley R, editor. *Australasian Anaesthesia 2009*. Melbourne, Australia: Australian and New Zealand College of Anaesthetists; 2009. p. 111–4.
4. Cooper R, Stoflet S. Diversity and consistency: the challenge of maintaining quality in a multidisciplinary workforce. *Journal of health services research policy* [Internet]. 2004;9 Suppl 1(1355-8196 (Print) LA - eng PT - Journal Article SB - H):39–47. Available from: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15006227
5. Charles G, Stimson D, Maurier M, Good J. Physician's assistants and clinical algorithms in health care delivery. *Annals of Internal Medicine*. 1974;81(3):733–9.
6. Roblin DW, Becker ER, Adams EK, Howard DH, Roberts MH. Patient satisfaction with primary care: does type of practitioner matter? *Medical care* [Internet]. 2004 Jul;42(6):579–90. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/15167326>
7. Baldwin KA, Sisk RJ, Watts P, McCubbin J, Brockschmidt B, Marion LN. Acceptance of nurse practitioners and physician assistants in meeting the perceived needs of rural communities. *Public health nursing (Boston, Mass.)* [Internet]. 1998 Dec [cited 2012 Oct 31];15(6):389–97. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/9874920>
8. AAPA. American Academy of Physician Assistants. Our History. [Internet]. American Academy of Physician Assistants Website. 2010 [cited 2012 Aug 10]. Available from: http://www.aapa.org/the_pa_profession/history.aspx
9. Kaylin J. Yale's physician assistant program nears 40 [Internet]. Yale School of Medicine Website. 2009 [cited 2012 Aug 10]. Available from: <http://yalemedicine.yale.edu/autumn2009/features/feature/50543>
10. Farmer J, Currie M, C. W, Hyman J, Arnott N. EVALUATION OF PHYSICIAN ASSISTANTS TO NHS SCOTLAND FINAL REPORT. Iverness, UK; 2009 p. 44.
11. AAPA. Physician Assistant Census Report : Results from the 2010 AAPA Census [Internet]. 2010 p. 26. Available from: http://www.aapa.org/uploadedFiles/content/Research/2010_Census_Report_National_Final.pdf
12. Woodin J, McLeod H. Evaluation of US-trained Physician Assistants working in the NHS in England. University of ... [Internet]. 2005 [cited 2012 Aug 10];(May). Available from: <http://www.bhamlive1.bham.ac.uk/Documents/college-social-sciences/social-policy/HSMC/publications/2005/Evaluation-of-US-trained-Physician-Assistants.pdf>
13. Nassar A, Bethel J. Introducing the physician assistant. *Emergency nurse : the journal of the RCN Accident and Emergency Nursing Association* [Internet]. 2009 Mar [cited 2012 Oct 31];16(10):12–4. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19361087>
14. Leger M, Legier C, Farhinger D, McNellis. The Global Development of Physician Assistants. AAPA's 33rd Annual Physician Assistant Conference. Australia; 2008.
15. Grzybicki DM, Sullivan PJ, Oppy JM, Bethke A-M, Raab SS. The economic benefit for family/general medicine practices employing physician assistants. *The American journal of managed care* [Internet]. 2002 Jul [cited 2012 Oct 31];8(7):613–20. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/12125801>
16. Hooker RS. A cost analysis of physician assistants in primary care. *JAAPA : official journal of the American Academy of Physician Assistants* [Internet]. 2002 Dec [cited 2012 Oct 31];15(11):39–42, 45, 48 passim. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/12474431>

17. Buchan J, O'May F, Ball J. New role, new country: introducing US physician assistants to Scotland. *Human resources for health* [Internet]. 2007 Jan [cited 2012 Oct 31];5:13. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1885268&tool=pmcentrez&rendertype=abstract>
18. McGee P. *Advanced practice in nursing and the allied health professions*. 3rd ed. Oxford, England: Wiley-Blackwell; 2009.
19. Dunphy L, Youngkin E, Smith N. Advanced practice nursing: doing what had to be done – radicals, renegades and rebels. In: Joel L, editor. *Advanced Practice Nursing. Essentials for role development*. Philadelphia: FA Davis and Co.; 2004. p. 3–30.
20. Read S, Roberts-Davis M. Preparing nurse practitioners for the 21st century Executive summary; from the report of the project 'Realising specialist and advanced nursing practice: establishing the parameters of and identifying the competencies for nurse practitioner roles and evaluation' [Internet]. Sheffield; 2001 p. 15. Available from: <http://www.opengrey.eu/item/display/10068/543660>
21. Buchan J, Calman L. *Skill-Mix and Policy Change in the Health Workforce: Nurses in Advanced Roles*. Paris, France; 2004.
22. Royal College of Nursing. *Advanced Nurse Practitioners. An RCN Guide to the Advanced Nurse Practitioner Role, Competencies and Programme Accreditation*. London, England; 2008.
23. McMaster University. *The Clinical Nurse Specialist Briefing Note* [Internet]. McMaster University Website. 2012 [cited 2012 Aug 12]. Available from: <http://www.icn-apnetwork.org/>
24. ICN. *Perspectives on Nurse Practitioner/Advanced Practice Nursing in the USA* [Internet]. ICN website. 2012 [cited 2012 Aug 12]. Available from: <http://www.icn-apnetwork.org/>
25. WHO. *Mid-level and nurse practitioners in the Pacific: Models and issues* [Internet]. Manila: Western Pacific Region. 2001. Available from: <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Mid-level+and+nurse+practitioner+s+in+the+Pacific+:+Models+and+issues#0>
26. World Bank. *The economic costs of noncommunicable diseases in the Pacific Islands*. 2012
27. WHO. *Strategic Action Plan for Nursing and Midwifery Development in the Western Pacific Region*. 2006 p. 1–23.
28. Asante, AD, Negin, J, Hall, J, Dewdney, J, Zwi, AB. Analysis of policy implications and challenges of the Cuban health assistance program related to human resources for health in the Pacific. *Human Resources for Health*. 2012; 10 (10): 1478-4491.
29. Usher, K, Lindsay, D, Oman, K, Kerse, L. *Enhancing the Quality of Nursing and Midwifery Education Programs and Services in the Pacific*. Unpublished.
30. Miller M, Siggins I, Thomson N, Fowler G, Bradshaw S. *The potential role of Physician Assistants in the Australian context* [Internet]. 2011. Available from: <https://www.hwa.gov.au/sites/uploads/hwa-physician-assistant-report-volume2-literature-review-20120816.pdf>

APPENDICES

APPENDIX 1. FURTHER READING

Abstein JP, Warner MA (1996). Anesthesia providers, patient outcomes, and costs. *Anesthesia & Analgesia*, 82, 1273-1283.

Alston, RP (2010). *Assistance for the anaesthetist: resistance is futile*. www.anaes.med.ed.au/univ/PAlston.pdf (accessed 10 August 2012)

Armitage M, Shepherd S. (2005). A new professional in the healthcare workforce: role, training, assessment and regulation. *Clinical Medicine*, 5(4), 311-314. Bohm ER, Dunbar M, Pitman D, Rhule C (2010). Experience with physician assistants in a Canadian arthroplasty program. *Canadian Journal of Surgery*, 53(2), 103-108.

Baldwin KA, Sisk RJ, Watts P, McCubbin J, Brockschmidt B, Marion LN. Acceptance of nurse practitioners and physician assistants in meeting the perceived needs of rural communities. *Public Health Nursing* 1998;15(6):389-397.

Bryant-Lukosius, D, Carter, N, Kilpatrick, K, Martin-Misener, R, Donald, F, Kaasalainen, S, Harbman, P, Bourgeault, I, DiCenso, A. (2010). The clinical nurse specialist role in Canada. *Canadian Journal of Nursing Leadership*, 23 (special issue): 140-166.

Government of Manitoba (2008). *First in Canada physician assistant programme begins next week at University of Manitoba*. <http://news.gov.mb.news/index.html?archive+2008-9-01&item=4734> (accessed 12 August 2012)

Health Force Ontario. (2007). *Defining the Physician Assistant Role in Ontario: Ontario Physician Assistant Scope of Practice Statement and Ontario Physician Assistant Competency Profile*. http://www.healthforceontario.ca/upload/en/work/defining%20the%20role%20of%20physician%20assistant%20scope%20of%20practice%20and%20competencies%20document_%20may%209%202007.pdf. (accessed 10 August 2012).

Health Workforce Australia (2011). *The Physician Assistants Report Volume 2 – literature review* <http://www.hwa.gov.au/news-and-events/news/24-08-2012/physician-assistants-report-released> (accessed 24 September 2012)

Hooker RS. (2010). The future of the physician assistant movement. *Medical Journal of Australia*, 192(3), 116.

Jones, IW and Hooker, RS (2011). Physician assistants in Canada: update on policy initiatives. *Canadian Family Physician*, March 2011, 57 (3): e83-88. <http://www.cfp.ca/content/57/3/e83.full> (accessed 12 August 2012)

Mittman D, Cawley J, Fenn W. Physician Assistants In the United States. *Physician Assistant World*, <http://www.paworld.net/whatpadoes.htm>

Ontario Medical Association (2010). *Statement on Physician Assistants*. <http://www.oma.org/media/news/pr100121.asp> (accessed 10 August 2012)

Parle V, Ross NM & Doe WF. (2006). The medical care practitioner: developing a physician assistant equivalent for the United Kingdom. *Medical journal of Australia*, 185(1),13-17.

Registered Nurses Association of Ontario (2010). *Nurses oppose the Ontario government's physician assistant role citing inadequate education, concerns over patient safety and unnecessary costs*. <http://www.rnao.org/Page.asp?PageID=122&ContentID=3152&SiteNodeID=509> (accessed 10 August 2012)

Royal College of Anaesthetists (2008). *Joint statement from the Association of Anaesthetists of Great Britain and Ireland and the Royal College of Aneasthetists: Physicians' Assistants (Anaesthesia) – PA(A)s supervision and scope of practice*. [http://www.rcoa.ac.uk/docs/PA\(A\)_JointStatement.pdf](http://www.rcoa.ac.uk/docs/PA(A)_JointStatement.pdf) (accessed 10 August 2012)

The University of Queensland (2010a). *Master of Physician Assistant Studies (MPhysAsstSt)*. http://www.uq.edu/study/program.html?acad_prog=5474. (accessed 10 August 2012).

The University of Queensland (2010b). *Postgraduate Program in Physician Assistant Studies*. http://www2.som.uq.edu.au/som/FutureStudents/Postgrad/PhysicianAssistantStudies/Documents/Physician%20Assistant%20Masters%20Program_low%20res.pdf (accessed 10 August 2012).

United States Department of Labor. (2010). *Occupational Outlook Handbook, 2010-11 Edition*:

Physician Assistants. <http://www.bis.gov/oco/ocos081.htm>. (accessed 10 August 2012).

University of Birmingham. (2010a). Postgraduate Prospectus: Physician Assistant (Anaesthesia) Postgraduate Diploma. <http://www.postgraduate.bham.ac.uk/programmes/taught/medicine/physician-assistant=anaesthesia.shtml>. (accessed 10 August 2012).

University of Birmingham. (2010b). Postgraduate Taught Courses: Physician Assistant (Anaesthesia) Postgraduate Diploma. <http://medweb4.bham.ac.uk/cpd/pgt.aspx?id=46>. (accessed 10 August 2012).

University of Washington. (2010a). MEDEX Northwest Division of Physician Assistant Studies. Physician Assistant Training Program. http://www.washington.edu/medicine/som/depts/medex/applicants/mchs_prerequisites.htm. (accessed 10 August 2012).

University of Washington. (2010b). MEDEX Northwest Division of Physician Assistant Studies. Clinical Training Opportunities. http://www.washington.edu/medicine/som/depts/medex/preceptors_lecturers/clinical_opportunities.htm. (accessed 10 August 2012).

University of Washington. (2010c). MEDEX Northwest Division of Physician Assistant Studies. Master of Clinical Health Services Degree Curriculum. http://www.washington.edu/medicine/som/depts/medex/applicants/mchs_curriculum.htm (accessed 10 August 2012).

APPENDIX 2. DEFINITIONS

These definitions relate to **the context of this report** and are derived from the multiple definitions used by different healthcare systems in different countries.

Accreditation is a process designed to confirm the educational quality of new, developing and established education and training programs. It is usually carried out by peer/third party review against established standards, outcomes or performance indicators.

Advanced practitioners are health professionals (often nurses, but can be from a range of professions or subject disciplines) who have been trained in and granted registration in an extended or discrete scope of practice. Countries use various names for such practitioners (whose roles may vary according to locality and service need) including: **nurse consultants/practitioners, medical, physician, surgical or anaesthetic assistants/associates and clinical officers.**

Approval for programs is sought via accreditation. Decisions to approve (or not) an educational program are often taken by a different body to the one which has carried out the accreditation process.

Assessment refers to a determination of student/learner performance/competence, often via examinations.

Bonded/Bonding: An arrangement where trainees/students agree to return to a particular geographical location and/or specialty after completing their education in return for financial assistance with the cost of their education or other benefits

Credentialing is the process of reviewing and confirming the qualifications and profile of a healthcare professional, for example when they apply for positions in different institutions or countries. It is particularly important in countries with regional registration systems.

Commissioning is used to describe the scheme and processes by which education and training programs (and in particular the numbers of students/trainees involved in those programs) are funded and allocated to education and healthcare training organisations. Commissioning activities include the allocation of scholarships and subsidies and self-funding schemes

and typically involve some type of formal quality assurance of the education and training provided.

Continuous Professional Development (CPD) is the process by which fully qualified professionals demonstrate that they are maintaining and updating their education and clinical competence. It usually involves completion of a specified number of accredited activities over a fixed recurring time period (e.g. 1-5 years).

Competency: A broad composite statement, derived from professional practice, which describes a framework of skills, knowledge, attitudes, psychosocial and psychomotor elements.

Curriculum: The totality of the education program, that is coherent in structure, processes and outcome and that links theory and practice in the professional education of a doctor, nurse or of a midwife.

Family Medicine Practitioners are medical practitioners who work primarily in the community/primary care/family medicine and provide care to individual patients and families. In some countries these are known as **GPs (General Practitioners)**. This is seen as a specialty in its own right, requires specific training and is different from the role of a general physician/generalist.

Hub and Spoke refers to a scheme in which one organisation acts as a management or coordinating centre for a number of other related organisations or activities. One example is a primary care (family medicine) training centre which has responsibility for coordinating and monitoring the training activities of a number of other practices.

Licensing generally involves conferring upon an individual a license to practice their particular healthcare profession. Many countries do not distinguish between licensing and registration (page 25) and both may be partial/temporary/conditional in certain circumstances (for instance, newly qualified professionals in some countries).

Local: Applicable to individual Pacific Island Countries and Territories (PICT).

Numerus Clausus (closed number) is a system of regulating student numbers (usually medical students) wherein a fixed number of places are

available each year, usually determined by the government and based upon future workforce planning. The opposite form of student number regulation is a **free market**, wherein there is no regulation of student numbers – graduates compete for jobs and universities compete for students (and funding, from students and/or government).

Postgraduate refers, in the context of the education of healthcare professionals, to education which occurs after initial registration with/licensing by a professional body. This is sometimes termed **post-qualifying** education for example when referring to some nursing programs which are at diploma and not degree level.

Regional: Applicable to all PICT across the Pacific region.

Registration generally refers to the actual process of enrolling with a professional regulatory body following graduation from an accredited program. Many countries do not distinguish between registration and licensing, but some do and a license to practise may be issued by a separate authority, particularly in countries where the processes are managed at a regional level. Both licensing and registration may be partial/temporary/conditional under certain circumstances (for instance, newly qualified professionals in some countries).

Revalidation refers to the renewal of a license to practice. Many countries have some sort of regular renewal or re-registration, generally every few years (although the term revalidation is one most commonly associated with the UK currently).

Standard: A definition or statement for evaluating performance and results established by evidence and approved by a recognised body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the requisite degree of compliance in a given context.

Specialty/Specialist refers to the latter stages of postgraduate training, generally for doctors, where they attain their final career status (e.g. surgeon, psychiatrist).

Undergraduate refers, in the context of the education of healthcare professionals, to education that occurs before, and usually leads to, registration with/

licensing from a professional body/regulator. This is sometimes termed **prequalifying** or **basic** education. Students engaged in undergraduate education of this sort may already have a previous degree (and so are graduates, but will always be referred to here as undergraduate not postgraduate students).

THE KNOWLEDGE HUBS FOR HEALTH INITIATIVE

The Human Resources for Health Knowledge Hub is one of four hubs established by AusAID in 2008 as part of the Australian Government's commitment to meeting the Millennium Development Goals and improving health in the Asia and Pacific regions.

All four Hubs share the common goal of expanding the expertise and knowledge base in order to help inform and guide health policy.

Human Resource for Health Knowledge Hub

University of New South Wales

Some of the key thematic areas for this Hub include governance, leadership and management; maternal, newborn and child health workforce; public health emergencies; and migration.

www.hrhhub.unsw.edu.au

Health Information Systems Knowledge Hub

University of Queensland

Aims to facilitate the development and integration of health information systems in the broader health system strengthening agenda as well as increase local capacity to ensure that cost-effective, timely, reliable and relevant information is available, and used, to better inform health development policies.

www.uq.edu.au/hishub

Health Finance and Health Policy Knowledge Hub

The Nossal Institute for Global Health (University of Melbourne)

Aims to support regional, national and international partners to develop effective evidence-informed national policy-making, particularly in the field of health finance and health systems. Key thematic areas for this Hub include comparative analysis of health finance interventions and health system outcomes; the role of non-state providers of health care; and health policy development in the Pacific.

www.ni.unimelb.edu.au

Compass: Women's and Children's Health Knowledge Hub

Compass is a partnership between the Centre for International Child Health, University of Melbourne, Menzies School of Health Research and Burnet Institute's Centre for International Health.

Aims to enhance the quality and effectiveness of WCH interventions and focuses on supporting the Millennium Development Goals 4 and 5 – improved maternal and child health and universal access to reproductive health. Key thematic areas for this Hub include regional strategies for child survival; strengthening health systems for maternal and newborn health; adolescent reproductive health; and nutrition.

www.wchknowledgehub.com.au

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