Leadership and management

HIV AND HUMAN RESOURCES CHALLENGES IN PAPUA NEW GUINEA: AN OVERVIEW

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IHIG INTERNATIONAL HIV RESEARCH GROUP
Providing the evidence base to respond effectively to HIV

Papua New Guinea

An AusAID funded initiative

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The International HIV Research Group

The International HIV Research Group conducts high quality social and behavioural research which provides essential strategic information needed to design cost effective and high impact interventions and underpins the development of appropriate policy responses by national partners.

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ACRONYMS

AIDS	Acquired immunodeficiency syndrome
ART	Antiretroviral treatment (or therapy)
CBO	Community-based organisation
CHW	Community health worker
FBO	Faith-based organisation
GFATM	Global Fund to Fight Aids, Tuberculosis and Malaria
GoPNG	Government of Papua New Guinea
HIV	Human immunodeficiency virus
HRH	Human resources for health
HRI	Human resource information system
IEA	International Education Agency of PNG
IHRG	International HIV Research Group
IMAI	Integrated Management of Adolescent and Adult Illness
IMCI	Integrated Management of Childhood Illness
IRG	Independent Review Group
LMIC	Low and middle-income countries
MCH	Maternal and child health
MoU	Memorandum of Understanding
NACS	National AIDS Council Secretariat
NCD	National Capital District
NDoH	National Department of Health
NGO	Non-government organisation
NHATU	National HIV and Aids Training Unit
NHP	National Health Plan
NRI	National Research Institute
NSP	National Strategic Plan for HIV/AIDS
PLHIV	People living with HIV
PMTCT	Preventing mother to child transmission
PNG	Papua New Guinea
PPTCT	Prevention of parent to child transmission
STI	Sexually transmitted infections
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNSW	University of New South Wales
UNGASS	United Nations General Assembly Special Session
VCCT	Voluntary confidential counselling and testing
VCT	Voluntary counselling and testing
WHO	World Health Organization

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.

EXECUTIVE SUMMARY

Information available in PNG shows that the majority of human resource training was provided by the **National HIV and AIDS Training Unit and the National Department of Health in partnership with other implementing agencies.**

The HIV epidemic in Papua New Guinea (PNG) presents major challenges, including significant human resources challenges. This report presents an overview of the available global literature on HIV and human resources, collates information on the workforce responses to HIV in PNG and highlights human resource issues specific to HIV in PNG.

The review of international literature identified some major issues including the lack of trained staff, the large attrition rate of health workers due to poor working conditions and the uneven distribution of HIV health workers in both the private and public sectors.

The concentration of HIV services in urban areas, discriminatory attitudes among health workers towards people living with HIV (PLHIV) which can negatively influence the quality of service provided, and the effects of skewing the health system and workforce towards HIV services are also documented in the literature. In some countries a response to these issues has been task-shifting or task-sharing; however, the usefulness of this strategy to address human resource issues for HIV in PNG needs further investigation.

Information available in PNG shows that the majority of human resource training was provided by the National HIV and AIDS Training Unit (NHATU) and the National Department of Health (NDoH) in partnership with other implementing agencies. Yet there is not enough information to plan for effective HIV workforce development; follow-up of those who have been trained has not occurred, and hence the contribution to services cannot be assessed.

Some evidence is presented in this report that the focus on HIV workforce development has occurred at the expense of other health workforce areas. A research publication from the National Research Institute (NRI), PNG, surveying health workers in rural economic enclaves, noted that few staff had received the HIV related in-service training they needed. Human resource issues identified included inadequate staffing and absenteeism; isolation from the rest of the health workforce; lack of supervision, and irregular salary payments.

The overview report concludes with a series of questions that relate to workforce planning and deployment, workforce management and training of personnel. The international literature review demonstrates the value of gathering empirical data on the human resource challenges associated with HIV. Gathering information on the extent of training and the deployment and roles of graduates is essential to evaluating workforce effectiveness and for the development of human resources for health policy, responsive to the HIV epidemic in PNG.

PAPUA NEW GUINEA: SELECTED HRH INDICATORS

2,746
Health facilities in PNG

4.4%
Doctors and dentists as a percentage of public sector health workforce

33.8%
Community health workers as a percentage of public sector health workforce

56
Annual shortfall in output of trained nursing staff

96
Annual shortfall in number of community health workers

27.7%
Nurses as a percentage of public sector health workforce

(Adapted from draft World Bank Report (2011): Health Human Resource Review)

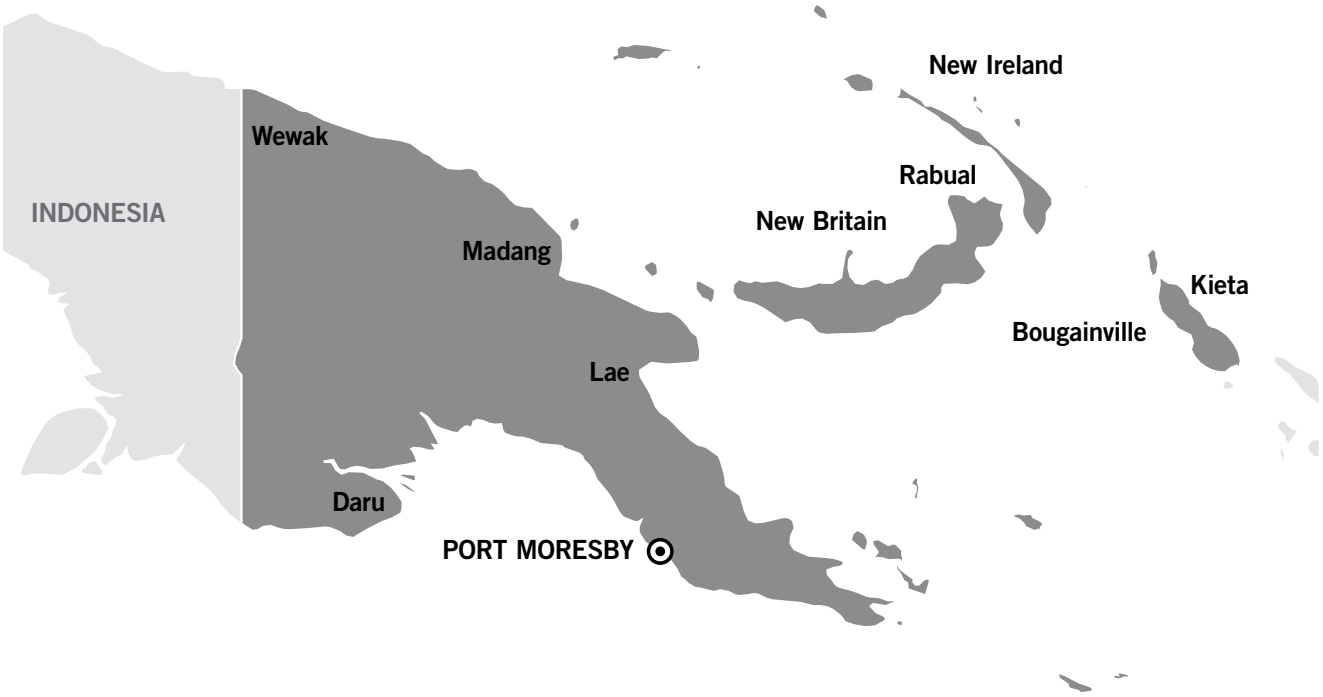
Key to acronyms

HRH human resources for health

INTRODUCTION

In PNG an estimated 0.9% of the general adult population is infected with HIV but the spread of the epidemic has been uneven across provinces [NDoH & NACS 2010]. The epidemic in PNG is described as concentrated geographically and amongst certain populations.

In 2010 in PNG, 138,581 HIV tests were reported to have been conducted and 4,208 were found to be positive. In the Highlands Region 2010 surveillance data indicates incidence at 4.4%, in the National Capital District (NCD) 5.2%, and in Momase 2.6% [NDoH 2011 - in draft]. The extent of the epidemic has meant that among many other challenges faced by government, donors and non-government organisations (NGOs), human resources within the health system is a central issue.



AIMS, OBJECTIVES AND METHOD

In 2011 the HRH Knowledge Hub and the International HIV Research Group (IHRG), both located in the School of Public Health and Community Medicine, University of New South Wales (UNSW), planned to undertake a descriptive account of the workforce involved in responding to the HIV epidemic by obtaining data held by the NDoH in PNG. However, existing data was out-of-date, incomplete or could not be released, requiring a reframing of the 2012 research objectives as:

A. To examine the international literature on human resources and HIV
B. To examine the extant available data on the HIV workforce in PNG
C. To present an overview of the human resources for health (HRH) issues specific to HIV in PNG.
D. To present data on the only large-scale research on human resources for HIV in PNG.

The international literature was searched using a number of key databases – Medline, Web of Science and Proquest. As well, Google was used to find key grey literature. The literature was searched using five key terms "human resources for health AND HIV"; "HIV workforce"; "health workers AND HIV"; "health professionals AND HIV"; "health system AND HIV".

(A) The international literature on HIV and HRH challenges

The deficiency of human resources for HIV has been described as a 'triple threat' [Chen et al. 2004] as it increases the workload of already burdened health workers, requires health workers to deal with patients in palliative care (and their families) and it can expose health workers to HIV infection. There are numerous other related issues: severe shortages of HIV health workers in many countries, lack of skills required to deal with an evolving epidemic [UNAIDS 2010] and changes in epidemic responses [Chen et al. 2004; Dolvo 2005; WHO 2006a]. Major issues discussed in the international literature on human resources and HIV are outlined below.

Insufficient trained staff

As the number of people living with HIV increases and fewer people die of AIDS related conditions due to the roll out of antiretroviral therapy (ART), the number of people needing services is expected to increase requiring a concomitant increase in the number of health workers to provide long term HIV management through treatment [Barnighausen et al. 2007]. This will place an increased strain on the already deficient HRH for HIV service provision in low and middle-income countries (LMICs). Tawfik and Ngoti [2003] argue that the major issue in the quality of HIV service provision in Southern Africa is the overburdening of service providers.

Lack of training is one of the **primary reasons for noncompliance** with universal precautions among healthcare workers.

They found that there are many in the health workforce who may not have the skills to deal with the changing disease burden, and possess less than optimal knowledge and skills for managing people living with HIV or the more complicated stage of AIDS. In some resource-limited settings, the barriers to ART adherence have been identified as the lack of adequate physician training, healthcare infrastructure, and discontinuities in provider-patient relationships [Ivers et al.2009; Meng et al. 2006; Xiulan et al. 2011].

In India, access to services and quality of care have both been compromised by an overburdened healthcare system and staff with limited training in administering ART [Vijaykumar 2007]. Lack of training is one of the primary reasons for noncompliance with universal precautions among healthcare workers [Jankovic et al. 2009; Sadoh et al. 2006; Simbar et al. 2011; Wu et al. 2008].

Poor working conditions leading to attrition

Studies have shown significant attrition rates due to the labour intensive nature of providing ART [Hanefeld & Musheke 2009; Kober 2004]. The attrition and absenteeism of health workers has been attributed to low salaries, tough working conditions, inadequate medical supplies and having to deal with high inpatient death rates.

It has been noted that the staff with the most experience in HIV treatment often leave the workforce totally, or go into more senior management roles, resulting in skills loss for HIV treatment and increased dependency on other health workers with less experience in diagnosing and treating HIV [Marchal et al. 2005].

Although some studies have found that ART scale-up increases the burden and workload on the existing health

workforce, others have found that ART programs increased the motivation and satisfaction of staff, due to the improved health of patients and the increased acquisition of skills through training opportunities [George et al. 2010].

Inter-sectoral movement

A study completed in Ethiopia revealed that the attrition of HIV health workers from the public sector was due to their attraction towards NGOs which provide HIV training programs [Elzinga et al. 2010]. It was shown that between 2003 and 2007 the number of doctors in the public sector decreased from 1,613 to 1,037, whereas in the private sector and within NGOs, the number increased from 419 to 769 within the same period. The authors attributed the change to the attraction of the large funding that these organisations received for HIV programs. In the public sector, the salary for a doctor was approximately $150 per month, which was low compared to the salaries provided by NGOs.

Furthermore, in many developing countries private sector organisations are predominantly found in urban rather than rural areas. If funding and resourcing moves from public to private sectors, health workers may also migrate from rural to urban areas. A recent report in Zambia has shown that rural areas were falling behind in clinical staff allocations and the gap was especially widening in those rural facilities providing HIV services [Brugha et al. 2010].

In order to address the issue of staff moving to the private sector in Botswana, the public and private sectors have collaborated to provide better access to ART treatment. In a survey completed in 2003, private practitioners indicated a high willingness to provide ART on private practice premises; it was found that these private practices relieved the need for the hiring of extra personnel in the public sector, who would have to have been recruited from other countries [Dreesch et al. 2007].

Negative attitudes amongst health workers toward people living with HIV

Many studies in LMICs including China, Vietnam, India, Indonesia, Thailand, Philippines and Bangladesh have documented health care workers' discriminatory attitudes and behaviours towards PLHIV, these include:

1. Denial of treatment and care on grounds of HIV and AIDS status [Ahsan Ullah 2011; Anderson et al. 2003; Paxton et al. 2005; Wang & Zhang 2008].
2. Delaying treatment without reason [Ahsan Ullah 2011; Paxton et al. 2005; Sringernyuang et al. 2005; Yang et al. 2005].

A recent report in Zambia has shown that **rural areas were falling behind in clinical staff allocations** and the gap was especially widening in those rural facilities providing HIV services.

3. Cessation of ongoing treatment and early discharge from hospital without valid reasons [Hossain & Kippax 2011].
4. Differential treatment, including coerced or mandatory testing, testing without consent [Hossain & Kippax 2011; Khoat et al. 2005; Paxton et al. 2005].
5. Quarantine, compulsory internment, and/or segregation in health institutions [Khoat, et al. 2005].
6. Inappropriate (excessive or selective) use of standard precautions [Bray Preston et al. 2002; Ferrer et al. 2009; Hossain & Kippax 2011; Mahendra et al. 2007; Wang & Zhang 2008; Wu et al. 2008].
7. Breaches of confidentiality [Wang & Zhang 2008; Ahsan Ullah 2011].

These discriminatory behaviours have direct negative consequences on the quality of health care services [Rajaraman & Palmer 2008]. Various reports indicate compromised access and quality of care to PLHIV because of HIV-related stigma [Chan et al. 2008; Khoat et al. 2005; Ruiz-Torres et al. 2007; Vijaykumar 2007]. The literature suggests that the knowledge and attitudes of health care workers in relation to HIV is an important factor influencing the willingness and ability of PLHIV to access health care, and the quality of the care they receive [Kermode et al. 2005]. The stigmatisation of PLHIV and breaches in confidentiality by health workers have led to the avoidance of treatment, negative social implications and diminished employment opportunities for those identified as HIV-positive [Rajaraman & Palmer 2008].

Skewing of the health system

There is a concern that HIV has claimed disproportionate funding, infrastructure and human resources relative to disease burden, and that this skewing can distort health systems and HRH deployment. In Malawi, it has been noted that a large proportion of health staff have left government health services to work in privatised HIV and AIDS programs funded by overseas universities or NGOs [Kushner et al.

2004]. Negin & Robinson [2010] studied the funding patterns for HIV and non-communicable diseases in Pacific Island countries and concluded that external funding did not match with disease and mortality figures or local priorities and needs, thereby having impacts on the setting of country health policy priorities.

However, the World Health Report 2008 argued that in responding to specific high burden diseases, such as HIV, countries and the health workforces can develop skills and services in ways that strengthen other components of the health system. In other words the skewing effect may not always be negative, and through a particular targeted response to HIV, health workforces and health systems can be strengthened.

There is still a need to examine whether HRH deployment and changes created by HIV funding have skewed the workforce in particular country contexts and had negative impact, or, whether there have been positive impacts, such as promoting some of the core features of primary health care within the health system.

Task-shifting: a response to the human resource crisis in HIV

Task-shifting is a common response to the global HRH crisis. According to the World Health Organization (WHO) task-shifting involves the rational redistribution of tasks among health workforce teams. Specific tasks are moved, where appropriate, from highly qualified workers to health workers with less training and fewer qualifications, in order to make more efficient use of available HRH. It might also involve expert patients delivering specific forms of support in clinical and community settings. It has been argued by WHO that task-shifting has a promising potential for providing for the HRH deficiency for HIV and AIDS in LMICs [WHO 2008].

In Ethiopia, it has been noted that task-shifting is one of the main contributors to successful up-scaling of universal access to HIV treatment [Elzinga et al. 2010]. There is evidence that task-shifting has improved access to treatment and to the decentralisation of health workers from urban areas to rural areas [Babigumira et al. 2009; Celletti et al. 2010; El-Sadr & Abrams 2007; Rasschaert et al. 2011].

In some countries, task-shifting offers treatment at a lower cost without decreasing the quality of services [Babigumira et al. 2009; Lehmann et al. 2009; Selke et al. 2010]. Some commentators argue that the recruitment of less qualified health workers has improved the quality of treatment of those diagnosed with HIV [Zachariah et al. 2009]. In Botswana, the number of people on ART increased through the recruitment of less qualified health staff to administer ART under direct supervision [Dreesch et al. 2007].

A study completed in Mozambique revealed that clinical staff who had received short training courses on ART administration **did not adhere to the standards of care that were outlined in the course,** with some errors observed to be potentially life-threatening.

It has also been found that task-shifting does not occur only between the medical and nursing professions, but also between the professions and the community. In many developing countries, community health care workers are lay people who receive specific training on delivering ART and HIV-related services. Their contribution to reducing the HRH crisis has been proven to be successful [Celletti et al. 2010; Mukherjee & Eustache 2007; Weidle et al. 2006].

However, in some countries, task-shifting in HIV treatment has been shown to compromise the quality of ART delivery [Rowe et al. 2007; Viswanathan et al. 2010]. Some studies have noted that health workers with lower qualifications have lacked adequate knowledge [Bharat & Mahendra 2007] and a study completed in Mozambique revealed that clinical staff who had received short training courses on ART administration did not adhere to the standards of care that were outlined in the course, with some errors observed to be potentially life-threatening [Brentlinger et al. 2010]. It has also been noted that the majority of sub-Saharan African countries have been slow to adopt task-shifting due to the lack of available evidence on the ability of lower skilled health workers to provide high quality care and make good decisions [Vasan et al. 2009].

Adequate supervision of lower skilled health workers has been shown to be the key determinant of their provision of high-quality care [Callaghan et al. 2010; Fulton et al. 2011]. Indeed, it has been noted that good supervision motivates and improves the performance of lower skilled health workers to whom tasks have been shifted [Celletti et al. 2010].

Summary of international literature

A number of issues arise from this review of the international literature on HIV and human resources including:

- insufficient training for staff in resource-limited settings;
- poor working conditions sometimes leading to attrition;
- uneven distribution of staff geographically and between public, NGO and private sectors, often as a result of salary differentials;
- the knowledge level of health workers in relation to HIV infection; and
- negative attitude of health workers towards PLHIV.

Internationally, with the imperative to continue and extend the provision of services, specific tasks have been delegated to less trained staff, and sometimes to community members; the response of 'task-shifting' has been adopted in various forms, either formally delegated by policy and supported by task-specific training, or informally by community members taking on new roles.

(B) Human Resources for Health in PNG

Draft World Bank Report 2011: Health Human Resource Review

A draft World Bank Report [2011] documents the existence of a HRH crisis in PNG. Asante and Hall [2011] noted that human resource management and the leadership capacity in PNG has been a concern for many years and that PNG's health workforce has inadequate skills to simultaneously meet the needs of a growing population, to accommodate a re-orientation towards primary health care in rural areas, and to improve the quality of supervision and oversight for service improvements.

Public sector health workforce management processes create a number of difficulties, including a limited capacity to respond effectively to changing epidemics and workforce needs. In comparison, health services run by faith-based organisations (FBOs) have a greater degree of autonomy in managing their staffing. The FBOs operate 45% of all health facilities in rural areas and employ 23% of all health workers in the country [Churches Medical Council 2003].

According to the draft World Bank Report the health workforce grew significantly in the decade to 2009; from 10,791 in 1998 to 13,063 in 2009 (21% growth). Table 1 on page 10 shows current health workforce distribution.

Direct service delivery staff account for 69% of these workers. This equates to one service delivery staff member for 561 PNG citizens, but with significant variation among provinces. For example the person to direct health care worker ratio in Manus Island is 270:1 while in Morobe, the East Sepik Province (ESP) and the Southern Highlands Province (SHP) that ratio roughly quadruples to 890:1 and is 329:1 in the New Guinea Islands (NGI). In addition to these poor ratios, the PNG health workforce is ageing with approximately half expected to reach retirement age by 2020, with a quarter already over 55 years of age.

The World Bank Report [2011] argues that the Government of Papua New Guinea (GoPNG) must develop a **fully-costed plan to expand training capacity, particularly of nurses and CHWs.**

The report also notes that while the number of doctors trained per year in PNG is adequate to replace those due to retire in the next 10 years, the annual output of 135 trained nursing staff falls well short of the 191 needed. The gap is wider for community health workers (CHWs) as the present annual output of 149 is less than the 245 needed.

The World Bank Report noted that in 2011 there were 2,746 health facilities listed in PNG. Over 10% of these are mission facilities and the report stated that there were 1,998 aid posts (although it is reported in the National Health Plan 2011-2020 that in some provinces 20% to 50% of aid posts have been closed since 2008). Fifty-two per cent of the total health facilities are in urban areas and 48% in rural areas, even though over 85% of PNG's population is rural. Medical officer urban bias is shown in Table 2 on page 10.

The World Bank Report [2011] argues that the Government of Papua New Guinea (GoPNG) must develop a fully-costed plan to expand training capacity, particularly of nurses and CHWs. This needs to include short-term options, and the significant refurbishment of existing training facilities. It identified the need for government to explore options to retain medical officers, to encourage redeployment of existing staff to rural areas, and for new graduates to be deployed to rural areas with known staff shortages. The report also identified that ageing staff in PNG will be a problem. A shortage of midwives has a particular impact on the capacity to prevent

TABLE 1: COMPOSITION OF THE PNG PUBLIC SECTOR HEALTH WORKFORCE (2009)

Source: World Bank [2011]

CATEGORY OF WORKFORCE	NO.	% TOTAL
Doctors and Dentists	570	4.4%
Health Extension Officers	486	3.7%
Nurses	3,618	27.7%
Allied health personnel	318	2.4%
Med. Lab. Technicians	258	2.0%
Community Health Workers	4,419	33.8%
Other/Administration	3,394	26.0%
TOTAL	**13,063**	**100.0%**

TABLE 2: TOTAL PUBLIC SECTOR FINANCED HEALTH EMPLOYEES URBAN AND RURAL (2009)

Source: World Bank [2011]

SERVICE DELIVERY STAFF CATEGORY	% URBAN	% RURAL
Medical Officers	86.7%	13.3%
Health Extension Officers	38.0%	62.0%
Nursing Officers	55.1%	44.9%
Midwives	34.5%	65.5%
Community Health Workers	32.0%	68.0%
Dentists/dental therapists	65.3%	34.7%

parent-to-child transmission of HIV. A further, critical problem is that nurses trained as midwives over the past decade are unable to be registered as midwives due to the curriculum not meeting the standards set by the NDoH[1].

National Health Plan 2011–2020

PNG's most recent National Health Plan [GoPNG 2010] recognises an emerging crisis in HRH. It documents the nature of this emerging crisis and makes specific recommendations on the way forward. It recognises that the health sector's most important resource is its workforce and argues that human resources need to be strategically and efficiently placed, but understands that:

> Increasing population growth, impacts of new and emerging diseases, and changing patterns of behaviour leading to more lifestyle-related illness, continue to outpace the human resource capacity of the health sector to respond effectively to the needs of the people….. Combined with the declining state of health facilities and the inability of health services to meet the needs of the population, these factors have had a significant negative effect on the morale of health workers. [2010, p.15]

A number of the objectives of the National Health Plan (NHP) are pertinent to the HRH needs in HIV. Objective 1.3 states a goal of: *The right health professionals working in the right places, motivated and delivering right (quality) services.* The strategies to ensure this are:

> 1.3.1: Review the distribution of the current available workforce and prioritise to place the right people with the right skills in the right places.
>
> 1.3.2: Increase the level of skills of health workers and improve the skills mix so they deliver the right (quality) services.
>
> 1.3.3: Increase motivation of formal and informal health workers through costed and government-approved incentive schemes (such as housing and uniforms, medical cover, and school subsidies).
>
> 1.3.4: Ensure clinical supervision is provided in accordance with the National Health Standards.
>
> 1.3.5: Ensure specialists for all provincial hospitals will be available by 2030 as per the National Health Standards.

Objective 3.2 of the NHP is also pertinent: *Quality workforce provided, capable of meeting the health needs into the future.* The strategies the GoPNG intends to meet this objective are:

> 3.2.1: Develop a National Human Resource policy and plan for the health sector.
>
> 3.2.2: Build the capacity of training institutions to reduce attrition rates and provide appropriate cadres of workers for the workforce of the future.
>
> 3.2.3: Increase the annual output of qualified and accredited health workers to meet the needs of population growth.
>
> 3.2.4: Focus on increasing the numbers of nurses, midwives, and community health workers.
>
> 3.2.5: Increase the staff ceilings for critical health workers through evidence-based advocacy to central agencies.
>
> 3.2.6: Develop and implement a sector-wide human resource information system (HRIS) by 2012.
>
> 3.2.7: Outsource the management of Laloki Psychiatric Hospital for in-service training.
>
> 3.2.8: Develop and implement affordable health sector workforce recruitment and retention strategies.

These NHP objectives need to be central to any examination of HIV and human resources in PNG; the development of the HIV workforce should not be separated from national health workforce planning.

(C) HIV and human resources in PNG

This section describes what is known about HIV and human resources in PNG through reference to reports and a description of the activities of training providers. This section also describes the way in which responding to the HIV epidemic may have skewed health workforce development in PNG; and identifies other human resource issues that have arisen as PNG responds to the HIV epidemic.

Review of HIV training programs in PNG 2009

The best source of information on the HIV workforce to date is the AusAID funded, *Review of HIV Training Programs in Papua New Guinea* (2009). Undertaken on behalf of the PNG NACS and the NDoH the review acknowledged that, prior to the review, there had been no assessment of the quality and effectiveness of HIV training programs, nor had there been any documentation of numbers trained and their

[1] Pers. correspondence to authors from Secretary, PNG Nurses Registration Board, 2011.

The most significant recommendation from the 2009 report was that training programs needed to be re-oriented, based on a strategic assessment of needs which would **reflect national and provincial priorities and new developments in the epidemic.**

distribution. The review also aimed to assess the effectiveness of management and coordination of training programs at national, provincial and district levels.

The report identified that the majority of training was provided by the NHATU, with in-service clinical training by the NDoH, in partnership with other implementing agencies such as the WHO, NGOs, community-based organisations (CBOs) and faith-based organisations (FBOs). International NGOs also provided a significant amount of training, using their own curricula, manuals and trainers in a range of HIV workforce related areas [p.23].

The report demonstrates that there are a wide range of agencies involved at many different levels in the human resource response to HIV. The most significant recommendation from the 2009 report was that training programs needed to be re-oriented, based on a strategic assessment of needs which would reflect national and provincial priorities and new developments in the epidemic. Implementation of the recommendations from the report has been impacted by the limited capacity within the NDoH and NACS to undertake such strategic assessment.

The next sections include a brief description of three agencies with roles in training and the preparation of HRH for HIV, as an illustration of historically different roles stakeholders have played in the development of the HIV health care workforce.

The NHATU and the International Education Agency of PNG

Established in 1997 the National Aids Council initially took responsibility for identifying, conducting and coordinating training programs relevant to the management of HIV and AIDS. In 2007 the national response related to HIV and AIDS training was outsourced to the International Education Agency (IEA) and the NHATU. From 2007 the focus of NHATU has been on revising and updating curricula and examining issues relating to the coverage and distribution of training.

NHATU courses currently include counselling and voluntary counselling and testing (VCT) training, home based care training, testing and management training, peer education and introduction to basic HIV and AIDS training. Currently NHATU collates data disaggregated by sex, province and number of participants who have completed each of its courses. However, there is no information available on the sector that trainees came from and the effectiveness and impact of the training programs. Nor is it clear if training activities are carried out systematically in response to epidemic patterns or needs. Table 3 shows the cumulative number of people trained by NHATU between 2007 and 2010 but there is no information available as to why, for example, there has been significantly more people trained in drama theatre projects, than in advanced counselling, or testing and HIV management training.

A breakdown of expenditures for training per Province is available from NHATU but there is no other information that can be gathered to link training distribution to epidemic patterns and needs. Nor is information currently available on placement or follow-up for those who have been trained.

National Department of Health

Until 2011 the NDoH played a significant role in ensuring the implementation of the WHO's Integrated Management of Adolescent and Adult Illnes (IMAI) module for HIV and Integrated Management of Childhood Illness (IMCI). Review of course materials was regularly undertaken by NDoH and WHO. The IMAI training course consisted of course work (two weeks) and a clinical practicum (two weeks) which was delivered in Port Moresby and some regional centres[2].

Difficulties have been noted with the course curriculum and design, not least of which is the amount of time that clinicians have to be away from their regular work, and a lack of mentoring and ongoing supervision after attending the course[3]. Records of numbers trained through the IMAI program are not available from NDoH and information on their current placements has not been made available for this review.

Catholic Health Services

Table 4 provides information about the significant investment made by one of the larger FBOs in HIV related training programs.

[2] Review of HIV Training Programs in Papua New Guinea, Final Report of the Training Review Team, March 2009 p. 14

[3] Ibid p.15.

TABLE 3: NHATU COURSE COMPLETIONS 2007-2010

COURSE TITLE	NUMBERS TRAINED 2007 – 2010
Advanced Counselling Training	154
Counselling and VCT	4,969
Home Based Care Training	7,659
Introduction to Basic HIV and AIDS	31,615
Introduction to Counselling Training	3,136
Peer Education Training	8,507
Testing and Management Training	837
Theatre Training	2,511
Provider Initiated Counselling and Testing	527

TABLE 4: CATHOLIC HEALTH SERVICES HIV TRAINING PROGRAM BUDGET 2008

Source: Review of HIV Training Programs in PNG, 2009

TRAINING	2008 BUDGET PNG KINA	PERCENTAGE OF ANNUAL BUDGET
Home-Based Care	490,300	30%
Introduction to HIV	348,500	21%
VCCT	338,000	21%
Peer Education	255,000	16%
HIV/AIDS, STI	20,000	1%
Rapid Test	25,000	2%
PMTCT	130,000	8%
ART/IMAI	20,000	1%
Total	**1,626,800**	**100%**

In the same year the National Catholic AIDS Office started to systematically gather material on HIV diagnosis in PNG [4]. The data demonstrated that the Western Highlands and Enga Provinces were the highest in priority for what they called 'HIV Criticality' and this determined the orientation of focus for the establishment of facilities, although there was no systematic investigation of workforce needs to enable this scale-up.

A recent report notes that, along with delays in receiving drugs and test kits from the NDoH, the most significant challenge faced is attracting suitably qualified staff or up-skilling current staff to meet HIV service demands.[5]

There are many more organisations involved in HIV services in PNG but an examination of the work of NHATU, NDoH and Catholic Health Services in PNG demonstrates:

1. Follow-up of those who have been trained has not occurred or not been possible.
2. An examination of workforce 'effectiveness' is not possible until agencies responsible for the training are able to provide workforce data.
3. Until workforce data is centrally recorded and available for analysis, then evaluation and further systematic planning is not possible.
4. There is currently insufficient information to centrally plan for HIV workforce development.

Independent Review Group's report 2011

The Independent Review Group (IRG) report [2011] indicated that health service staff in several provinces had maintained service levels in 2010 relative to 2008 and 2009, but there were common concerns emerging. These included increasing STI and HIV patient loads with static or diminished staffing levels; insufficient space with occupational health risks for staff and patients alike; and stock-outs of some drugs and repeated stock-outs of HIV test kits. The report also stated that in the Highlands Region the regional referral centre has insufficient staff; there was unreliable laboratory testing equipment; and large numbers of loss-to-follow-up in adults and children were observed (with more than 50% of paediatric patients lost within a year).

The IRG report noted that there is insufficient supervision at several levels (national to regional, regional to provincial and provincial to district) and that training, supervision and external quality assurance should be expedited. It also reported that the end of the Global Fund Round 4 and the ongoing restructuring of the NDoH, had negatively impacted the operation of the STI HIV and AIDS Surveillance Unit,

The most significant challenge faced is **attracting suitably qualified staff or up-skilling** current staff to meet HIV service demands.

with the loss of several key staff and insufficient funds to support supervisory activities. The delay of the start of Global Fund Round 10 has led to key positions in the STI HIV and AIDS Surveillance Unit becoming unfunded with ensuing discontinuation of staff. The IRG noted that both NDoH and NACS are undergoing restructuring with adverse impacts on human resources management and the morale of staff.

Issues of skew in HRH for HIV response in PNG

Rudge et al. [2010] see problems emerging in meeting recurrent costs and in absorbing staff positions introduced by Global Fund-supported activities. In PNG there is anecdotal evidence that the focus on HIV workforce development has occurred at the expense of maintaining a focus on other health workforce areas[6] and Rudge et al. [2010] argue that scaling up in disease specific services in PNG is unlikely to achieve the aims of having a robust primary health care service.

Duke [2008] argues that there are insufficient health professionals in PNG "to scale up HIV treatment programmes in a timely and effective way and to deal with all the other problems in child health". They cite clinicians' anecdotes of how HIV has increased the antenatal clinic workload because of the complexity of counselling, testing and prevention interventions and argue that additional health workers need to be planned for and funded in each province. If such planning does not occur "...scaling up ART and PPTCT programmes will be impeded, or will result in a 'human resource steal' away from other equally essential activities" [Duke 2008, p 611].

Other human resources issues

Health care workers in PNG's rural areas are often isolated from professional peers and many have high levels of responsibility and leadership within the community; some

[4] 2008 HIV and AIDS Annual Surveillance Report, January to December 2008

[5] National Catholic HIV/AIDS Office 2010 AusAID Annual Report

[6] Pers. correspondence to authors 'HIV has sucked the energy out of primary health care ' May 2011

PNG's 2010 United Nations General Assembly Special Session country progress report [NACS & Partners 2011] indicated that the **capacity to deliver PPTCT services remains limited.**

health staff struggle with reconciling their moral beliefs, socio-cultural pressures from the community, and their professional health promotion and public health obligations when addressing issues related to STIs and HIV [Dundon 2007; Hammar 2008; Wardlow 2008].

PNG's 2010 United Nations General Assembly Special Session country progress report [NACS & Partners 2011] indicated that the capacity to deliver PPTCT services remains limited. They cite considerable staffing issues and a lack of formal training for managers to support them to manage programs, as well as a limited understanding of PPTCT and changing clinical practice in this area; as well as variable interpretation of global standards to the PNG context.

There is very little in PNG's National Strategic Plan for HIV and AIDS 2011-2015 on the subject of human resources. The plan argues that the health sector has significantly increased access to and uptake of HIV counselling, testing and ART, coupled with training of health care workers. The Plan acknowledges that there are unmet needs and states that - it will 'strengthen the capacity of health workers and stakeholders to deliver quality PPTCT services, integrated with MCH services' [p. 32] – however there is very little detail on how capacity strengthening will occur.

The priority outcomes for HIV from the Ministerial Forum held in October 2011 included strengthening the health workforce. The shared target for this outcome was to increase the number of health workers, by cadre, per 10,000 of the population. Australia's contribution was to:

- Support the University of Papua New Guinea's School of Medical and Health Sciences to increase the quantity and quality of Papua New Guinea health care workers and public health programs.
- Support the maternal health response by funding eight midwifery trainers (to teach at all four midwifery schools) and two obstetric and gynaecological specialists to undertake teaching and direct services at Mt Hagen and Madang hospitals.
- Ensure Prevention of Parent to Child Transmission of HIV, HIV and STI counselling, testing and treatment are included in curriculum for mid-wives, nurses and other health care workers.
- Provide in-service and pre-service training for HIV testing, counselling, treatment and sexual health to health care workers, including those in rural facilities.
- Provide in-country scholarships to increase the number of community health workers, nurses and midwives enrolled in PNG training institutions.

Again, these are target statements, and the mechanisms, infrastructure management and resource allocation decisions to achieve these are yet to be specified.

(D) HIV Prevention in Rural Economic Enclaves: A Health Workers Baseline Survey

Research by Buchanan-Aruwafa & Amos [2010] provides important information about health workers and the human resources challenges in responding to HIV in PNG. Information from the research is included here, as it provides further and recent evidence about the significant human resources challenges being faced in PNG.

The survey collected information in 2008 in five rural economic enclave areas across eight provinces in PNG, with 141 health workers completing self-administered surveys. The survey aimed to monitor and evaluate issues that impact on the delivery of rural primary health care, to assess the effectiveness of the health workers support system, and report on the response to HIV in rural Papua New Guinea.[7]

Data were collected from health workers in health facilities managed by the Provincial Health Offices, the FBOs and the private sector, and within geographic proximity to five rural Economic Operators who had signed a MoU in a public-private partnership with the NDoH and Asian Development Bank.

[7] This baseline report by the National Research Institute was done in collaboration with the National Department of Health, the Asian Development Bank, Barrick Kainantu Limited, Higaturu Oil Palm, Oil Search Limited, Ramu Agri-Industries, WR Carpenters, and selected rural health facilities including Hospitals, Rural clinics, District Health Centres, Sub-Health Centres and Aid Posts. Those interviewed included Community Health Workers, Registered nurses, Nurse Aids, Health Extension Officers and Aid Post Orderlies.

Most staff reported that their facilities normally served from 101 to 500 patients (40.7%) or from **over 500 to 1000 (26.3%) patients per month.**

Education and Training

From the baseline report, most health workers interviewed had attained either Grade 10 (52.5%) as their highest educational qualification, or had two or more years of tertiary education (44.0%). However, half had been educated more than twenty years prior to the baseline; with a quarter of health staff completing their education between thirty and forty years before. Only a quarter had completed their education in the last eight years.

Health staff reported that more had been trained in the area of STI and HIV than in other areas; with training courses on STI Syndromic Management (30.1%), HIV Introduction Training (22.8%), VCT (18.7%) and smaller numbers trained in ART (3.7%) and PMTCT (7.3%). Yet health workers also reported that the courses that they most needed were in the area of HIV and STI, including: ART (19.4%); Introduction to HIV (17.4%); VCT (16.0%); PMTCT (13.2%) and STI Syndromic Management (11.8%).

Facility Staffing

The majority (72.4%) of health workers surveyed reported that the facility they worked in lacked adequate staff. The numbers of staff per facility varied from one to forty-eight: with two-fifths (40.0%) of the facilities reporting having from one to five staff; 30.0% from six to ten staff; and over a quarter (25.7%) of facilities reporting having from eleven to fifteen staff.

While a majority of health workers reported that staff came to work as scheduled, over a quarter (28.4%) said that staff did not always work as planned. Of these health workers, more reported that staff would come late to work (44.4%) or were absent for a day (40%); while over a tenth (11.9%) reported that staff could be away for more than a week. Fewer health staff reported that their facility had sustained staff absence for over a month (2.5%) to over three months (1.3%). Further analysis of baseline data indicates that while staff absence was reported from all types of facilities, staff from District and Sub-Health Centres reported more staff absences. Unscheduled staff absences, when there is already inadequate staffing, further strain HRH and contribute to staff frustration, facility closure and ability provide all services.

The number of patients receiving services every month varied considerably. Most staff reported that their facilities normally served from 101 to 500 patients (40.7%) or from over 500 to 1000 (26.3%) patients per month. Only 16.1% of health workers reported serving over 1000 patients a month; while 16.9% served either 100 or fewer patients in the past month. Further analysis indicates that numbers of people served at different types of facilities ranged greatly and all types of facilities reported that they could serve less than 50 or between 500 and 1000 people a month; only Hospital, District and Sub-Health Centre health staff reported serving over a 1000 patients a month.

While 93.4% of health workers reported having their doors open to patients during scheduled hours, 6.6% of health workers reported that their facility or part of their facility had 'closed' over the past year. Facility closures occurred frequently because of a shortage of medicine, staffing issues, water problems, criminal activities or tribal fighting in the area of their facility.

Supervision and Support

A large majority (78.9%) of health workers reported that staff did not receive enough supervision. Only three-fifths (59.4%) reported that a doctor had visited their facility. Most interviewed reported having team meetings at their facilities (58.5%) or they had meetings with their bosses (62.9%); however two-fifths reported they did not have a supervisory support system through team or individual meetings. While 58.7% of health workers reported that their last supervisory visit was within the last month; a quarter (25.7%) had their last supervisory visit six months before. Further analysis showed that all but one staff surveyed from an Aid Post said that they did not receive adequate supervision.

Most (77.0%) felt that they could talk to their bosses, although this was mediated by an association with gender, whereby, those could not easily talk to their boss were predominantly female (81.3%, $p<0.006$).

Frustration and not feeling safe from HIV

Most (63.4%) health workers reported that they were not satisfied with their working conditions and 72.6% were frustrated in their work. Not receiving pay on time, or not

Only a third (34.9%) of health workers surveyed reported feeling safe from HIV. Almost two-thirds (62.2%) who did not feel safe from HIV had not completed the Introduction to HIV course.

having supplies of drugs and medical supplies were identified by health staff as contributing significantly to feeling frustrated at work. While most (65.7%) health staff reported receiving their pay on time; a third (34.3%) did not receive their pay in a timely manner.

There was a statistically significant association between not receiving one's pay on time and feeling frustrated in their work (83% $p<0.44$). Only a third (34.9%) of health workers surveyed reported feeling safe from HIV. Almost two-thirds (62.2%) who did not feel safe from HIV had not completed the Introduction to HIV course.

HIV services and training

Most (60.2%) health workers reported that they thought people living with HIV were neglected in their surrounding community and at health facilities. Health workers were referring 66.7% of PLHIV to other professionals, mainly for VCT and counseling but also for clinical services. Most of the missing data in the survey was in the area of referrals for PLHIV suggesting that any evaluation of HRH workloads must consider the effectiveness of the patient referral processes.

CONCLUSIONS

In this report we have focused on the workforce involved in responding to HIV. However, many of the points we have raised also apply to the general health workforce. We could find no reliable and up-to-date information on the numbers of people working in HIV services in PNG or their deployment and roles. Although the data may yet be retrieved, the available information indicates that a significant number of people have received a variety of training programs provided by the government and NGO sectors. The coordination of training output into an effective workforce does not appear to be happening, at least at the national level.

This important finding identifies an imperative to introduce greater harmonisation into HIV training provided by government and supported by donors and NGOs, such as to identify characteristics of the graduates, their skills, intended roles, locations, supervisory arrangements and the terms and conditions of their deployment as health workers. Further research is needed to determine the extent to which this apparently large scale investment in training HIV workers at various levels, for various roles and by multiple supporters actually contributes to the prevention of transmission, or to the care and treatment of PLHIV.

Among the existing HIV workforce the major health systems imperatives appear to be support, supervision and supply; there is a need to address the issues of health care worker frustration arising from poor payment and supply systems.

The concern arising from this review is the potential for many training recipients to enter the workforce with limited and variable sets of skills and to receive little ongoing support and supervision. This can lead to a disintegrated service response and to staff leaving the HIV workforce or operating with limited effectiveness.

In identifying the HRH policy issues arising from this review, a number of general questions are posed that suggest areas for context specific policy options. These include:

Workforce planning and deployment

- What potential is there for the central collation of HIV training outputs and for the coordination of HRH for HIV workforce through national, provincial and district level planning?
- Given the expansion of infrastructure and services proposed by the Global Fund to Fight Aids, Tuberculosis and Malaria (GFATM) and others: How can PNG respond in a way that prevents further stress on the already fragile health system? Can agency coordination reduce new training infrastructure capital and recurrent staff costs?

Workforce management

- What management systems require strengthening to support health workers in the field by ensuring their supervision, payments and supplies?
- Is task-shifting a feasible strategy in PNG for addressing the problems of inadequate health staffing in rural areas?

Training of personnel

- How can the many training inputs be coordinated towards the production of an integrated workforce directed towards achieving the HIV goals of the National Health Plan? What coordination is needed for the many agencies involved in human resource inputs in the response to HIV?
- What sets of competencies are needed for the prevention of HIV transmission and the provision of treatment and care in the cultural contexts of PNG? How will these competencies be packaged into courses that maximise the use of resources and allow for deployment based on competency sets?
- Is there a need to develop a HRH for HIV workforce training plan?

REFERENCES

Ahsan Ullah, A 2011, 'HIV/AIDS-Related Stigma and Discrimination: A Study of Health Care Providers in Bangladesh', *Journal of the International Association of Physicians in AIDS Care (JIAPAC),* vol. 10, no. 2, pp. 97-104.

AusAID, Sanap Wantaim Program 2009, *Review of HIV Training Programs in Papua New Guinea,* AusAID, Port Moresby.

Babigumira, J, Castelnuovo, B, Lamorde, M, Kambugu, A, Stergachis, A, Easterbrook, P & Garrison, L 2009, 'Potential impact of task-shifting on costs of antiretroviral therapy and physician supply in Uganda', *BMC Health Services Research,* vol. 9, no. 192.

Baer, MR & Roberts J 2002, 'Complex HIV treatment regimens and patient quality of life', *Canadian Psychology/ Psychologie canadienne,* vol. 43, no. 2, pp. 115-121.

Bärnighausen, T, Bloom, DE & Humair, S 2007, 'Human resources for treating HIV/AIDS: Needs, capacities, and gaps', *AIDS Patient Care and STDs,* vol. 21. no, 11, pp. 799-812.

Bemelmans, M, van den Akker, T, Pasulani, O, Tayub, NS, Hermann, K, Mwagomba, B, Jalasi, W, Chiomba, H, Ford, N & Philips, M 2011, 'Keeping health staff healthy: Evaluation of a workplace initiative to reduce morbidity and mortality from HIV/AIDS in Malawi', *J Int AIDS Soc,* vol. 14, no. 1.

Bharat, S & Mahendra, VS 2007, 'Meeting the sexual and reproductive health needs of people living with HIV: Challenges for health care providers', *Reproductive Health Matters,* vol. 15, no.29, pp. 93-112.

Bolger, J, Mandie-Filer, A & Hauck, V 2005, *Papua New Guinea's health sector: A review of capacity, change and performance issues,* European Centre for Development Policy Management.

Bray Preston, D, Forti, EM & Kassab, CD 2002, 'Profiles of rural nurses' use of personal protective equipment: a cluster analysis', *Journal of the Association of Nurses in AIDS Care,* vol. 13, no. 6, pp. 34-45.

Brentlinger, P, Assan, A, Mudender, F, Ghee, A, Vallejo Torres, J, Martinez Martinez, P, Bacon, O, Bastos, R, Manuel, R, Ramirez Li, L, McKinney, C & Nelson, LF 2010, 'Task shifting in Mozambique: cross-sectional evaluation of non-physician clinicians' performance in HIV/AIDS care', *Human Resources for Health,* vol. 8, no. 23.

Brugha, R, Kadzandira, J, Simbaya, J, Dicker, P, Mwapasa, V & Walsh, A 2010, 'Health workforce responses to global health initiatives funding: A comparison of Malawi and Zambia', *Human Resources for Health,* vol. 8, no. 19.

Buchanan-Aruwafu, H & Amos, A 2010, *HIV Prevention in Rural Economic Enclaves: A Health Workers Baseline Survey,* NRI Special Publication No. 60, National Research Institute, Port Moresby.

Callaghan, M, Ford, N & Schneider, H 2010, 'A systematic review of task-shifting for HIV treatment and care in Africa', *Human Resources for Health,* vol. 8.no. 8.

Casas, EC, Decroo, T, Mahoudo, JAB, Baltazar, JM, Dores, CD, Cumba, L, De Weggheleire, A, Huyst V & Bottieau, E 2011, 'Burden and outcome of HIV infection and other morbidities in health care workers attending an Occupational Health Program at the Provincial Hospital of Tete, Mozambique', *Tropical Medicine & International Health,* vol. 16, no. 11, pp. 1450-1456.

Celletti, F, Wright, A, Palen, J, Frehywot, S, Markus, A, Greenberg, A, de Aguiar, RA, Campos, F, Buch, E & Samb, B 2010, 'Can the deployment of community health workers for the delivery of HIV services represent an effective and sustainable response to health workforce shortages? Results of a multicountry study', *AIDS,* vol. 24, suppl. 1, pp. S45-S57.

Chan, K, Stoove, M & Reidpath, D 2008, 'Stigma, social reciprocity and exclusion of HIV/AIDS patients with illicit drug histories: A study of Thai nurses' attitudes', *Harm Reduction Journal,* vol. 5, no. 28.

Chankova, S, Muchiri, S & Kombe, G 2009, 'Health workforce attrition in the public sector in Kenya: a look at the reasons', *Human Resources for Health,* vol. 7, no. 58.

Chen, L, Evans, T, Anand, S, Boufford, JI, Brown, H, Chowdhury, M, Cueto, M, Dare, L, Dussault, G, Elzinga, G, Fee, E, Habte, D, Hanvoravongchai, P, Jacobs, M, Kurowski, C, Michael, S, Pablos-Mendez, A, Sewankambo, N, Solimano, G, Stilwell, B, de Waal, A & Wibulpolprasert, S 2004, 'Human resources for health: overcoming the crisis', *The Lancet,* vol. 364, no.9449, pp. 1984-1990.

Connell, J, Zurn, P, Stilwell, B, Awases, M & Braichet, JM 2007, 'Sub-Saharan Africa: Beyond the health worker migration crisis?', *Social Science & Medicine,* vol. 64, no. 9, pp. 1876-1891.

Dovlo, D 2005, 'Wastage in the health workforce: some perspectives from African countries', *Human Resources for Health,* vol. 3, no. 6.

Dreesch, N, Nyoni, J, Mokopakgosi, O, Seipone, K, Kalilani, J, Kaluwa, O & Musowe, V 2007, 'Public-private options for expanding access to human resources for HIV/AIDS in Botswana', *Human Resources for Health,* vol. 5, no. 25.

Duke, T 2008, 'HIV in Papua New Guinea: The need for practical action, and a focus on human resources and health systems for women and children', *Journal of Paediatrics and Child Health,* vol. 44, no. 11, pp. 611–612.

Dundon, A 2007, 'Warrior women, the Holy Spirit and HIV/AIDS in rural Papua New Guinea', *Oceania,* vol. 77, no. 1, pp. 29-42.

El-Sadr, WM & Abrams, EJ 2007, 'Scale-up of HIV care and treatment: Can it transform healthcare services in resource-limited settings?' *AIDS,* vol. 21, suppl. 5, pp. S65-S70.

Elzinga, G, Jerene, D, Masfin, G & Nigussie, S 2010, *Human Resources for Health Implications of Scaling Up for Universal Access to HIV/AIDS Prevention, Treatment, and Care: Ethiopia Rapid Situational Analysis,* Global Health Workforce Alliance Technical Work Group, www.who.int/workforcealliance/knowledge/.../Ethiopia_report.pdf

Ferrer, LM, Cianelli, R, Norr, KF, Cabieses, B, Araya, A, Irarrázabal, L & Bernales M 2009, 'Observed use of standard precautions in Chilean community clinics', *Public Health Nursing,* vol. 26, no. 5, pp. 440-448.

Fulton, B, Scheffler, R, Sparkes, S, Auh E, Vujicic, M & Soucat, A 2011, 'Health workforce skill mix and task shifting in low income countries: A review of recent evidence', *Human Resources for Health,* vol. 9, no. 1.

George, G, Atujuna, M, Gentile, J, Quinlan, T, Schmidt, E, Tobi, P & Renton, A 2010, 'The impact of ART scale up on health workers: evidence from two South African districts', *AIDS Care,* vol. 22, suppl. 1, pp. 77-84.

GoPNG 2010, *National Health Plan 2011-2020,* Vol 1 & 2, Government of Papua New Guinea, Waigani.

Hammar, L 2008, 'Fear and Loathing in PNG: Sexual health in a nation under siege', in L Butt & R Eves (eds), *Making sense of AIDS, culture, sexuality, and power in Melanesia,* 1st edn, University of Hawaii, Honolulu, pp. 100-134.

Hanefeld, J & Musheke, M 2009, 'What impact do Global Health Initiatives have on human resources for antiretroviral treatment roll-out? A qualitative policy analysis of implementation processes in Zambia', *Human Resources for Health,* vol. 7, no. 8.

Hirschhorn, L, Oguda, L, Fullem, A, Dreesch, N & Wilson, P 2006, 'Estimating health workforce needs for antiretroviral therapy in resource-limited settings', *Human Resources for Health,* vol. 4, no. 1.

Hossain, M B & Kippax, S 2011, 'Stigmatized Attitudes Toward People Living With HIV in Bangladesh: Health Care Workers' Perspectives', *Asia-Pacific Journal of Public Health,* vol. 23, no. 2, pp. 171-182.

Independent Review Group on HIV/AIDS 2011, *Report from an assessment visit 28 April – 13 May 2011,* www.aidsdatahub.org/...independent-review-group-on-hiv/aids-report-from-an-assessment-visit-28-april-–-13-may-2011-aggleton-p-bharat-s-co...

Jankovic, S, Bojanic, J, Jovic-Vranes, A, Marinkovic, J, & Jankovic, J 2009, 'Knowledge, attitudes and practices towards blood-borne pathogens in healthcare workers in Banja Luka, Bosnia and Herzegovina', *Central European Journal of Medicine,* vol. 4, no. 4, pp. 409-414.

Kermode, M, Holmes, W, Langkham, B, Thomas, MS & Gifford, S 2005, 'HIV-related knowledge, attitudes & risk perception amongst nurses, doctors & other healthcare workers in rural India', *Indian Journal of Medical Research,* vol. 122, no. 3, pp. 258-264.

Khoat, DDV, Hong, L, An, C, Ngu, D & Reidpath, D 2005, 'A situational analysis of HIV/AIDS-related discrimination in Hanoi, Vietnam', *AIDS Care,* vol. 17, suppl. 2, pp. S181-S193.

Kober, K 2004, 'Scaling up access to antiretroviral treatment in southern Africa: Who will do the job?', *The Lancet,* vol. 364, no. 9428, pp. 103-107.

Kushner, AL, Mannion, SJ & Muyco, AP 2004, 'Secondary crisis in African health care', *The Lancet,* vol. 363, no. 9419, pp. 1478.

Lehmann, U, Van Damme, W, Barten, F & Sanders, D 2009, 'Task shifting: the answer to the human resources crisis in Africa?', Human Resources for Health, vol. 7, no. 49.

Lucas, GM 2005 'Antiretroviral adherence, drug resistance, viral fitness and HIV disease progression: A tangled web is woven', *Journal of Antimicrobial Chemotherapy,* vol. 55, no. 4, pp. 413-416.

Mahendra, V, Gilborn, L, Bharat, S, Mudoi, R, Gupta, I, George, B, Samson, L, Daly, C & Pulerwitz, J 2007, 'Understanding and measuring AIDS-related settings: A developing country perspective', *Journal of Social Aspects of HIV/AIDS Research Alliance,* vol. 4, no. 2, pp. 616-625.

Maher, L, Coupland, H & Musson, R 2007, 'Scaling up HIV treatment, care and support for injecting drug users in Vietnam', *International Journal of Drug Policy,* vol. 18, no. 4, pp. 296-305.

Marchal, B, Brouwere, VD & Kegels, G 2005, 'Viewpoint: HIV/AIDS and the health workforce crisis: What are the next steps?', *Tropical Medicine & International Health,* vol. 10, no. 4, pp. 300-304.

Meng, X, Anderson, AF, Hou, X, Wang, Y, Sun, L, Zhang, X, Li, Z, Qui, B, Lang, Y, Zhang, L 2006, 'A pilot project for the effective delivery of HAART in rural China', *AIDS Patient Care and STDs,* vol. 20, no. 3, pp. 213–219.

Mills, EJ, Schabas, WA, Volmink, J, Walker, R, Ford, N, Katabira, E, Anema, A, Joffres, M, Cahn, P & Montaner, J 2010, 'Should active recruitment of health workers from sub-Saharan Africa be viewed as a crime?' *The Lancet,* vol. 371, no. 9613, pp. 685-688.

Mukherjee, JS & Eustache, FE 2007, 'Community health workers as a cornerstone for integrating HIV and primary healthcare', *AIDS Care,* vol. 19, suppl. 1, pp. S73-S82.

NACS & NDoH 2010, *Papua New Guinea National HIV and AIDS Strategy 2011-2015,* National AIDS Council, Port Moresby.

NACS & Partners 2011, *The UNGASS 2010 Country Report Papua New Guinea,* National AIDS Council Secretariat, Port Moresby.

Negin, J & Robinson, H 2010, *Funding for HIV and Non-Communicable Diseases: Implications for Priority Setting in the Pacific Region,* Nossal Institute for Global Health, Melbourne. http://www.aihi.unimelb.edu.au/__data/assets/pdf_file/0004/331753/HPHF_hub_WP1.pdf

NDoH 2011, *The 2010 STI, HIV and AIDS Annual Surveillance Report (DRAFT),* National Department of Health STI, HIV and AIDS Surveillance Unit, Port Moresby.

NDoH & NACS 2010, *Papua New Guinea HIV Prevalence: 2009 Estimates,* NDoH and NACS, Port Moresby.

Ngo, A, Ratliff, E, McCurdy, S, Ross, M, Markham, C & Pham, H 2007, 'Health-seeking behaviour for sexually transmitted infections and HIV testing among female sex workers in Vietnam', *AIDS Care,* vol. 19, no. 7, pp. 878-887.

Paxton, S, Gonzales, G, Uppakaew, K, Abraham, K, Okta, S, Green, C, Nair, KS, Merati, TP, Thephthien, B, Marin, M, Quesada, A 2005, 'AIDS-related discrimination in Asia', *AIDS Care,* vol 17, no. 4, pp. 413-424.

Pence, BW 2009, 'The impact of mental health and traumatic life experiences on antiretroviral treatment outcomes for people living with HIV/AIDS', *Journal of Antimicrobial Chemotherapy,* vol. 63, no. 4, pp. 636-640.

Rajaraman, D & Palmer, N 2008, 'Changing roles and responses of health care workers in HIV treatment and care', *Tropical Medicine & International Health,* vol. 13, no. 11, pp. 1357-1363.

Rasschaert, F, Philips, M, Van Leemput, L, Assefa, Y, Schouten, E & Van Damme, W 2011, 'Tackling Health Workforce Shortages During Antiretroviral Treatment Scale-up—Experiences From Ethiopia and Malawi', *Journal of Acquired Immune Deficiency Syndromes,* vol. 57, suppl. 2, pp. S109-S112.

Rowe, SY, Kelly, JM, Olewe, MA, Kleinbaum, DG, McGowan Jr, JE, McFarland, DA, Rochat, R & Deming, MS 2007, 'Effect of multiple interventions on community health workers' adherence to clinical guidelines in Siaya district, Kenya', *Transactions of the Royal Society of Tropical Medicine and Hygiene,* vol. 101, no. 2, pp. 188-202.

Rudge, J, Phuanakoonon, S, Nema, K, Mounier-Jack, S & Coker, R 2011, 'Critical interactions between Global Fund-supported programmes and health systems: a case study in Papua New Guinea', *Health Policy Plan,* vol. 25, suppl. 1, pp. i48-i52.

Ruiz-Torres, Y, Cintrón-Bou, FN & Varas-Díaz, N 2007, 'AIDS-related stigma and health professionals in Puerto Rico', *Interamerican Journal of Psychology,* vol. 41, no. 1,pp. 49-56.

Sadoh, WE, Fawole, AO, Sadoh, AE, Oladimeji, AO & Sotiloye, OS 2006, 'Practice of universal precautions among healthcare workers', *Journal of the National Medical Association,* vol. 98, no. 5, pp. 722-726.

Selke, HM, Kimaiyo, S, Sidle, JE, Vedanthan, R, Tierney, WM, Shen, C, Denski, CD, Katschke, AR & Wools-Kaloustian, K 2010, 'Task-shifting of antiretroviral delivery from health care workers to persons living with HIV/AIDS: Clinical outcomes of a community-based program in Kenya', *Journal of Acquired Immune Deficiency Syndromes,* vol. 55, no. 4, pp. 483-490.

Shoptaw, S, Stein, JA & Rawson, RA 2000, 'Burnout in substance abuse counselors: Impact of environment, attitudes, and clients with HIV', *Journal of Substance Abuse Treatment,* vol. 19, no. 2, pp. 117-126.

Simbar, M, Shayan-Menesh, M, Nahidi, F & Akbar-Zadeh, AR 2011, 'Health beliefs of midwives about HIV/AIDS protection and the barriers to reducing risk of infection: An Iranian study', *Leadership in Health Services,* vol. 24, no. 2, pp. 106-117.

Sringernyuang, DL, Thaweesit, S & Nakapiew S 2005, 'A situational analysis of HIV/AIDS-related discrimination in Bangkok, Thailand', *AIDS Care,* vol. 17, suppl. 2, pp. S165-S174.

UNAIDS 2010, *Global Report: UNAIDS report on the global AIDS epidemic,* UNAIDS and World Health Organization, Geneva. http://www.unaids.org/globalreport/documents/20101123_GlobalReport_full_en.pdf

Van Damme, W, Kober, K & Kegels, G 2008, 'Scaling-up antiretroviral treatment in Southern African countries with human resource shortage: How will health systems adapt?' *Social Science & Medicine*, vol. 66, no. 10, pp. 2108-2121.

Vasan, A, Kenya-Mugisha, N, Seung, K, Achieng, M, Banura, P, Lule, F, Beems, M, Todd, J & Madraa, E 2009, 'Agreement between physicians and non-physician clinicians in starting antiretroviral therapy in rural Uganda', *Human Resources for Health,* vol. 7, no. 75.

Vijaykumar, S 2007, 'Treatment Education Is Critical', *Economic and Political Weekly,* vol. 42, no. 14, pp. 1249-1251.

Viswanathan, M, Kraschnewski, JL, Nishikawa, B, Morgan, LC, Honeycutt, AA, Thieda, P, Lohr, KN & Jonas, DE 2010, 'Outcomes and Costs of Community Health Worker Interventions: A Systematic Review', *Medical Care,* vol. 48, no. 9, pp. 792-808.

Wang, Y & Zhang, K 2008, 'HIV/AIDS related discrimination in health care service: a cross-sectional study in Gejiu City, Yunnan Province', *Biomedical and Environmental Sciences,* vol. 21, no. 2, pp. 124-128.

Wardlow, H 2008, '"You have to understand, some of us are glad AIDS has arrived;" Christianity and condoms among the Huli, Papua New Guinea', in L Butt & R Eves (eds), *Making sense of AIDS; culture, sexuality, and power in Melanesia,* University of Hawaii, Honolulu, pp. 100-134.

Weidle, PJ, Wamai, N, Solberg, P, Liechty, C, Sendagala, S, Were, W, Mermin, J, Buchacz, K, Behumbiize, P, Ransom RL & Bunnell, R 2006, Adherence to antiretroviral therapy in a home-based AIDS care programme in rural Uganda', *The Lancet,* vol. 368, no. 9547, pp. 1587-1594.

WHO 2006a, T*aking stock: Health worker shortages and the response to AIDS, World Health Organization,* Geneva. Retrieved from http://www.who.int/hiv/toronto2006/TTR2_eng.pdf

WHO 2006b, *Towards universal access by 2010: How WHO is working with countries to scale-up HIV prevention, treatment, care and support,* World Health Organization, Geneva. Retrieved from http://www.who.int/hiv/pub/advocacy/towardsuniversalaccess.pdf

WHO 2006c, *The world health report 2006: Working Together For Health,* World Health Organization, Geneva. Retrieved from http://www.who.int/whr/2006/whr06_en.pdf

WHO 2008, *Task shifting: rational redistribution of tasks among health workforce teams: global recommendations and guidelines,* World Health Organization, Geneva. Retrieved from http://www.who.int/healthsystems/TTR-TaskShifting.pdf

WHO 2010, *Towards universal access: scaling up priority HIV/AIDS interventions in the health sector: progress report 2010,* World Health Organization, Geneva. Retrieved from http://libdoc.who.int/publications/2010/9789241500395_eng.pdf

World Bank 2011, 'Papua New Guinea: Health Human Resource Review: meeting human resource constraints and improving health outcomes' draft not published, The World Bank.

Wu, S, Li, L, Wu, Z, Cao, H, Lin, C, Yan, Z, Jia, M & Cui, H 2008, 'Universal precautions in the era of HIV/AIDS: Perception of health service providers in Yunnan, China', *AIDS and Behavior,* vol. 12, no. 5, pp. 806-814.

Xiulan, Z, Pierre, M & Yurong, Z 2011, 'Decentralization of the provision of health services to people living with HIV/AIDS in rural China: the case of three counties', *Health Research Policy and Systems,* vol. 9, no. 9.

Yang, C, Boone, L, Nguyen, TX, Rudolph, D, Limpakarnjanarat, K, Mastro, TD, Tappero, J, Cole, AM & Lal, RB 2005, 'Defensin pseudogenes in HIV-1-exposed, persistently seronegative female sex-workers from Thailand', *Infection, Genetics and Evolution,* vol. 5, no. 1, pp. 11-15.

Zachariah, R, Ford, N, Philips, M, Lynch, S, Massaquoi, M, Janssens, V & Harries, AD 2009, 'Task shifting in HIV/AIDS: Opportunities, challenges and proposed actions for sub-Saharan Africa', *Transactions of the Royal Society of Tropical Medicine and Hygiene,* vol. 103, no. 6, pp. 549-558.

Zelnick, J & O'Donnell, M 2005, 'The impact of the HIV/AIDS epidemic on hospital nurses in KwaZulu Natal, South Africa: Nurses' perspectives and implications for health policy', *Journal of Public Health Policy,* vol. 26, no. 2, pp. 163-185.

Zhou, YR 2007, '"If you get AIDS… You have to endure it alone": Understanding the social constructions of HIV/AIDS in China', *Social Science & Medicine,* vol. 65, no. 2, pp. 284-295.

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