KINGDOM OF CAMBODIA

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Second National

HEALTH WORKFORCE DEVELOPMENT PLAN

2006-2015

Version 1

Human Resource Development Department
Ministry of Health, CAMBODIA
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Preface

Cambodia's first National Health Workforce Development Plan covered the years 1996 to 2005. Notable achievements in the human resource development field during this period include the nationwide implementation of the MPA training program; commencement of CPA training activities; a very considerable strengthening of nurse training leading to the production of highly competent and highly motivated nursing school graduates at Registered Nurse level; up-grading to secondary level of many personnel originally trained to primary level; establishment of an international standard post-graduate medical education program; and of great importance in view of Cambodia's concern for the well-being of mothers and their young children, the re-introduction of midwifery training.

Among other significant changes and developments have been closer liaison and cooperation between the Ministry of Health (MOH) and the Ministry of Education, Youth and Sport (MOEYS); the granting of semi-autonomous status to the University of Health Sciences; establishment of a computer based MOH health personnel data-base; and the emergence of non-government programs for the training of health professional personnel.

Among the concerns to be addressed in the coming years are the transparent accreditation of health personnel training institutions and programs; the training of additional categories and sub-categories of health personnel; and the registration and licensing of health personnel to permit adequate monitoring of the staffing situation and training needs in both the government and other health service sectors.

The 2006-2015 health workforce development plan is designed, with assistance from Prof. John Dewdney, to provide guidance to those who will be involved in the development of human resources for health over the next ten years.

The Ministry of Health is committed to ensuring the development of a well-trained, highly motivated health workforce directed to the protection and promotion of the health of the community at large and the proper care of those with personal health problems. The implementation of a well formulated health workforce development plan will contribute significantly to the attainment of this objective.

Phnom Penh, November , 2005

Prof. Eng Huot
Secretary of State

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1. Introduction

1.1 Meeting the Challenges

As in every country in the world, from the most affluent to the poorest, Cambodia faces a long list of challenges relating to its health workforce. These challenges cannot be met by simply re-structuring or "improved management" within the government health service, because many of them arise from the division between and interdependency of the public and private sectors of the Cambodian health care system. Some of the major challenges and the strategies proposed to address them in this document include:

1.1.1 The Public V. Private Health Service Divide

The relative roles and responsibilities of the government and other providers present a major workforce challenge. Although some improvements in government health service performance are expected to occur in the coming decade, the importance of the private sector will inevitably increase. Staffing the public and private sectors of the health care system calls for strengthening of workforce planning, management and training activities to ensure co-ordination of activities and co-operation in comprehensive service delivery.

Recommendations:
The extension of the role of the Ministry of Health (MOH) Working Group on Human Development to embrace matters concerning the health workforce in the public and private sectors of Cambodia's health system, including health workforce size, composition, deployment, employment, deployment, training and finance, with group membership drawn from both the public and private sectors. Rename this committee as the Working Group on the Health Workforce, thus emphasising its wider role.

#MOH to take a more active role in planning, monitoring and regulating service and training activities within the private sector of the health care system.

1.1.2 Health Workforce Incentives and Rewards

The range and levels of incentives and rewards available to health service personnel in both the public and private sectors are major determinants of health system performance. A private consultant firm has been commissioned to advise the Ministry of Health on these matters and work has been proceeding over the past two years.

Recommendation:
#The work of the private consultant firm be continued, with particular emphasis on the incentives and rewards offered to attract and retain both public and private sector personnel for work outside Phnom Penh. (Recommendations related to this topic are also included under other headings elsewhere in this document.)

1.1.3 Distribution of Health Personnel

The relatively generous availability of health personnel in Phnom Penh as compared with the rest of the country has been recognised for many years.

Recommendations:
#Cap the total MOH staff numbers in Phnom Penh – no additional posts to be created In Phnom Penh but post job descriptions may be changed, (but not so as to increase the number of posts for doctors, medical assistants and midwives) and posts falling vacant may be re-filled subject to justification for their being re-filled.

AND

#Adopt a localised natural attrition approach whereby the need for re-filling any post that becomes vacant is assessed, and if re-filling is not deemed essential, that post (with or without a change in job description) is transferred to a location outside Phnom Penh.

The implementation of this dual strategy will require firm top level commitment, firm decision making and transparent management.

#MOH total staff numbers to increase in line with population growth, but all additional posts will be created outside of Phnom Penh.

#Significant incentives to be offered to MOH staff to remain in posts outside of Phnom Penh e.g. free or subsidised housing, interest free loan for purchase of motor vehicle for personal use, preferential admission to post-basic and post-graduate training on full salary and allowances with guaranteed employment on completion of training.

#Government to offer incentives to private sector personnel to establish practices outside of Phnom Penh and the major population centres e.g. practice establishment loans or grants; access to government hospital and health centre services; private patients to be eligible for free essential medications etc for major health concerns including TB, malaria, HIV/AIDS and immunisation.

1.1.4 Health Personnel Roles and Staffing Mix

The inevitably expanding scope and scale of service provision, the necessary introduction of new technology, and changes in the public demand for and utilisation of services call for the review of present roles of health service personnel and the introduction of new cadres and expansion of others at present very small in size.

Recommendations:
#Systematically and regularly review and if necessary revise existing education and training programs conducted in both the public and private sectors to ensure their relevance and adequacy to meet the requirements of service provision.

#Systematically and regularly examine the desirability of extending the present range of occupations represented in the health workforce to include categories of worker at

present unrepresented or seriously underrepresented in the workforce eg some medical and nursing specialties, medical record and health information system technicians, biomedical engineers and technicians, environmental health personnel, hospital and health service management personnel. Act on the findings of that examination.

#Examine the present need and monitor the future situation regarding the expansion or reinstatement of categories of personnel which are now in the process of being phased out e.g. primary level nursing staff, middle level medical staff (in other countries designated as 'clinical officers', 'medical assistants", 'nurse practitioners' etc). Act on the findings of the examination and monitoring.

1.1.5 Staffing Services at Community Level

Significant improvement in the health status of the population at large is dependent on the scope, scale and quality of services available at the community level.

Recommendations:
#As noted above, development of incentives from government to encourage private sector personnel to establish services outside of Phnom Penh and major population centres.

#Posting of MOH doctors to health centres as "Sub-district Medical Officers" with their role expanded beyond MPA to embrace personal health, community health and environmental health activities and supervision of two or more health centres.

#Provision of incentives for secondary nurses with obstetrical training to manage normal deliveries at facilities where no midwife is present.

1.1.6 Health Personnel Education and Training

Private sector involvement in the production of health professional personnel (including post-basic and post-graduate specialist training) has introduced a new dimension to the planning, provision and regulation of health personnel education and training.

Recommendations:
#Establish committee/s with representation of public and private sector to monitor and co-ordinate programs, program objectives, structure and content, program scheduling, program intake numbers, curricula, field work placement and activities, post graduation internships, postgraduate specialist training in the light of current and emergent service requirements (see Working Group on Health Workforce in 1.0.1 above).

#Accelerate the introduction and development of arrangements for the registration, licensing and accreditation[1] of educational and training institutions and programs, and

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[1] The terms 'licensing' and 'accreditation' are often used somewhat loosely or interchangeably. Better usage is to regard licensing as giving permission to do undertake some regulated activity (e.g. running a nursing school),
and accreditation as certification by an outside body of review that some activity has been or is being performed in conformity with prescribed standards and should be permitted to continue for a stated future period..

the registration and licensing/re-licensing of health professional personnel, covering both public and private sectors.

#As a matter of urgency review, and if necessary adjust, (a) the pre-service medical education programs at UHS and International University, and (b) subsequent medical internship arrangements, to ensure their relevance and orientation to medical practice at community level i.e. inclusive of personal health care, community health activity and environmental health protection and promotion. The activities of all relevant training institutions must be continuously reviewed

Define the competency and training needs of medical specialists at diploma level (6,12 or 18 months training programs) and full specialist level (training programs over several years), in the light of the recent (2004) review of CPA2 specialist medical training, current hospital staffing patterns and the commencement of specialist medical practitioner training at International University and any other private sector institutions offering similar programs[2]. Adjust training programs, trainee selection processes and training intakes accordingly.

#Continually monitor and where appropriate regulate activities in the health personnel education and training field because this is an area where private initiatives are likely to increase in number and scope over the next few years.

1.1.7 Health Workforce Information System

Health workforce management and planning require up-to-date information regarding many aspects of the health care system, including material relating to the service delivery system and to health personnel education and training activities. (Although beyond the scope of this workforce plan, attention is needed to the whole of the MOH information system so that the Ministry can properly monitor, plan, manage, regulate and report upon the country's health care system i.e. including both public and private sector activity.)

Recommendations

#Extend the present central health workforce and human resources development database, which relates only to personnel employed in the public sector of the health care system, to include personnel working elsewhere in the health care system. (This will require review and adjustment of present arrangements for registration, licensing and re-licensing of professional health personnel.)

#Establish a central database to maintain records of personnel undertaking formal professional training activities within both the public and private education institutions.

#Make realistic estimates of the personnel and finance required to carry out the necessary development of the required information systems and their operation, and budget accordingly.

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[2] International University advertised the commencement of a Master of Surgery program in 2005. That university also offers a range of other programs for health personnel at pre-service and post-graduate level.

1.1.8 Further Elaboration and Implementation of The Health Workforce Plan

Staffing and training requirements are, in the first instance, determined by the nature, quantity and quality of the services to be provided. The nature, quantity and quality of services to be provided is determined by service planners/managers, in consultation with financial, workforce and other resource input planners/managers. The challenge is to ensure adequate interaction between the different groups of planning and management expertise.

Recommendation:
#The appointment of a Working Group on Health Workforce as recommended in 1.0.1 above, with representation from both the public and private sectors of the health system.

#Appointment within MOH of a full-time Health Workforce Adviser, to facilitate interaction between the service delivery and personnel education units in both the public and private sectors, the Departments of Personnel, Human Resources Development, Planning and Information in matters relating to the health workforce.

The Advisor reports directly to a nominated top level MOH officer, not a departmental director. (This appointment may require the recruitment of an ex-patriate with appropriate expertise and experience in health service development and management, as well as in workforce related matters. Although external funding may be required, the Advisor should be seen as a member of MOH staff, not the employee of an external agency.)

1.2 Purpose and use of the health workforce plan

1.2.1 Overall purpose

The purpose of the Health Workforce Plan is to provide guidance for the staffing of Cambodia's health services and the training of health personnel over the ten years from the beginning of 2006 to the end of 2015 in line with national health policy, strategies and service plans.

The plan will provide indicative staffing targets for each of the major categories of health personnel. It also indicates additional categories that will be needed to meet the service and administrative personnel requirements of an inevitably increasingly complex health care system. Taking into account the present level of staffing, losses from the workforce due to retirement, resignation and other causes, and entry into the workforce from training programs and other sources, the plan will indicate the training intakes necessary to match staff availability with service requirements. The Plan will also provide some indication of the future costs of staffing the services, and point to areas calling for external support.

Of course, as noted in Cambodia's first health workforce plan, no relatively long-term plan can predict exactly what will happen in the future. Such a plan shows what would occur if the assumptions on which it rests prove to be correct and if the proposals presented are implemented. The plan enables one to see 'in advance' the consequence

of decisions, actions and events, to monitor whether the various assumptions are valid, and then take whatever further action is appropriate to the situation.

It must be recognised that, from the evaluative information currently available, it appears that the implementation of the National Health Coverage Plan which was adopted with high hopes and great enthusiasm in the middle nineteen-nineties has so far failed to produce notably significant improvement in the health status of the Cambodia's population. It is to be expected that Government will take steps to ensure that over the coming ten years resource input and service management will match the need for a more effective health care delivery system.

1.2.2 Specific Uses of the Plan

As for the previous national health workforce plan, the specific uses to which this Plan may be put include:

- Providing a framework within which consistent decisions may be made
- Indicating where resources are inadequate or inappropriately distributed, or are likely to become inadequate or inappropriately distributed unless corrective action is taken
- Identifying deficiencies or excesses in training intakes which may lead to difficulties in filling required posts or lack of employment opportunities for graduates from training programs
- Estimating the cost of staffing the services and of training; these estimates are of obvious use in budget negotiations and cost monitoring
- Providing a realistic indication to staff and potential entrants to the health service of their career options and prospects of advancement
- Identifying needs for external assistance, thereby assisting the Government and MOH in formulating proposals to be put to external funding agencies
- Providing a tool for continuing monitoring and review of the workforce situation so that as problems are anticipated or actually occur, strategies may be developed and implemented to prevent or minimise their adverse effect.

1.2.3 Plan Review

The Plan cannot be regarded as remaining static over the whole of the ten-year planning time frame. Inevitably economic, political and other events that will occur within the next ten years or so, and indeed developments within the fields of health care and environmental management, cannot be predicted with certainty. It is essential that this planning document be seen as the first instalment of a rolling plan - that is a plan which is regularly and systematically reviewed and up-dated at least biennially in the light of any relevant significant changes that have occurred or appear likely to occur.

1.3 The Health Care System - Structure and Function

The government sector of the health care system is dominated by the national Ministry of Health that provides a wide range of personal, community and environmental health related services and activities.

The non-government sector has two sub-sectors. The for-profit sub-sector is principally concerned with the delivery of personal health care by way of private professional practice, institutional care and the production and distribution of pharmaceuticals and other health-related goods.

The not-for-profit sub-sector includes the international and foreign government developmental assistance agencies and programs operating the health field, and a host of other foreign and some local NGO agencies concerned with technical assistance and service delivery.

1.3.1 The Government Sector

Within the government sector are two large employers of health personnel, the Ministry of Health (MOH) and the Ministry of Defence. Several other Ministries and government instrumentalities each employ small numbers of health personnel.

The Ministry of Health structure includes the central MOH units and provincial Health Departments, national programs and national specialised centres, training programs and the national health facility system – the Health Coverage Plan (HCP) – established in the mid-1990s. This facility system in Cambodia was designed to operate as a three-level referral structure, but patients may go directly to any facility without referral from a lower level[3].

Within the HCP structure, health centres and health posts are supposed to provide the first point of patient contact. Health centres, depending on their access to essential drugs and staff complement, are grouped by their capacity to deliver the Minimum Package of Activities (MPA). At this level are 960 facilities, of which 717 are designated as Health Centres, 66 are Health Centres with beds or former District Hospitals, and 177 are commune infirmaries or clinics. About 75% of these facilities are reported to be at MPA 3 level (the highest level), with a functioning Health Centre Management Committee (HCMC), Village Health Support Group (VHSG), staff available for 24 hours a day, and able to provide outreach services 12 times a year. The staffing of facilities at this level generally does not, except in the case of former district hospitals, include doctors. In addition to the health centres, about 70 health posts provide very basic front-line services to small, relatively isolated communities.

At the next level are the 69 Referral Hospitals (RH), classified according to their capacity to provide the Complementary Package of Activities (CPA). Although the staffing of all Referral Hospitals includes full-time doctors, a CPA 1 hospital does not have a general anaesthesia surgery service. CPA 2 hospitals have general anaesthesia surgery services, and CPA 3 hospitals, the highest level of RH, usually located in

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[3] The MOH/WHO (1997) publication *Guidelines for Developing Operational Districts provides an excellent description of the HCP and the rationale underlying its formulation.*

provincial centres, also offer additional specialised services. In 2003 fifteen Referral Hospitals were classed at CPA 3 facilities.

The five MOH National Hospitals top the hierarchy of government health care facilities. All are located in Phnom Penh and offer a range of specialised services at tertiary level. (Two private non-profit hospitals and one in Siem Reap, all three members of the "Kuntha Bopha Group", are also included in official statistics as "National Hospitals".)

Eight National Institutes are currently in operation, providing services targeted at particular population groups and particular health problem areas including maternal and child health, malaria control, diagnosis and treatment of tuberculosis, leprosy, and HIV/AIDS.

The formal education and training of health personnel is conducted at the autonomous University of Health Sciences (UHS), the affiliated Technical School for Medical Care (TSCM) and at four Regional Training Schools. Training and research in public health are conducted at the National Institute of Public Health.

No detailed information regarding the Ministry of Defence health services is publicly available.

Other government agencies employ health personnel to provide services relating to specialised health related activities, social welfare and rehabilitation.

1.3.2 The Not-For-Profit Non-Government Sector

The boundary between this sector and the government is blurred, since much of the activity involving non-government agencies and international development agencies involves partnership. For example in several provinces NGOs contribute very substantially in terms of management and financial support to the operation of government hospitals and health centres under "contracting" arrangements. Three major paediatric hospitals, two in Phnom Penh and one in Siem Reap, together constituting the "Kuntha Bopha Group", included in official reports as "National Hospitals", are very largely managed and funded outside of the government sector, although there are some linkages. Another major teaching hospital in Phnom Penh, the Centre for Hope Hospital, operates virtually entirely outside of the MOH.

International organizations and other development assistance agencies contribute financial support and technical assistance in many other MOH agencies and programs, for example through the Health Sector Support Project which is a cooperative effort between MOH and the World Bank, Asian Development Bank and the British Government's Department for International Development (DfID) as major funding participants.

1.3.3 The Private For-Profit Sector

There is a very large private investment in this sector. Among important areas of private health service provision are hospitals, medical and dental clinics, maternity centres, retail pharmacies, optometry services and spectacle suppliers, the production

and distribution of medical equipment and supplies. However, here again there is some blurring of the public-private boundary because full-time MOH and some other government employees provide much of the workforce for activities in the private sector.

Some indication of the scale of activity and thus of health personnel involvement in the private for-profit sector comes from the official statistics presented in Table 1.1.

Table 1.1: Numbers of licensed and unlicensed private sector clinics and laboratories, 2003

		Clinics					
		Maternity	Medical Consultation*	Medical Clinics**	Dental Consultation*	Dental Clinics**	Laboratories
Phnom Penh	Licensed	2	238	176	26	8	2
	Unlicensed	0	335	29	187	27	1
Provinces	Licensed	0	342	7	19	0	1
	Unlicensed	26	1,542	62	207	0	61
Total	Licensed	2	580	24	45	8	3
	Unlicensed	26	1,877	91	394	27	62

*Clinics without beds; **Clinics with beds
Source: Office of Ethics and Regulation, Hospital Services Department, MOH, 2004

Around 1,300 pharmaceutical businesses were operating under license in 2003, and another 2,500 were unlicensed[4].

A recent addition to activities in this sector has been the opening of a private university offering formal degree-level programs in medicine, dentistry, nursing, public health and other health professional areas.

Activity in the private for-profit sector has been growing substantially over the past decade and will undoubtedly be a major growth area within Cambodia's health care system in the period to be covered by this workforce plan.

1.4 Health Service Utilisation

Only limited information regarding health service utilisation is available, and it does not accurately reflect either the quantity or quality of service provided to Cambodia's population.

Statistics published by MOH regarding health service activities show low rates of utilization, but the data are inevitably incomplete, because they do not include activities within the private sector of the health care system. Many qualified MOH health personnel undertake private practice "out-of-hours", and in Phnom Penh and to a lesser extent in some other areas of the country some qualified practitioners work completely outside the government system. No reliable information is available

[4] Under the four-page *Law on the Management of Private Medical, Paramedical, Medical Aide Practice 2000* a doctor, dentist, dental assistant, nurse, midwife, physiotherapist or laboratory specialist may be authorized to set up a clinic or laboratory. The *Law on the Management of Pharmaceuticals 1996* requires the presence of a qualified pharmacist or 'other qualified person' at an authorized pharmacy.

regarding the current scope and scale of utilisation of services provided by "informal" practitioners.

The following table (Table 1.2) shows official MOH service utilization rates, but they must be regarded with caution. More valid information about the real levels of population utilization of health services should be forthcoming from the 2005 Demographic and Health Survey.

Table 1.2: Selected MOH health service statistics

	1998	2000	2003
Number of contacts per inhabitant per year, provincial health services	0.31	0.31	0.39
Hospital bed occupancy rate (%)	47.4	50.7	60.7
Prenatal coverage rate (%)	30	40.9	46.1
Institutional delivery coverage			
Health Centre	2.9%	3.6%	4.2%
Hospital	4.8%	5.6%	6.7%
EPI coverage - measles	63%	69%	67%

Source: *MOH National Health Statistics, 2003*

1.5 National Health Planning

The Royal Government of Cambodia's *Health Sector Strategic Plan (HSP) 2003-2007* [5] provides overall guidance for the development of health services for the early years covered by this workforce plan. The MOH policy statement in that document asserts that all people of Cambodia, of whatever gender, age, place of residence or ability to pay, should have access to good-quality, basic and essential specialized h ealth care services, staffed by competent health professionals, and at a cost people can afford; they should have information that empowers them to make informed choices about matters affecting the health of themselves and their families.

HSP 2003-2007 proposes six key areas of work:

- Health service delivery
- Behavioural change and communication
- Quality improvement
- Human resource development
- Health financing , and
- Institutional development

Within the *Strategic Plan* each MOH unit/program/hospital/province is required to develop a detailed plan. Progress in the implementation of these plans is reviewed year by year at the Joint Annual Health Sector Review (AJHSR).

In 2004 MOH published the first national operational plan, entitled *Pushing the Momentum: The First Health Sector Annual Operational Plan 2005*[6]. This first AOP set targets for activities during 2005 under each of the above six key area headings. Presumably an AOP will be issued every remaining year of the HSP 2003-2007's life.

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[5] MOH (2002). *Health Sector Strategic Plan (HSP) 2003-2007*

[6] MOH (2004). *Pushing the Momentum for Health Sector Development: The First Health Sector Annual Operational Plan, 2005.*

It is essential that these very short-term operational plans give appropriate attention to the workforce implications of the activities and targets they propose.

1.6 National Health Workforce Policy

As in many countries around the world, Cambodia has no published comprehensive official statement of health workforce policy. The MOH *Health Sector Strategic Plan 2003-2007* included three strategies specifically related to the health workforce:

- "Increase the number of midwives through basic training and strengthen the capacity and skills of midwives already trained through continuing education.
- Strengthen human resources planning to reduce the mal-distribution of the numbers and type of workforce through identification of posts and the reallocation of staff.
- Enhance the management and technical skills and competence of all Ministry of Health workforce through quality, comprehensive training, education, retention and support measures."

In somewhat more detail, and taking a long term view over the whole of the country's health workforce, matters of policy concern which call for attention and the delineation of realistic approaches and strategies over the coming years include:

- The government/non-government workforce divide

In broad terms government policy can be seen to be oriented towards maintaining a situation in which government employees also constitute a major "part-time" component of the non-government health workforce. However comprehensive health system planning, including health workforce planning, requires more explicit guidance as to policy delineating the respective roles of government and other providers of health care.

- Geographic distribution of health personnel – both government and non-government personnel

There is no evidence to date of effective implementation of policy directed to redressing the current inequitable distribution of health personnel between urban areas, particularly Phnom Penh, and the rural areas where approximately 85 per cent of Cambodia's population live. There will be no quick and easy adjustment, and the longer term objective should be raising the level of health personnel availability in areas outside Phnom Penh rather than reducing service availability in Phnom Penh. This will require a re-think of present policies regarding overall health service structure and the future respective roles of the government and private sectors. It may become necessary to introduce some regulation of the geographic location of government and private hospitals, clinics etc, and of the scope and scale of their activities, in order to move towards a more equitable health care system.

- Output of government and other health personnel education and training programs

The establishment of a major private sector health personnel education provider three years ago raises questions regarding employment opportunities for graduates from

both government and private programs, and regarding the possibility of raising standards of staffing outside of Phnom Penh. These and other matters arising from this radical change in the health personnel education and training situation call for an in-depth study of the implications of the change.

- Remuneration of health service personnel

Development of arrangements for appropriate levels of incentive and reward for health service personnel in both the government and private sectors are matters of urgent concern.

Proposals for the introduction of some form of health insurance are under consideration, but the possible impact on the remuneration of government and other health service staff would probably be relatively small.

A consultant firm has been commissioned to explore ways and means of introducing a stepped incremental salary funding arrangements for government health worker s. It appears unlikely that any very significant change along these lines would be introduced until well into the life of the 2006-15 health workforce plans.

- Workforce management concerns, relating to personnel in both the public and private sectors include:

  - Recruitment into employment into public service and other employment
  - Strengthening of workforce management at the service level
  - Productivity of health service personnel
  - Competence and quality of performance of health service workers
  - Discipline and disciplinary procedures

- Education and training of health service personnel, including both health professionals and other health service personnel demand consideration; among matters of concern are :

  - The respective roles of government and other agencies in the education and training of health personnel
  - Standards of education and training programs, including institutional and program accreditation and licensing
  - Collection of information relating to intakes into and exit from training programs in the private sector
  - Review of current and developing roles and training needs of health personnel and staff mix, including development of additional cadres of health worker

- Location of training facilities

  - Desirability and feasibility of establishing medical (doctor) education training centres outside Phnom Penh

Most of these and other important workforce policy issues have been 'on the table' for years. Decisions at the highest level as to feasibility of delineating and implementing

policy development and change, and the allocation of priorities between the concerns, are needed.

1.7 Health Service and Health Workforce Financing

The contribution of government finance as a percentage of total national expenditure on health is very low, with only 14.2% of health service finance coming through government channels and the other 85.8% coming from non-government sources, principally from out-of-pocket spending on the part of individual members of the population. In 2003, government spent US$3.16 per head on health care, down from $4.10 in 2002. The bulk of this small government input is spent on service operating costs and only about one third of it went on salaries and other payments to staff.[7]

As mentioned in 1.5 above, development of policy regarding health worker remuneration is a major concern. Of course the policy must be developed in the light of salaries and earnings of other government service employees (eg school teachers, defence personnel) and people working in commerce and industry.

Unless there is a radical change in the government approach to the funding of health services, including the payment of health personnel, any very significant expansion of the health system and the health workforce will occur in the private sector.

1.8 The Organizational Arrangements For Health Workforce Planning

Within the Ministry of Health three departments have major responsibilities relating to the health workforce.

- Department of Planning and Health Information (DPHI)
- Department of Human Resources Development (DHRD)
- Department of Personnel (DP)

One might expect from those titles that DPHI, as Cambodia's principal health system planning unit, would be responsible for determining the allocation and numbers of health service personnel required to meet the staffing needs of the nation's overall health system plan – a plan which should embrace both the government and private sectors of that system. DHRD would be concerned with planning and coordinating the production of a sufficient pool of appropriately trained personnel from which the staffing needs of the health care system may be met. The Department of Personnel would have responsibility for "hiring, and firing" people to be employed in the services actually operated by MOH, and arranging for the payment, transportation, acceptable working conditions, safety and so on of MOH employees. Thus the responsibilities of both DPHI and DHRD extend across the whole of the country's health care system, embracing both the government and non-government sectors, and require a relatively long-term vision, although their functions are very different. The Personnel Department would be principally concerned with more immediate administrative matters relating only to MOH personnel.

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[7] MOH (2004). *Pushing the Momentum for Health Sector Development: The First Health Sector Annual Operational Plan, 2005.*

For a number of reasons the present allocations of functions and degree of participation in workforce planning of these three departments does not follow that pattern. An important matter for decision in the near future is the redefinition of the respective roles of these three departments, perhaps with health workforce planning becoming primarily the concern of DHPI.

A number of the MOH inter-departmental committees and working groups set up in November 2004 have responsibilities relating to planning Cambodia's workforce. These include:

- Health Sector Steering Committee
- Technical Working Group for Harmonization and Alignment in the Health Sector
- Technical Committee for the Implementation of the Health Strategic Plan 2003-2007
- Working Group on Health Service Delivery
- Working Group on Human Resource Development

There are currently no formal arrangements for health workforce planning relating to the non-government sub-sectors of the workforce. The advent of a major non-government health personnel education institution underlines the necessity to establish such arrangements.

1.9 Health Workforce Data and Information Management

The Department of Personnel is responsible for ensuring that MOH employees are on the payroll and the maintenance of personnel records. Records relating to entry into and completion of MOH RTC and UHS/TSCM training programs and participation in some other training activities are maintained by DHRD. These two departments share a computer-based human resources data-bank from which some information essential for workforce planning and the monitoring of plan implementation may be extracted. DPHI collects and collates staffing information from central and provincial MOH units. These staffing returns are the basis of the annual two-page summary of MOH professional health employees by professional category and place of work published in the DPHI's annual *National Health Statistics* report.

These sources provide some information for the preparation of the health workforce plan and monitoring its implementation.

Regular review and reconciliation of the information produced from the HR database, the annual DPHI summary and payroll should be carried out at least annually throughout the life of this workforce plan 2006.

But a major impediment to workforce planning and workforce management is the very limited data available from the private sector of the health care system. Some data regarding health personnel working in the private sector may be obtained from MOH and provincial health department records of mandatory professional registration and registration of health facilities. However the registration machinery is in need of review and up-grading. It must be linked to an annual re-licensing system to be of any value for workforce planning and monitoring purposes.

Machinery requiring the regular collection of data relating to students entering and leaving health professional training programs in the private sector is not yet in place.

Strategies to be developed during the life of *HWFP 2006-15* must include attention to organizational responsibilities and arrangements for the collection, processing and analysis of relevant data; expansion of the information system (including the development of data collection and input from the private sector); data-processing, and workforce monitoring. More comprehensive publication of health workforce information, for example by the preparation of an annual report in Khmer and English, will be a important means of keeping decision makers informed of issues and developments relating to health workforce. The proposed appointment of a Health Workforce Adviser would enhance the capacity of MOH to undertake these essential functions.

1.10 The Planning Context - Assumptions Relating to Workforce Planning

1.10.1 Population and Demographic Trends

When the results of the national census 2005 have been processed they should enable more precise estimation of current population numbers, population growth rates and projected population numbers.
For the purpose of this plan an annual rate of population increase of 2.0 per cent per year for the period 2006 to 2015 has been assumed. This rate of growth is in line with the recent (2004) middle level rate projection from the National Institute of Statistics.

The gender and age distribution of a population has obvious implications for health service and health workforce planning. In Cambodia over the 2006 to 2015 period the major increase in population will be in the less than 10 years of age group, thus increasing the requirement for maternal and child health service provision and MCH personnel.

Continued improvement in the country's road and transport system may have important implications for the siting and development of health facilities and the location of health service personnel.[8]

1.10.2 Health Situation and Trends

The Government of Cambodia is committed to the achievement of the Millennium Development Goals relating to health, which should produce significant improvement in nutrition levels, child and maternal health and environmental heath services during the life of this health workforce plan. The achievement of these goals will require an increase in resource inputs by Government and a sustained effort on the part of health service personnel.

Among specific health problems which will make increased demands upon the health workforce are communicable disease control and traffic-related trauma. As a subscriber to the Millennium Development Goals project, Cambodia is committed to making significant improvement in population nutrition levels in the coming years.

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[8] In July 2006 JICA was funding a study of the social implications of development of Cambodia's road system.

Increasing numbers of HIV/AIDS patients coming into long-term treatment every year are to be expected at least in the first few years of the planning period. One might also expect to see the Government taking a more aggressive stance against malaria and tuberculosis. Improvements in the road system together with the increasing use of motor vehicles will increase the incidence of road traffic accidents and increase the demand for emergency medical and ambulance services.

1.10.3 Structure of the Health Care System

For the purposes of this first version of the *Health Workforce Plan 2006-15*, it will be assumed that the basic structure of the health care system will remain substantially unchanged throughout the planning period.

The major service growth areas appear likely to be in the private for-profit sector. Further expansion of non-government health professional training activities may also be anticipated. For example one 250-bed private teaching hospital is planned to come into operation in Phnom Penh by 2007, a private paediatric hospital is being proposed elsewhere, and additional pre-service and advanced specialist training programs outside of government provision have been fore-shadowed.

1.10.4 Health Sector Finance and Future Developments

There appear at present to be no convincing signs of a significant economic take-off in Cambodia over the next several years but it is assumed that finance will be found to sustain a growth in the size of the MOH workforce in line with population growth. Further development is to be expected outside the public sector.

1.10.5 Private Expenditure on Health Services and Health Care

The largest share of any expansion of both capital and recurrent expenditure will likely be seen in the private sector.

Growth in the private sector health workforce will be financed from fees charged to patient, and through self-funding on the part of students entering private sector training programs.

The introduction of health insurance arrangements would - for those able to afford or otherwise obtain insurance - reduce the risk of sudden calls for substantial amounts of money in the event of serious illness or injury. However, the likelihood of very large numbers of people entering insurance schemes in a cash-income-poor country such as Cambodia may be somewhat small.

1.11 Limitations of the Health Workforce Plan

Although the Ministry of Health is responsible for the preparation of the national health workforce plan, it has only limited control over the health workforce. Recruitment into the permanent MOH workforce, staff salaries, other benefits and conditions of employment are matters for negotiation with other government instrumentalities. MOH control over activities of the thousands of personnel working

in the non-government sector of the heath system is weak and for the most part unmonitored by MOH.

MOH control over the education of health personnel has been weakened to some extent by the granting of a large measure of autonomy to the University of Health Sciences. More seriously, from a planning point of view, MOH control over intakes into professional training programs has been drastically reduced by the entry of private health personnel education providers, notably the International University located in Phnom Penh.

The MOH employed workforce operates within a context characterised by such features as structural and managerial deficiencies, problems associated with a high level of dependence on a multiplicity of development assistance agencies and NGOs, inadequate and irregular funding, poor standards of facility provision and maintenance, logistics problems, and, reportedly, limited "political will" at high levels to make decisions or take action which might be regarded as "unpopular". In addition some commentators have stated that the community at large does not have confidence and trust in the health services provided by government.

Obviously no plan can be expected to address all the workforce-related issues inherent in such a complex situation. At best one can identify areas where some positive change may be possible, and move within them by a process of progressive incrementalism.

2. The Current Health Workforce – Issues And Opportunities

2.1 Overview of This Chapter

Cambodia's current workforce is characterised by its relatively small size in relation to the country's population; the overlap of the government and the private health workforces; the widespread discontent among government employees resulting from low salaries; the high level of "dual employment" of and "informal payments" to health professionals employed by the Ministry of Health; an inequitable distribution of health personnel between the Phnom Penh area and the rest of Cambodia; the small numbers of formally trained allied health professionals and appropriately qualified managerial personnel in the government service; and low levels of productivity as reported in official statistics.

This chapter describes in more detail the characteristics of the current workforce and its performance, identifies major challenges to be met during the life of this workforce plan, suggests strategies for meeting some of the challenges and points to the need for further examination of others as a pre-requisite to formulating plans for their management.

2.2 Introduction

A clear picture and understanding of the characteristics of the current health workforce is important from the planner's point of view because this workforce is going to constitute the bulk of the health workforce for the ten years covered by the 2006-2015 health workforce plan. Furthermore, one has to recognise that any very

significant change in the present composition and deployment of the workforce over those ten years may be very difficult to achieve.

Analysis of recent trends and the current health workforce situation in terms of structure, size, composition, deployment and productivity also provides some of the information on which projection of the future workforce requirements and utilization may be made. The following sections present a review of the information available regarding some salient features of the current health workforce situation with comments on the situation.

The basic structure of Cambodia's total health workforce is unchanged from 1996 when the first Health Workforce Development Plan was written, with four major divisions and a fifth "informal" division:

Division 1. The Ministry of Health workforce – the largest of the four divisions

MOH employees, numbering between 17 and 18 thousand permanent staff members and several thousand others employed as temporary "floating" or contractual workers, make up the largest contingent within the health workforce.

Division 2. Health personnel employed in other Ministries and government agencies – the largest employer here being the Royal Cambodian Armed Forces with a health workforce of some thousands

These two Government employee divisions make up by far the largest component of Cambodia's health workforce. The majority of these health service personnel are MOH staff. Health personnel serving in the Cambodia Armed Forces, probably between two and three thousand in number, make up the second largest government contingent. Other Ministries and government agencies employ in total several hundred health workers.

Division 3.The health workforce employed in the non-government, not-for-profit sub-sector of the health care system – personnel working in the IOs[9] and DAAs[10] and in the NGO[11] administrative and service agencies

In the not-for-profit field international and foreign government development assistance agencies and scores of other local and foreign non-government organizations employ several hundred national and expatriate health service personnel.

Division 4.The health workforce engaging in for-profit activities including the staffing of private hospitals, clinics etc and private professional practice.

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[9] IO – in this report, an international organization such as World Bank, Asian Development Bank, WHO,UNICEF and other UN agencies. An IO may implement its activities through NGOs or other contractual arrangements with local or foreign organizations

[10] DAA – in this report, a development assistance agency of a foreign government such as AusAID, Cooperation Francais, JICA, USAID - may implement its activities through NGOs or other contractual arrangements with local or foreign organizations

[11] NGO – in this report a non-government, not-for-profit agency, local or foreign based - financing may include support from an IO or DAA.

MOH employees (Division 1 above) make up a very substantial part of Division 4, working as 'full-time' civil servants within the MOH workforce, and 'part-time' in the private for-profit sub-sector.

The private for-profit sector of the health care system provides a range of employment for a significant and growing number of full-time personnel. These are greatly outnumbered by government employees working part-time either in independent private professional practice or as owners or employees of private hospitals, clinics, laboratories, pharmaceutical and other health-related enterprises. Although in total many thousands of people are working in this for-profit sector, the machinery for its regulation and surveillance is at a rudimentary stage of development. The absence of appropriate registration and licensing machinery seriously hampers health service and health workforce planning and monitoring.

A fifth, 'unorganized' component, the 'traditional' health workers, including traditional birth attendants (TBAs), continues to be an important part in the health care system. But apart from some limited information relating to the activities of some TBAs, there is virtually no systematic collection of data regarding the size, composition and activities of this traditional front-line workforce. It must be emphasized that the traditional health worker is potentially dangerous, in that time spent in seeking and perhaps acting on their advice may delay the seeking of competent diagnosis and treatment until the patient's condition has become either irreversible or is so far advanced that successful treatment is very difficult. Apart from some later reference to the work of TBAs, this fifth component will not be further mentioned in this review.

2.3 Size and Composition and Size of the Current Ministry of Health Workforce

2.3.1 The Current MOH Health Workforce – Categories and Numbers

The MOH 2004 *National Health Statistics* report shows a total of 17 thousand permanent employees within the Ministry of Health workforce. The categories of health professionals employed permanently within MOH and the numbers in each category as reported in *National Health Statistics 2004* are shown in Table 2.1.

Table 2.1: MOH permanent staff, categories and numbers, 2004

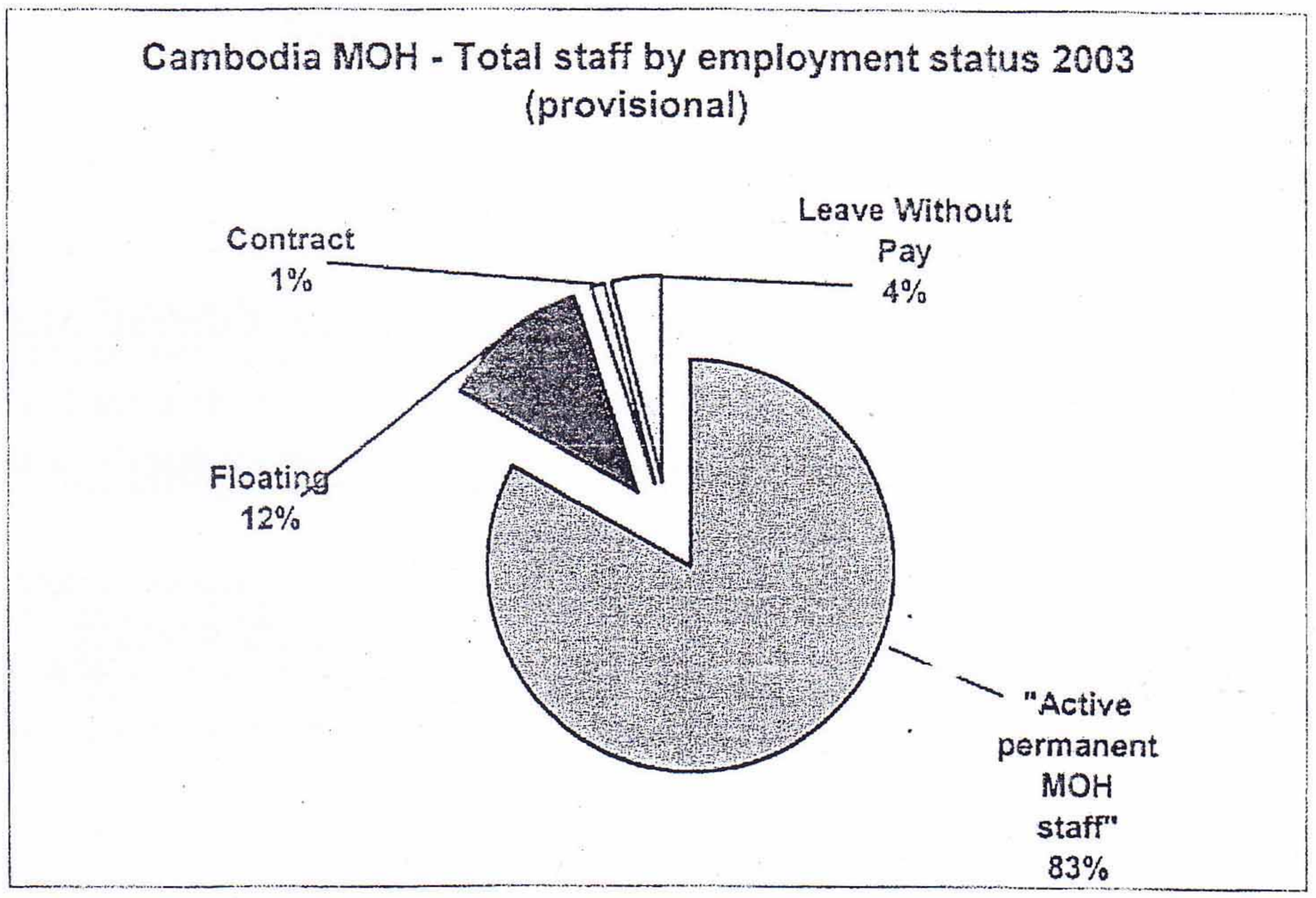
Category	Number	%
Medical Doctor	2,120	12.4%
Medical Assistant	1,340	7.9%
Dentist	139	0.8%
Dental Assistant	84	0.5%
Pharmacist	395	2.3%
Assistant Pharmacist	146	0.9%
Nurse, Secondary	4,498	26.4%
Nurse, Primary	3,356	19.7%
Midwife, Secondary	1,756	10.3%
Midwife, Primary	1,063	6.2%
Lab Tech, Secondary	340	2.0%
Lab Tech, Primary	91	0.5%

Physiotherapist	42	0.2%
Non-health Technician	285	1.7%
Other	1,409	8.3%
Total	17,064	100.0%

Source: MOH (2004) *National Health Statistics 2004*

The MOH permanent workforce is augmented by a large number of support staff, employed as 'floating' staff or contractual staff. Most of these people do not hold any formal qualifications in the health professional field and are generally employed in low level, relatively unskilled jobs. There have been problems in collecting and conciliating data regarding the numbers and composition of this important component of the component of the MOH workforce, but a recent estimate put the number at around 3,000. Thus the total MOH workforce including professional and support staff in 2003 was somewhere between 21,000 and 22,000. The chart below gives a provisional picture of the composition of the MOH workforce in 2003.

Chart 2.1: Employment status of MOH personnel, 2003 (provisional numbers subject to review)



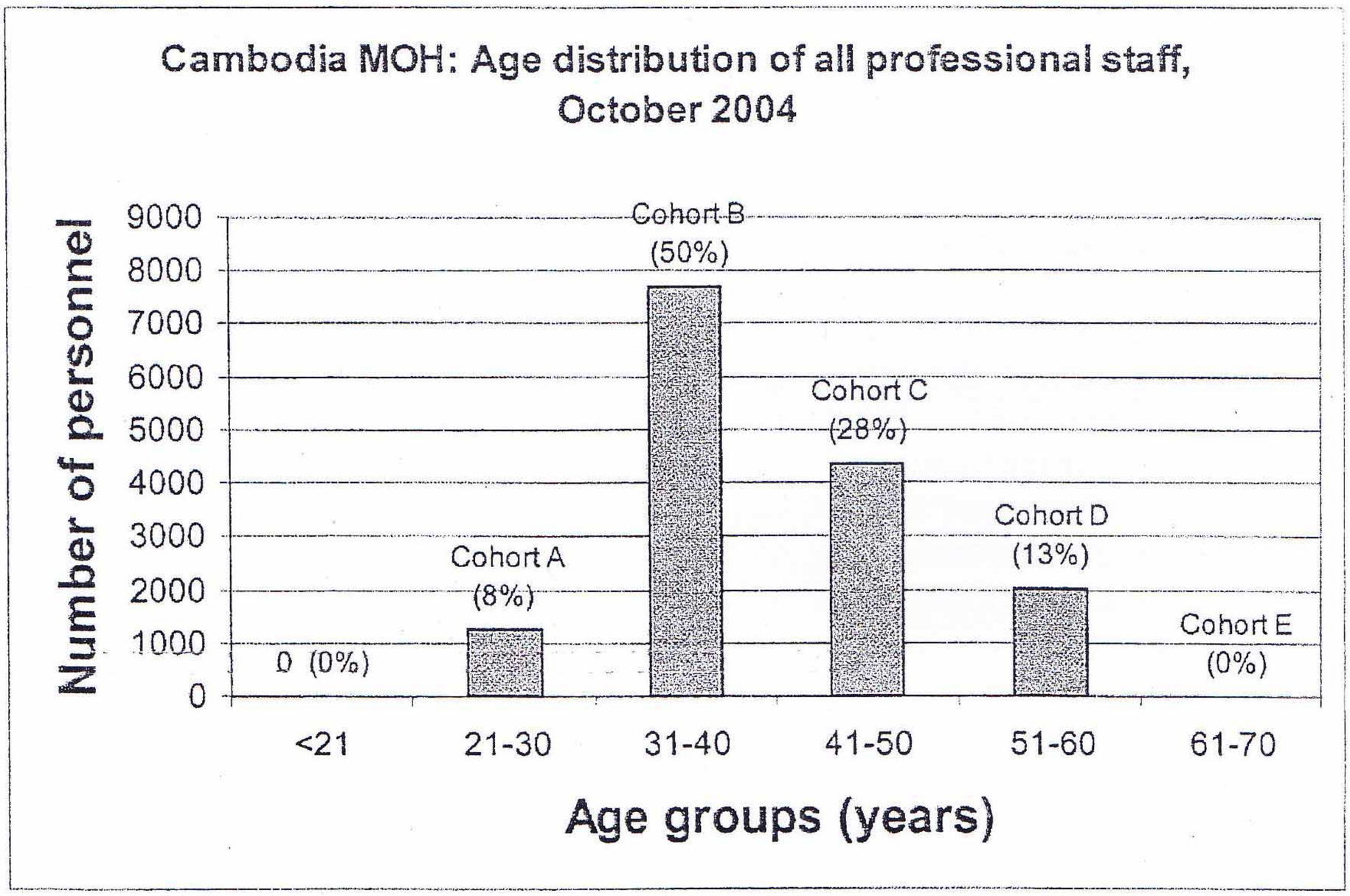
In late 2004 the Prime Minister announced that the large "floating/contractual" component of the government health service workforce would be brought within the civil service and so become eligible for the benefits attaching to established government employees. However, this decision was reversed very shortly later.

At any one time a significant number of MOH employees are on extended leave either with or without pay - some to pursue further professional education in Cambodia and overseas, others to spend time working full-time in the non-government sector of the health system. These arrangements may cause staffing problems because the post of a person on approved extended leave must remain unfilled during their absence.

2.3.2 Gender and Age Distribution of the MOH Health Workforce

Data regarding the age distribution of the MOH professional workforce is incomplete, but the chart below (Chart 2.2) probably gives a reasonably indicative picture of the present situation. The concentration of 50% of that workforce in the 31-40 year age group reflects the losses of trained personnel during the Khmer Rouge years and the "catch-up" production of health personnel following that period.

2.3.3 Chart 2.2: Age Distribution of MOH Professional Staff, 2003



Source of data: HRD database, 2004

Analysis of the available data for particular categories of MOH employees (doctors, nurses, pharmacists etc) reveals patterns of age distribution similar to that shown in the above chart.

Over the next twenty years at least 40% of the present number of MOH staff will leave MOH employment on grounds of age. Then in the third decade from now the very large Cohort B will move out. If the current MOH professional personnel to population ratio is to be maintained there will have to be a very thorough examination of the required pattern of entry to training and service recruitment patterns to avoid a sudden drop in the number of available personnel in the years after 2015.

No detailed information regarding the age distribution of non-government personnel working in the health field is available. Since the majority of health personnel working in the private sector are also MOH employees, one would expect a somewhat similar age/gender distribution there.

Regarding gender distribution within the health workforce, Cambodia is one of the countries where there is not a very marked predominance of female personnel. This is

largely due to the relatively high proportion of males in Cambodia's nursing workforce.

2.4 Deployment of the MOH Workforce

2.4.1 Places of Work

The MOH health workforce is distributed between the National MOH departments, and institutes (approximately 2000 (12%) of the total 17,000 staff), the National Hospitals (also around 2,000 staff, (12%) of the total) with the provincial services accounting for the remaining 13,000 (76%) staff. Provincial MOH staff are distributed between the provincial health departments, referral hospitals, operational district offices and health centres.

2.4.2 Geographical Distribution of Personnel

In round numbers, 10 per cent of Cambodia's population live in and around Phnom Penh, 90 per cent elsewhere. Again in round numbers, 20 per cent of the MOH workforce are based in Phnom Penh, and 80 per cent elsewhere. Of course since Phnom Penh is the location of the central MOH administration, program directorates, national institutes and national hospitals, some concentration of personnel there is inevitable. The important point of concern is whether this degree of concentration results in an acceptable degree of equity in access to health services throughout Cambodia.

This concentration of health personnel in the capital city and its environs is particularly marked in the case of doctors, as shown the table below, with more than half of the MOH doctor workforce located in Phnom Penh.

Table 2.2: Geographical location of Cambodia's population and MOH doctors, 2003

Location	% Population	% MOH Doctors
Phnom Penh	9.5%	52%
Rest of Cambodia	90.5%	48%
Totals	100.0%	100.0%

Source: MOH *National Health Statistics, 2004* (provisional)

The apparently inequitable distribution of doctors between Phnom Penh and the rest of Cambodia needs to be seen against the perspective of the distribution of other health personnel. There are imbalances in the distribution of medical assistants and nurses, but these are not as marked as in the case of doctors, as shown in Table 2.3 below.

This inequitable distribution of government health personnel has of course been recognised for years, and was noted in the *First National Health Workforce Plan 1966-2005*. However, it must be remembered that the Health Coverage Plan on which that workforce plan was based was designed specifically to set up a health care system in which the 'front-line' service, the point of first encounter between patients and the government health service, would be the "doctorless" health centres. In other words,

the HCP was designed on the assumption that there would not be very many doctors in the government's health care delivery system, and most of them would be located in hospitals. This approach was reflected in policy decisions in the nineteen-nineties to cease the production of medical assistants and reduce intakes into the medical undergraduate program at what was then Cambodia's only medical school.

Official statements and comments from other sources have time and again noted that redistribution of the workforce was necessary. Although the biennial reviews of the implementation of that original health workforce plan 1996-2005 drew attention to the continuing maldistribution, the situation remained virtually unchanged throughout the life of that plan.

2.4.3 Effect of Re-Distribution of MOH Personnel

In terms of population per health worker ratios, what would be the effect of a re-distribution of MOH staff across Cambodia on a simple national 'level playing field' basis? Table 2.3 provides an answer to this question.

Table 2.3: Population per MOH doctor, medical assistant, nurse and midwife, 2004

Category	Phnom Penh	Rest of Cambodia	Cambodia
Doctor	1,200	12,300	6,500
Medical Assistant	3,000	13,750	10,300
Doctor or Medical Assistant	850	6,500	4,000
Nurse	850	2,000	1,750
Midwife	3,200	5,200	4,900

Note: Population numbers rounded to nearest 50.
Source of data: MOH National Health Statistics 2004 (provisional)

Table 2.3 brings out the very great differences in population per MOH doctor or medical assistant between Phnom Penh and the rest of Cambodia. Redistribution on a level-playing field across Cambodia would mean a very significant reduction in the population per doctor over the country as a whole, while the population per doctor in Phnom would be very significantly increased. Similarly, population per medical assistant in Phnom Penh would increase significantly, but the improvement in the population:MA ratio overall would be less striking than in the case of doctors. For nurses and midwives there would again be significant worsening of the ratios in Phnom Penh, but with not a very great improvement n the overall ratio.

The key question that arises from such a table is whether one should be thinking about reducing the numbers of MOH health personnel in Phnom Penh, with, except in the case of doctors, a relatively limited 'statistical' benefit to the rest of the population, or whether one should be thinking about a significant addition to the total number of positions available outside of Phnom Penh?

It is unrealistic to talk of suddenly moving hundreds of doctors, medical assistants, nurses and midwives out of Phnom Penh. A more realistic approach is to cap the numbers of posts in Phnom Penh at their present levels and progressively increase the numbers of posts elsewhere.

In addition, in view of the increasing provision of private health facilities and services in Phnom Penh, consideration should be given to the adoption a localised natural attrition approach. Taking this approach, when any Phnom Penh located MOH post becomes vacant, the need for its being re-filled is assessed. If re-filling is not deemed essential, that post (with or without a change in job description) is transferred to a location outside Phnom Penh.

The successful implementation of this dual strategy will require firm top level commitment, firm decision making and transparent management.

Further measures such as regulating private practice opportunities in Phnom Penh and encouraging private practice elsewhere would further reduce the present inequities, and again would require a very firm stance on the part of the Minister for Health.

2.4.4 Functional Allocation of MOH Health Personnel

The allocation of health personnel to particular health service functions is determined in the first instance, as is geographical distribution, by the organizational structure and the service requirements as decided by health service objectives and priorities.

Thus, for example, the present allocation of a relatively large number of doctors to the National Centre for HIV/AIDS, Dermatology and STDs reflects a service decision to establish and maintain a significant medical workforce for the control and treatment of these diseases.

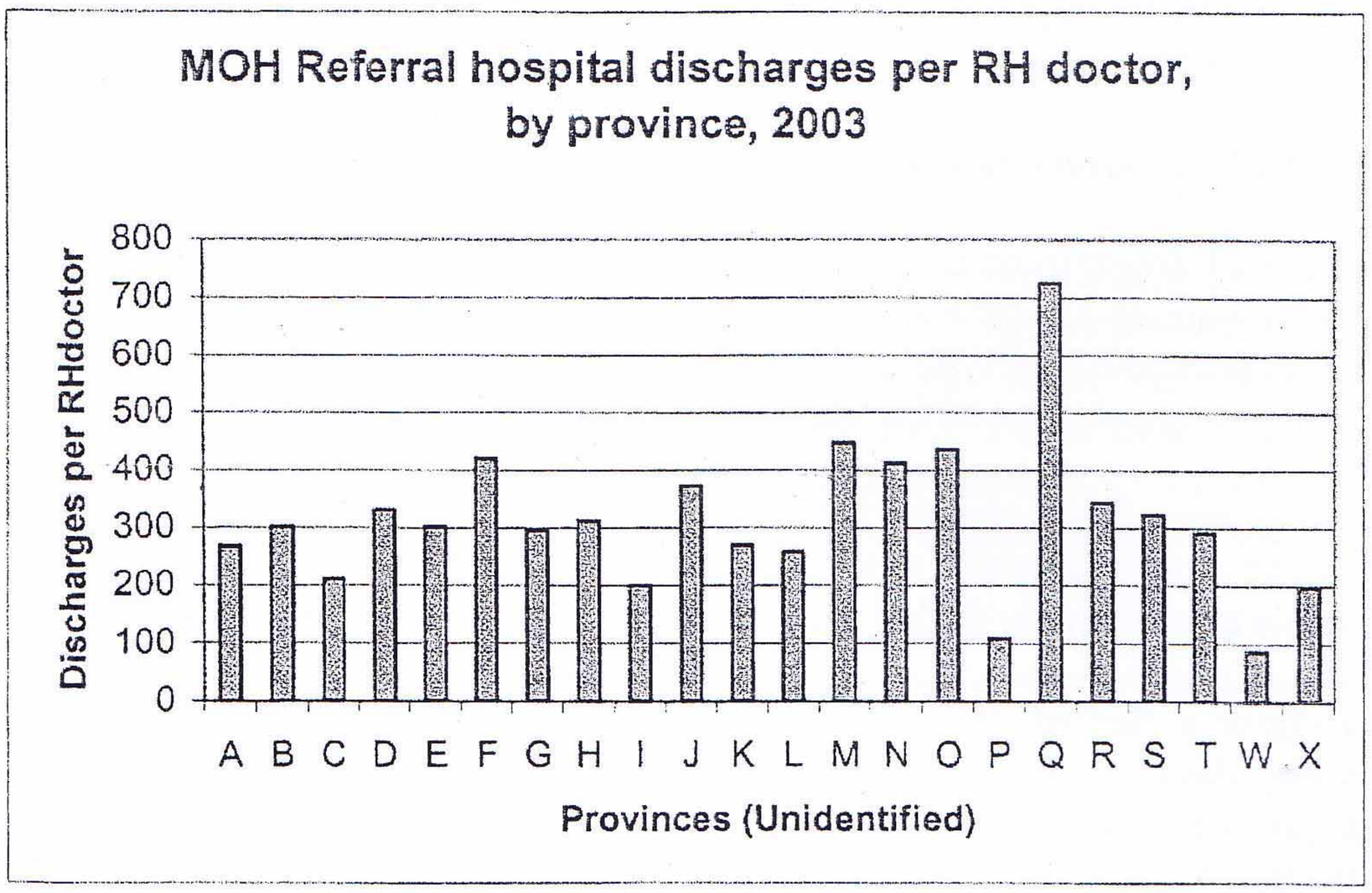
Similarly, the small number of doctors employed in the provincial health services reflects a service decision that generally doctors will not be posted to health centres, a decision originating in the early planning stage of the Health Coverage Plan.

The small number of formally qualified allied health professionals and appropriately qualified managerial personnel within the MOH workforce results in numbers of personnel occupying post for which they have not been trained. Although their performance may now, through "learning on the job", be regarded as adequate, it may in fact be less satisfactory than that of properly trained personnel, and improvements in the scope and scale of their activities may be somewhat difficult to achieve.

2.5 Health Workforce Productivity - MOH Personnel

A major determinant of workforce requirements in both the government and non-government sectors of the health care system is the productivity level of workers. The particular productivity indicators and standards to be used depend on the nature of the work to be done and the situation in which it is done. For example, deliveries per year may be one indicator used to assess the performance of a midwife, but expectations as to productivity level will have to take into account such factors as whether she manages only institutional deliveries, what role does she play in regard to ante-natal and post-natal care, what are the policies regarding respective roles of midwives and obstetricians, does she specialize in "high risk" cases so on.

The wide range of productivity that may occur is well illustrated in the following chart showing the average number of in-patient discharges per doctor in one year for referral hospitals in Cambodia.



The effective monitoring of implementation of a workforce plan requires the establishment of a system to monitor health worker productivity, since this may change over the life of a workforce plan as new techniques, new processes new therapies and other innovations change the work to be done, and as changes in incentive and reward systems, in operational and performance management and changes in the structure of the health system occur.

Monitoring productivity in terms of quantity and quality of performance is a primary responsibility of service managers, but their findings must be made available for workforce planning and monitoring purposes.

Note that here we are referring to the officially reported activity of MOH health personnel in the course of their MOH employment. Because many of the clinical personnel employed within MOH also practise "out-of-hours" in the private sector of the health care system the MOH reported statistics do not fully reflect the total productivity of MOH staff.

2.6 Other Government Health Personnel

The Ministry of Defence manages both the training and utilization of its health personnel independently from MOH. Detailed information regarding the current size, composition and employment of MOD health personnel is not publicly available. As the result of arrangements made in late 2004, some MOH medical assistants who, despite years of experience and completion of some *ad hoc* training (eg in the border camp or political party health services), lacked formal qualifications, are currently undergoing formal training in the MOD training school with a view to their being formally certificated for registration as medical assistants.

Health personnel employed in other government departments constitute a relatively minor, but important component of Cambodia's health workforce. Their employment and management is the responsibility of their employing department. It is probable that, like MOH employees, numbers of them work 'out-of-hours' in the private sector, but no details are available.

2.7 The Non-Government Health Sector Workforce

Very limited documented information is available regarding the numbers of health personnel working full-time or part-time in either the not-for-profit or for-profit sub-sectors of the health care system, although it is known that MOH employees constitute a very significant element of the 'part-time' for-profit health workforce.

Inevitably there is a concentration of non-government health personnel in Phnom Penh. The extent to which this concentration is acceptable and its future size is adjustable are matters for further examination early in the life of this workforce plan.

Apart from a limited data collection from some of the larger non-government hospitals, there is no readily available information regarding the activities and productivity levels of health personnel working in the non-government sector of the health system. Annual reporting on the activities of institutions and individuals working in this sector should be a condition of the granting of licences to operate health service and health personnel training facilities and to practice a health profession. The collection and processing of this data will require a considerable extension of the MOH information systems.

2.8 Workforce Skills Mix

At present numbers of posts calling for specialised technical knowledge and skills are occupied by staff who have more-or-less learnt on-the-job. Thus we see medical assistants, nurses and midwives filling a range of allied health roles and administrative posts for which their basic professional training may have but limited relevance. The past decade has seen substantial advances in the content, delivery and output from some in-country professional training programs, particularly in general nursing and midwifery. Development of training resources and training activities at the Technical School for Medical Care and in the non-government sector will assist in overcoming deficits in the number of trained personnel and the range of technical knowledge and skills in the allied health professional fields.

The range of technical knowledge and skills required to effectively and efficiently operate the country's heath care system over the coming ten years will widen, and indeed some areas of activity are already under-served in terms of technical capacity. Among areas which currently demand attention are:

Public health medicine, public health sciences and health service management - Public health medicine, public health sciences and health service management are concerned with the protection and promotion of population health and the prevention of disease and illness; the assessment of a community's health needs; and the provision of services to communities in general and to specific groups within them.

Competency areas to be developed include applied epidemiology and biostatistics, communicable and non-communicable disease control, environmental health service provision and management, community nutrition, population health protection and promotion, government regulation and control, health economics and health service finance, health service and health facility management technique and style; health system informatics; the rights and duties of health providers; and the dynamic relationship of health providers, funders and the public in the formulation of health care and population health policy.

Specialist medical disciplines – although the major improvements in the health status of Cambodia's population will be brought about through public health medicine, application of the public health sciences, primary health care and effective management of adequately funded health services, there is need for a thorough review of training and practice within the medical specialist disciplines. This review will have to cover specialist training and practice of personnel employed in both the public and private sectors of the health system.

Bio-technical engineering – the diversity of equipment in current use poses problems regarding installation, operation, maintenance and repair. Much of it will become obsolete or unserviceable in the relatively near future. As replacement and the procurement of more advanced equipment proceeds, up-to-date and extensive bio-technical engineering expertise will be required to advise on the procurement of appropriate equipment, and its use, and to undertake in-house activities related to its effective operation. In the past some use has been made of ex-patriate advisors working as very short term consultants. An in-country cadre of appropriately trained technicians under the leadership of one or more qualified bio-medical engineers is required – the present heath workforce does not possess this resource.

Health service information system – the ever increasingly complex health care system calls for a body of personnel able to provide expertise and practical skills in the development of hospital, health service and general administrative information technology and systems. Some of the requisite expertise and experience may be available in-country but, as for biotechnology, development of a cadre of trained national personnel is required within the health system to provide consistent and continuing input to information system development.

Ambulance and emergency medicine personnel – continuing improvement in Cambodia's road system and the increasing volume of road traffic will increase the need for the development of emergency medicine specialists and supporting

personnel, adequately equipped and maintained ambulances, staffed by para-medics able to make on-the-spot assessment , prepare the patient for transport and provide appropriate care during transportation.

2.9 Current Staffing Issues and Problems

Among the many issues arising from the present workforce situation and problems relating to workforce planning for the future, the following are of high priority:

2.9.1 The Public/Private Divide

The largely unregulated scope and scale of activity within the private sector of the health care system pose serious problems for health workforce planners, workforce managers. Serious problems may also arise regarding the planning and coordination of health personnel training activity. As government develops machinery for regulation of activity in the private sector over the coming years, attention must be paid to the collection and availability of information for workforce planning and monitoring purposes.

2.9.2 Staff Motivation, Performance And Productivity

The current policy of government is low pay for MOH personnel nominally employed on a full-time basis, but with an expectation that if they wish or need to they may augment that pay by additional 'out-of-hours' work in the private sector. The likely effects of such a policy on the quantity and quality of work in both the public and private sector, and its dis-incentive to locate in places where the local population have little cash-income, are well known. While this is a very much a workforce-related issue, its management or resolution does not rest in the hands of workforce planners.

2.9.3 Absorptive Capacity Of The MOH Health Services

As pointed out earlier, decisions regarding the allocation and utilization of personnel by category emanate from service planning and should reflect the staffing needs of the organizational structure and service delivery. An emergent issue calling for top-level decision making concerns the large and to some extent unforeseen number of medical students who will graduate soon, and then look for employment within the health field. There are currently few vacancies within MOH as presently organised for newly graduated doctors. The absorptive capacity of Phnom Penh for more doctors in the private sector is limited. Similar concerns relate to other categories of health professional personnel.

An extremely important question that arises from this emergent situation is whether MOH policy should be adjusted to encourage the employment of doctors outside hospitals, outside of Phnom Penh and the other few relatively large urban centres?

If the answer to this question is "Yes", then what strategies might be employed to achieve the desired outcome? Among the strategies to be considered are:

(i) The employment of more doctors as MOH staff based in health centres where they would function as family doctors and concurrently as community medicine practitioners, and

(ii) Assisting doctors to establish themselves in private practice, resident in areas outside of Phnom Penh and other major urban centres, with access to and some paid participation in health centre based activities, again filling the role of family doctor and community medicine practitioner.

2.9.4 The Effectiveness of the Present and Future Health Workforce

Reviewing the past and current health status of Cambodia's population, one has to ask whether the current health workforce and its deployment within the present health system really make the maximum possible contribution to the protection and advancement of the health status of the population. If the answer is not a firm "Yes", then one needs to look not only at the performance of health personnel, but also at the structure and management of the health system within which they work.

3. Education and Training Programs and Issues

3.1 Overview of this Chapter

Recently there has been a quantum change in the provision of health professional education in Cambodia with the emergence of non-government providers to augment the activities of the Government's University of Health Sciences, it's Technical School for Medical Care and Regional Training Centres. This development calls for new machinery to bring about co-operation between the government and non-government providers and co-ordination of their activities in order to avoid inappropriate utilisation of training resources and the production of graduates for whom there are no or very limited employment prospects.

This chapter reviews the present government arrangements and activities relating to the education and training of the health workforce and notes the developments occurring outside the government system. Some salient points for attention are identified and some strategies to address these issues proposed.

3.2 Education and Training Principles and Policy

3.2.1 Levels of Education and Training, and Terminology

In this chapter the term "pre-service education" is used to cover formal pre-service teaching and learning activities extending over a period of generally at least a year. A pre-service education program includes formal examination of knowledge and relevant competencies, with successful completion of the program recognised by the award of certificate, diploma or degree. A pre-service education program leading to the award of a 'first' (usually bachelor) university degree is usually referred to as an 'under-graduate' program. A pre-service education program conducted in other training institutions such as a nurse training school is often referred to as 'basic training". The completion of a pre-service education program is normally required employment and for some health professions, registration, as a qualified professional

health worker. Awards for completion of pre-service training are sometimes referred to as 'entry-level' qualifications.

Completion of pre-service education program and some work experience are normally required for entry to more advanced formal programs of instruction and learning, generally of at least six months duration. Successful completion of such a program conducted at a university leads to the award on completion of a "post-graduate" (or "higher") certificate, diploma or degree. A program conducted at other recognised training institutions may lead to the award of a 'post-basic' certificate or diploma. The practice of some specialties in the health field is restricted to holders of a relevant post graduate or post-basic award.

A wide range of structured training activities, of some days, weeks or occasionally months duration, generally directed to the acquisition of some specific work-related knowledge and competency, may lead to the award of a 'certificate of completion' or 'certificate of competency'. This level of training activity undertaken in the course of employment is referred to as 'in-service training'.

Participation in these shorter employment related training activities, together with a wide range of other organised activities designed to extend or refresh skills or performance make up what are referred to as "continuing education' or 'professional development' activities.

3.2.2 Recognition of Education and Training Qualifications

Practice of most health professions is restricted to holders of pre-service or higher level education awards from an institution recognised by government as offering education programs of acceptable quality. Until the present time (mid-2005) the only such recognised institutions in Cambodia were government institutions - the University of Health Sciences (formerly Faculty of Medicine, Pharmacy and Dentistry), the Technical School for Medical Care (formerly Central Nursing School) and the MOH Regional Training Centres (RTCs).

The status of awards from the recently establish private International University offering pre-service and some higher level education programs in medicine, dentistry, pharmacy and nursing is not yet completely clear, but will no doubt be clarified by the time this health workforce plan comes into operation.

The Cambodian Council on Accreditation is developing arrangements for the assessment of acceptability of tertiary level educational institutions and it is probable that in the future only awards from duly accredited institutions will be accepted for registration as a practitioner of a clinical profession.

3.3 Current Education and Training Responsibilities, Providers and Programs

3.3.1 Education and Training Responsibilities

The three principal authorities charged with responsibility for the conduct of education and training of health personnel in Cambodia are

- The Ministry of Health (MOH)
- The University of Health Sciences (UHS), which operates as an 'autonomous' government entity, and
- The Ministry of Education, Youth and Science (MOEYS)

MOH through its Department of Human Resources Development oversees and coordinates health personnel education and training activities within the government sector, and is responsible for the organization and conduct of national examinations of students undertaking courses at TSCM and the RTCs. In association with MOEYS, MOH is responsible for the oversight of all civilian health personnel education and training activities.

The Ministry of Defence is responsible for the education and training of its health service personnel.

3.3.2 Education and Training Providers - Government And Other Sectors

The following summary reviews the on-going activities of education and training providers. It is anticipated that similar activities will continue through the life of this workforce plan.

Government is the principal provider of health personnel education and training resources and activities. The government institutions are:

University of Health Sciences, Phnom Penh, offering undergraduate and graduate level programs n medicine, pharmacy and dentistry.

Technical School for Medical Care is an affiliate of UHS but its staff, facilities and programs are managed through MOH. It offers pre-service programs in nursing and the allied health sciences, and a wide range of shorter post-basic courses in specialised areas of nursing.

The four Regional Training Centres, all of them MOH facilities, located at regional centres outside of Phnom Penh, are principally concerned with pre-service training of nurses and post basic training of midwives. Some post-basic and other training activities are also conducted at RTCs.

All the above institutions participate in in-service training activities provided under the auspices of MOH and other agencies.

MOH service departments such the Hospitals Department and the National Institutes arrange and conduct a very diverse range of training activities for MOH staff.

The MOH National Institute of Public Health offers a structured training program for MOH staff with responsibilities for hospital and health service management, and, in association with Mahidol University, Bangkok, offers a program leading to the award of a post-graduate (masters) degree in public health.

The Ministry of Defence operates training facilities and conducts training programs for its health personnel. It has recently become involved in a course designed to

provide MOH medical assistants who lacked any government qualification with the training necessary for certification of fitness to practice.

In the non-government sector, international organisations, development assistance agencies, and NGOs contribute to the support and participate in the organization and conduct of in-country training programs for government and non-government health workers and other relevant personnel.

The International University in Phnom Penh operates as an independent agency offering pre-service and post-graduate degree level programs in the major health disciplines.

Overseas training ranging from formal post-graduate medical education to brief visits of observation and participation in meetings of professional associations is sponsored by a variety of agencies.

3.3.3 Types, Location and Length of Education and Training Programs

A schedule setting out types, levels, provider location and duration of the major health personnel training programs currently offered in Cambodia by government and non-government providers should be included in an annual report on health workforce education and training prepared to be prepared by the MOH Department of Human Resources Development.

Regarding future development of facilities for health personnel education and training, the appropriate location of facilities must be considered. The concentration of both the present two medical schools in Phnom Penh represents a lost opportunity to establish a regional medical school in a provincial urban centre where the medical school could be the focal point of all health personnel education and training activities in the region around that centre.

3.4 Accreditation of Institutions and Programs

Until recently the Cambodian Government was the sole provider of in-country pre-service education for people wishing to enter a heath service career. In November 2002 International University was founded as an independent institution for tertiary education and in its first academic year enrolled more than 200 students in courses offered in its Faculty of Health Sciences. The following year it inaugurated a graduate program in public health.

In 2004 the recently established Cambodian Committee on Accreditation and officials from MOEYS consulted with senior officers of MOH regarding the official recognition of the International University as a provider of professional health personnel education. Questions arise as to whether the qualifications awarded by the IU will be acceptable for professional registration purposes and whether graduates from this university – and any other similar non-government tertiary education institutions that may come into operation - will be accepted into MOH employment as appropriately qualified health professionals following completion of their programs of study and instruction. Bound up with these concerns are questions regarding the

acceptability of Cambodian trained health personnel into advanced level training programs or professional practice in other countries.

Further questions arise now that national policy requires accreditation of tertiary education providers institutes as to whether this policy will extend over government education institutions such as UHS, TSMC and the RTCs.

A key concern is the calibre, rigour and transparency of the accreditation process. In some countries a medical school accreditation survey team includes one or more appropriately qualified experts from another country.

The issues mentioned here will have to be considered and resolved in the very early years of the life of this workforce plan.

3.5 Curriculum Development and Approval

3.5.1 Inputs, Consultation and Oversight

Development of curricula for the pre-service and post-basic and post-graduate health personnel education programs, and the content of other training activities, will continue to include input from Cambodian and foreign advisors. Emphasis will continue to be placed on the development of curricula oriented to the special requirements of practice in Cambodia, including attention where appropriate to the materials prepared for the implementation of MPA and CPA programs.

Consultation between government and other agencies concerned with the provision of health personnel education and training activities will necessarily involve joint discussion regarding such matters as standardization and sharing of program content, uniform standards of student assessment, and the extent of desirable diversity in curricula, teaching materials, teaching methods, practical work and field experience. A standing joint committee including representation from both government and non-government providers would have these matters among its terms of reference.

A committee of the MOH Working Group on Health Workforce proposed in this plan would be one mechanism for the direction and oversight of these matters. Membership will have to include representation from both the government and non-government sectors of health personnel education and training. This committee would be responsible for the making of recommendations to the Working Group regarding major curriculum changes

3.5.2 The Medical Curriculum

The orientation of the UHS medical undergraduate curriculum has in the past been towards the production of 'hospital doctors', since under the HCP structure doctors were not generally to be placed in health centres. In urban centres MOH doctors, although employed as full-time staff of referral hospitals, engage in private general practice 'out-of-working hours'. If, as may be happen in the future, increasing numbers of MOH doctors are posted to health centres, or medical practitioners are encouraged to establish themselves as private practitioners with links to health centres, then they should be practising a dual family practice/community medicine role rather

than a hospital doctor role. Review of the medical under-graduate curriculum and internship programs is timely, to ensure that medical school students will develop appropriate family practice medicine and community medicine orientation, competencies and attitudes. This would require strengthening of community experience within the medical undergraduate program and during the internship years.

3.5.3 Midwifery Training

Midwifery training continues to be and will continue to be a major matter of concern. There will continue to be disagreement over the merits of a post-basic midwifery course following completion of secondary nurse education, as against the merits of a two-stream p re-service a pproach p roducing general n urses a nd m idwives w ho h ave not completed general nurse training. The production of primary midwives and their further professional development will also no doubt continue to be a matter for recurrent disagreement.

One important change that has occurred in recent years has been the addition of basic obstetric training in the general nursing curriculum with a view to enabling general nurses to manage normal deliveries.
This may mean that the call for specialist midwives will be reduced. Another important consideration is the role of doctors in midwifery. If, as has been suggested elsewhere in this document, increasing numbers of doctors are based in, or have strong links with, health centres, then one might anticipate their much greater involvement in obstetrics and infant care. That would require, as also mentioned elsewhere, a review of the medical undergraduate and internship education programs.

Questions relating to the composition of the midwifery workforce and the delineation of roles within it are matters for decision by midwifery service managers. When the service managers have formulated a clear policy on these matters, training arrangements may be planned to support implementation of that policy.

The growing popularity of having babies in private maternity centres raises issues relating to the continuing education of midwifery personnel working in the private sector.

3.6 Continuing Education

Every y ear a very large number and variety of focused in-service training activities targeted a t M OH h ealth p ersonnel a re c onducted b y t he c entral M OH departments, provincial health departments, the national institutes and national programs. In addition training activities conducted either by or with support from the international assistance agencies, professional associations and other agencies NGOs contribute to the number, range and diversity of training activity.

The scheduling and, where appropriate, co-ordination of continuing education presents a considerable administrative burden. The appointment of continuing education co-ordinators at provincial health departments to assist in the arrangement of continuing education activities was an attempt to ensure an appropriate utilisation of available resources. But despite the very considerable expenditure of resources and interruption of normal work schedules, there has been little by way of systematic

evaluation of the impact of many training activities. An evaluation of the continuing education arrangements, activities, costs and outcome is required.

Efforts will be directed in the coming years to address the continuing education needs of health personnel working outside the government sector.

3.7 Recruitment and Training of Teaching Personnel

The termination of a formal post-graduate program for the development of health personnel educators some years ago has left Cambodia with no structured framework for the preparation of well-qualified specialists in health personnel education and training. Short courses will continue to be offered through TSMC and other agencies to prepare and assist people who are or are contemplating engagement in educational and training activities as teachers and instructors.

3.8 Trainee Recruitment, Selection, Retention and Employment

Entry to government pre-service health personnel training programs will continue to be by way of national competitive examination, with some places to be allotted to fee-paying students. MOH in co-operation with UHS can control intake student quality and numbers to government training programs and to some extent adjust these in line with anticipated future requirements for trained personnel.

Special arrangements will continue to be made by MOH to assist in the entry to training of remote community people who will be employed as primary nurses in the north-eastern provinces, but who lack the educational background normally expected of entrants to nurse training.

Currently there is no official regulation or monitoring of the standard of entrants to pre-service programs at other institutions. In the future this will probably be a matter for the authority responsible for the accreditation of pre-service education programs. Regarding intake numbers, the absorptive capacity of the health care system for new graduates is inevitably limited, and therefore attention must be given to regulation of both government and non-government intakes to avoid wasteful "over-production" of expensively trained personnel who cannot find employment within the health care field.

Government and other providers of health personnel education have a joint responsibility to ensure that potential entrants to educational programs are properly informed as to employment and career opportunities likely to be open to them following graduation.

The absence from duty for prolonged periods when MOH staffs are granted study leave with or without pay for relatively long periods, which may run into years, can create problems due to the inability of management to fill the consequently vacant posts. However it is unlikely that arrangements relating to study leave of government officers will change significantly the near future.

3.9 Education and Training Finance

The entry of non-government participants in the provision of pre-service and graduate health personnel education introduces a new factor in the estimation and management of education and training finance. The implications of this new situation have not been explored as yet, but should be examined in the near future.

Continued financial support from international organizations and development assistance agencies will be require to support the out-of-country post-graduate education and shorter training activities essential to building the professional capacity of Cambodia's health workforce.

3.10 Education and Training Information System and Statistics

The computerised data-bank shared between the Department of Human Resources Development and the Personnel Department will, if properly maintained, continue to provide basic material regarding training records of individuals employed within MOH.

Additional data relating to training will continue to be collected by survey returns within MOH.

Attention must be given to the regular collection of relevant material from other providers of pre-service and postgraduate education programs.

The regular and systematic monitoring by the MOH HRD Department of training activity in both the public and private sectors would be facilitated by the preparation of a structured annual report summarising the past year's activities, including both text and statistical material.

The annual report should be reviewed by the proposed MOH Working Group on the Health Workforce Human Resource Development Working Group and recommendations incorporated into operational plans.

3.11 Current Training Issues and Problems

Among the current and emergent issues demanding action in the near future are:

- Recognition of the important role that private sector can play in the provision of health personnel education and training, and establishment of cooperative and co-ordinatory links between the responsible government authorities and private sector providers

- Expansion of the MOH HRD Department information system to include data relating to pre-service and post-graduate education programs and other relevant training activities being planned and conducted by providers other than MOH – this will facilitate monitoring, planning, management and regulatory activity on the part of MOH and MOEYS

- The training implications of the future structure of midwifery services and the composition of the midwifery workforce, some of which is not and will not be

"professional midwives", but nurses and doctors with obstetric training as part of their basic professional education

- The training implications of a review and possible re-structuring of MOH policy regarding the role and staffing of health centres, with adjustment of pre-service education and postgraduate training programs to meet necessary changes consequent upon the review

- The need for and provision of pre-service and postgraduate education in health and health related professional disciplines not currently established in Cambodia, including bio-medical engineering, medical information technology, advanced radiation therapy and medical imaging technology, and a number of medical and nursing specialties

- Strengthening of machinery for the planning, coordination, monitoring and evaluation of continuing education activities to minimize inappropriate use of resources

- Meeting the continuing education needs of personnel working in the private sector of the health care system.

4. Future Workforce Requirements and Training Schedules

4.1 The Future Health Workforce – Policy Considerations

4.1.1 Key Policy Matters

Policy considerations on which the development of Cambodia's health workforce must rest include:

- Size and composition of the future workforce
- Recruitment and employment of health service personnel
- Deployment of the health workforce

Responsibility for decisions on these policy matters rests with top level decision-makers. The proposals put forward in this draft plan are necessarily tentative and subject to amendment. As with all policy decisions, changes in preferences or situations may call for previously made decisions to be changed. As noted earlier, it is essential that the health workforce plan be kept under continuing review to ensure that the policies on which it rests remain relevant and appropriate.

Other matters such as education and training, conditions of employment and health workforce finance are also of great importance. These are addressed elsewhere in this document.

4.1.2 Size and Composition of the Future Health Workforce

The required size and composition of a country's health workforce ultimately depends on the scope, scale and structure of the country's health care delivery system. At present the scope and scale of both public and private services available in Phnom Penh are markedly more generous than those available elsewhere in the country.

Since the government is a relatively minor player in providing finance for health services, and the financial input from international organisation, development assistance agencies or NGO sources is unlikely to increase appreciably (and in fact may decrease) over the next few years, it is unlikely that there will be any sudden and impressive increase in either the total scope or scale of government service provision over the immediately foreseeable future. Also, for political and other reasons, it is unlikely that the scope and scale of government health services now located in Phnom Penh will be reduced rapidly and the resources thus "saved" re-allocated elsewhere.

In the absence of any clear policy directive from government regarding the future scope and scale of government service provision, it will be assumed that official policy will be directed to having the size of the government health workforce increase in line with the increase in population numbers, a projected growth rate around 2 per cent per year. Within this increase in government workforce numbers, there will be some adjustment to at least partially remedy existing shortages in areas such as midwifery and specialised nursing, some medical specialties, the allied health professions and trained health service management personnel. The vacancies created by loss of government personnel through retirement other employment and by the creation of new government service posts may be met by the output of new graduates from government training programs. The deployment of this rather slowly increasing government workforce will be discussed later in this chapter.

So far as the non-government component of the health service workforce is concerned, the expected and as yet unregulated output of medical, nursing and other health professional personnel from pre-service training programs operating in the private sector will increase the total number of trained personnel seeking entry to the health workforce. This forthcoming addition to the pool of qualified health professionals highlights policy concerns regarding recruitment and employment of health service personnel.

4.1.3 Recruitment Employment of Health Service Personnel

Policy relating to health workforce recruitment and employment is complicated by the existence of three components of the active professional health workforce[12]:

- "Government only" employees
- government employees who are also working in the private sector of the health care system, and
- other non-government health personnel

A further complication regarding people in the above two government employee components is that the posts they occupy, their recruitment and employment are not entirely under the control of the Ministry of Health or other Ministry in which they are working, but are also subject to decisions made in other government instrumentalities including the CAR, MEF and the Office of Public Function.

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[12] The "total professional health workforce" includes an "active" component, qualified personnel currently working for reward in health service occupations, and an "inactive" component , personnel formally qualified to enter the active workforce but currently unemployed or working outside the health service system.

There are numbers of problems associated with the present arrangements for creation of new government posts, filling of vacancies, procedures for recruitment of new staff, et cetera which demand further examination and remediation. These are important matters of administrative concern. (Some writers on public service management advocate the placing of publicly funded health services under a quasi-autonomous national health authority such as a National Health Commission. The health authority is empowered to employ and control its own staff distinct from those government personnel employed elsewhere as 'civil servants'. This provides the health authority more flexibility in the creation/abolition of posts and the recruitment and employment of health service personnel. The desirability and feasibility of some such arrangement in Cambodia will not be discussed here.)

The output of health professionals from private education and training institutions "in competition" with the established government institutions will demand urgent attention to these concerns in the very near future.

In relation to the non-government employment of graduates from training programs are concerned, there will be some additional employment opportunities in the larger private hospitals now under construction or at an advanced planning stage. However, these new institutions will in the main be seeking experienced staff rather than very recent graduates. The absorptive capacity for more health workers in the private sector in Phnom Penh may already be reaching saturation point. Elsewhere the opportunities for private employment are limited by the numbers of people willing and able to afford direct payment for private health care.

4.1.4 Deployment of the Health Workforce

Adjusting the current inequitable distribution of MOH health personnel

The concentration in of government doctors, medical assistants and nurses, and of private professional practitioners, in Phnom Penh, and to a lesser degree in the relatively few sizeable urban centres elsewhere, is in part a reflection of government policy adopted in the early 1990s.

The National Health Care Plan's Minimum Package of Activities (MPA) was written and implemented in such a way that doctors have virtually no role in the health centres which were intended to serve for the majority of the population as the point of first contact between patients and the government health service.

Furthermore, the extremely low level of heath service funding from government and the very heavy reliance on direct out-of-pocket payments from patients (who for the most part are cash income-poor rural people) to meet staffing costs makes professional practice (either as government employees or private practitioners) outside of Phnom Penh and the larger urban centres a generally unattractive proposition.

Should the "inequitable" distribution of the workforce be adjusted – if so, how?

There appears to be a widely held view that some adjustment is desirable. Indeed, it has been stated MOH policy for years that any increase in MOH staff numbers was to occur within the provincial/district service. In fact the ratio of central to provincial/district staff has remained virtually unchanged for the past ten years.

Unless the government is prepared now to take "draconian" measures such as forced transfers or the dismissal (with or without compensation) of staff whose employment is considered redundant, the adjustment process will inevitably extend over a considerable number of years.

Understandably, so far as MOH health professionals are concerned, Phnom Penh in particular and other urban centres offer attractions both as to 'quality of life-style" and salary supplementation. Outside of Phnom Penh the Ministry's Provincial Health Departments and Referral Hospitals do not have large numbers of vacant posts to absorb staff currently based in Phnom Penh. And of course many of the staff currently working in Phnom Penh are there as the result of their efforts to move there from other postings – they certainly don't want to go elsewhere.

Having regard to these considerations, it might be appropriate to cap the total number of MOH Phnom Penh staff at the present level – i.e. posts becoming vacant may be re-filled, if that is deemed justifiable, but no additional posts to be created. Any expansion of the scope and scale of MOH services in Phnom Penh will be achieved through productivity increases without an increase in employee numbers. The administration of this regime will require firm direction to ensure that any vacant post is filled in accordance with the job description eg clerical type posts are filled by clerks, not doctors, dentists, nurses or midwives. To ensure transparency and fairness any post becoming vacant must be publicly advertised and the selection process conducted in accordance with published rules. Only in exceptional circumstances will "supernumerary" staff be appointed for special duties. These supernumerary appointments will be on a "casual" or "contract" basis, and in no case will be for period exceeding twelve months.

However, there is a considerable body of opinion that, having regard to workload and productivity, the level of MOH staffing in Phnom Penh is "generous". A more rapid adjustment of MOH staffing towards an equitable distribution may be achieved by a process of local natural attrition. Any post becoming vacant in Phnom Penh is removed from the staffing establishment there and transferred as a vacant position to the establishment at a location of need outside Phnom Penh. Only in exceptional circumstances would a post becoming vacant in Phnom Penh be filled. An absolute limit may be set on the number of "exceptional" retention of posts permitted in any one year.

It is recommended that both of these approaches be adopted so that the total number of MOH personnel in Phnom Penh will not increase, and vacant posts in Phnom Penh which are "redundant' there will be transferred elsewhere.

It is possible (probable?) that at some point during the ten-year planning period the part-time employment of health professionals within Cambodia's health service will become accepted. In this case one full-time post may be split between two (or more) appointees. However, such arrangements must only be permitted where the level of service delivery will not be impaired. Employment of part-time staff does not necessarily change the "FTE" (full-time equivalent) staffing establishment, but does entail some additional administrative costs and may be associated with some loss of productivity.

Deployment of doctors

The population to doctor ratio in Phnom Penh as against the rest of Cambodia is particularly striking.
The enlarging numbers of newly qualified doctors from UHS and International University should not be absorbed in Phnom Penh. As shown in a recent (2004-05) review of staffing levels of referral hospitals there are not large numbers of vacant posts in those hospitals. Where may the 'surplus' new doctors be employed?

Major improvements in population health status may result from better leadership and increased range and volume of services at the community level, i.e. at, and below, health centre level. (In some countries, including some African countries from which the HCP model was derived, medical assistants provide the leadership at health centre level.)

The posting of MOH doctors who have been adequately trained in personal, community and environmental health care to act as 'sub-district medical officers' responsible for the health services delivered at and from two or three centres, and preferably housed close to one of them, provides opportunity for the employment of more doctors outside of Phnom Penh and other urban centres. Extension of the role of health centres to a level beyond that of the bare minimum MPA would offer opportunities for the sub-district medical officers to utilise all aspects of their training. Provision of incentives to remain in sub-district MO posts might include a salary supplementation of appreciable amount, free or subsidised housing, use of or an interest-free loan towards the purchase of a vehicle for personal use and so on.

The number of MOH doctors currently based in Phnom Penh who would accept sub-district MO posts is likely to be small. Some of the forthcoming 'surplus' medical graduates, on completion of internship, may be posted as MOH sub-district medical officers.

The distribution of doctors who, on becoming qualified, do not enter MOH employment will to a considerable extent be determined by market forces. Saturation of the market for private medical in Phnom Penh will motivate some of them to seek a living elsewhere. The government may assist their establishment as practitioners at community level. Examples of incentives to be offered may include practice establishment loans or grants; access to government hospital and health centre services; private patients to be eligible for free essential medications etc for major health concerns including TB, malaria, HIV/AIDS and immunisation.

4.2 Projecting Workforce Requirements

4.2.1 Introductory Remarks

Population growth is obviously a major consideration in workforce planning. The medium level growth projection of the National Institute of Statistics shows an overall annual percentage increase in population numbers from 1.87% in 2003 to 2.07% in 2015, giving an overall increase in population numbers of 27% in that period. But for Phnom Penh the projected increase in population is 42%, in the Northeast Crescent

38% and for the rest of Cambodia 21%[13]. These population changes have implications not only for the geographic deployment of the health workforce, but, among other things, for the allocation of health personnel between the different sectors and sub-sectors of the health workforce. For example, one might plan on the assumption that any very considerable amount of any increase in workforce numbers in Phnom Penh would be in the private for-profit sub-sector; in the NE Crescent an increase in NGO staff numbers; an increase in the for-profit sub-sector in provincial urban areas; and for the rest of Cambodia an increase in government and NGO staff numbers. In this national plan we are concerned with the national picture and detailed planning for particular localities must be undertaken on a case by case basis outside the scope of this document. An annual rate of population growth rate of 2.0 per cent will be used for projection purposes in this document, giving an increase from an estimated 14 million population at mid-year 2006 million to nearly 17 million in mid-2015[14].

Another extremely important consideration in workforce planning relates to assumptions about future service utilisation and participation patterns within the community to be served[15]. Increasing service productivity to meet the needs and demands of growing population numbers is not simply a matter of increasing personnel numbers. Private sector employment may offer greater incentives to, and higher rewards for, increased work activity on the part of individuals and organizations. Whether and to what extent increased individual activity on the part of health personnel (in either the government or non-government sector) contributes to better health outcomes is another question. Unnecessary 'follow-up' visits, polypharmacy, inappropriate ordering of radiographic and other investigations or large numbers of irrelevant laboratory tests all generate activity, but all can be regarded as 'over-servicing'. Appropriate management and regulation can do something to increase 'positive' productivity, but the projected increases in Cambodia's population and existing shortages in some workforce categories will make an overall increase in workforce numbers imperative.

The composition of the future workforce in terms of occupational categories and mix in relation to future service requirements is a major workforce planning concern. For example, would a medical assistant trained specifically to meet the wide range of demands at health centre level be a better investment in Cambodia than say a 'registered nurse' trained along the lines of university-based nurse education programs modelled on those in very affluent countries?

Changes in the activities required in the future to ensure an efficient and effective health system will call for changes in training program content and for the development of additional cadres of health personnel. For example, with an accelerating movement towards delivery of personal health services through non-government provision, government health authorities will play an increasing part in coordinating, regulating and monitoring service activities. This will demand an

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[13] The Northeast Crescent here comprises the provinces of Mondul Kiri, Ratanakiri, Stung Treng and Preah Vihear.

[14] The current NIS population estimates and projections will no doubt be adjusted when the results of the 2005 national census become available. However it is unlikely that these adjustments will require large changes in the projection tables presented in this workforce plan.

[15] Unfortunately there are no reliable statistics regarding overall private sector service utilisation and population participation patterns.

appropriately trained specialist managerial cadre, adequately resourced in terms of administrative backup and a comprehensive information system.

4.2.2 Planning Assumptions - The MOH Workforce

Several different approaches may be used to estimate and project staffing requirements in terms of workforce. In this workforce plan we consider five variables in relation to projection of requirements for MOH staffing:

(i) The demographic factor – as population changes in size, composition and distribution, the patterns of service utilization and community participation in health-service related activities change[16]. As noted previously Cambodia's population is expected to increase from around 14 million at the beginning of the planning period to some 17 million in 2015. Because the number of immigrants or Cambodian "returnees" entering Cambodia is expected to be small, most population increases will be by way of births and, one hopes, reduction of the death rates of infants and children.

(ii) The replacement factor – exit of personnel from the active health workforce by way of resignation, redundancy, retirement on grounds of age or disability, emigration or for some other reason may call for the entry of new recruits to health service employment.

On the basis of the MOH staff exit trend over the past seven years, and a review of the age structure of the present MOH workforce, it is assumed that an average of one in forty of the workforce will leave MOH employment every year, thus calling for the replacement factor to be set at 2.5 per cent of the workforce per year.

(iii) The service development factor – epidemiologic changes, for example the emergence of HIV infection as a human disease problem, are among the many drivers for the development of services. Other drivers include changes in community wealth, rising community expectations as to the power of medical science to better diagnose and manage health problems, alterations in service utilisation rates and community participation in health-related activities, pressure from the pharmaceutical and medical technology industries, and attempts by health professionals to market their wares. Service development may call for changes to long-term or shorter-term service plans and adjustments to financial and other material inputs to the health care system.

Also very important in service development is the optimal deployment of the health workforce.

There are currently some obvious deficits in staffing of services, the most serious of which is the absence at many health centres of personnel trained and experienced in midwifery. Inevitably some new services and activities will be introduced by MOH over the decade covered by the plan, and some existing activities will be further expanded in scale and scope – developments which may cause "under-staffing" in other areas of service delivery.

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[16] Population pyramids for Cambodia year by year from 2006 to 2015, as estimated from the US Census Bureau International Data Base, can be accessed at http://ww.census.gov/cgi-bin/ipc

On the other hand, there is clearly some "over-staffing" in a number of areas within MOH. Some of this "slack" can be taken up by the re-definition of roles of individual staff members, some by re-allocation of personnel (the difficulties associated with movement of staff are recognized), and some by the non-filling of redundant and supernumerary posts when they become vacant.

Expansion in the scope and scale of services offered in the private sector over the planning period are expected to be significant.

These workforce-related adjustments in service availability and provision are matters for the attention of service planners/managers and workforce planners, and call for the development of the health service information system (including the health workforce information component) to facilitate close monitoring of the staffing situation.

(iv) The workforce productivity factor – when health personnel are appropriately remunerated, their working conditions are good, the working hours sensibly arranged, facilities and equipment of good standard and supplies are adequate and regular, one expects a high level of productivity from the workforce. There have been some increases in productivity of staff working in established MOH programs and relatively high productivity in some more recently introduced activities. However, overall, the gains in productivity in the public sector since the introduction of the Health Coverage Plan have not been great.

For the MOH projection we will assume that the increases in productivity will match the staffing requirements of service development i.e. the average annual productivity increase at productivity increase of the MOH professional workforce will offset need for additional staff otherwise required by service development.

Because we are assuming that the MOH service development factor is offset by the productivity factor, neither of these variables will be shown in MOH workforce projection tables presented in this first version of the 2006-2015 health workforce plan.

(v) The student dropout factor - in calculating the number of students required to enter training in order to meet MOH staffing targets, allowance must be made for entrants who for one reason or another will either not complete training or, having completed training will not enter the MOH workforce. Some of the "graduate drop-outs" may enter employment in the private sector of the health system. The information currently available regarding drop-out rates from pre-service training programs is incomplete – among the several reasons for this is the absence of arrangements for routine "tracking' of graduates from these programs. For the purposes of the indicative projections presented in this first version of the health workforce plan 2006-15 we will assume an overall dropout rate of 10 per cent for each new entry student cohort. So if 50 students enter training, 45 will enter MOH employment. As more information regarding drop-outs comes to hand, the projection tables must be revised accordingly, just as the National Institute of Statistics has to revise its population projection tables from time to time. Note that the "required student entry" in any year must relate to the service entry requirement in the year following completion of that entry cohort's training.

Of course a new graduate from, say, a nurse training school cannot "replace" a nurse who retires after 30 years of professional experience. It is assumed that there is a general "upward movement" of staff with the new entrant appointed to a post at the bottom level of the nursing cadre, while the vacant senior nurse post is filled by an appropriately experienced older nurse. .

4.2.3 Planning Assumptions - Non-Government Sector

The non-government sector of the health system in Cambodia presents very serious problems to the workforce planner. Among the features of this sector which create difficulties are:

- The very large number of personnel working the non-government sector who are in fact also employed as 'full-time' staff within the government sector.

- The very large number of non-government 'agencies' operating within the health system - if one includes private clinics, pharmacies and similar small, independent entities the number runs into thousands

- No comprehensive system has been established for the collection of information regarding the numbers, the scope and scale of activity and productivity of personnel working in the non-government sub-sectors either as employees or as independent professional practitioners

- The inadequacy of what arrangements do exist for collecting information regarding the workforce in this sector. For example the legislation requiring registration of health facilities and that relating to the registration of medical practitioners was not designed to provide workforce information in a form readily useable for health workforce monitoring and planning purposes.

- The agenda of some non-government sector agencies may include objectives or activities which are not really in accord with government service or health workforce policy or requirements, but the government may be unable to effectively control the activities of these agencies.

- MOH is heavily dependent on the technical assistance provided by ex-patriate consultants employed, often on a short-term basis, by international organisations, foreign national development assistance agencies, NGOs etc. MOH may receive sometimes conflicting and sometimes inappropriate advice on service and workforce matters – advice which may be acted on with serious detrimental effect – for example the cessation of midwifery training for several years!

For the above reasons the size of the private sector workforce, as measured for example in terms of "Full-time equivalents" (FTEs) and its composition, age distribution, deployment, productivity and so on are matters for conjecture. Insufficient data and other material are available to make any very meaningful projections at present, although there is a strong expectation that there will be significant workforce-related changes in the private sector during the life of this plan.

As the relevant information systems are established and developed, it will become possible to assess the situation realistically and then consider the projection of staffing and training requirements.

4.3 Doctors and Medical Assistants

4.3.1 MOH Doctors and Medical Assistants – Projected Staffing and Training Requirements

Because there is now no training program for the production of medical assistants (except in the RCAF health service) the medical assistant cadre by 2015 will be seriously depleted in numbers and the downward trend in numbers will continue until all of them have eventually disappeared from the MOH workforce. This decline in numbers will be further accelerated by the up-grading of medical assistants to "doctor" level[17].

Experienced MAs may apply for entry to the UHS medical school with advanced standing. They constitute an extremely valuable source of medical school entrants. Does this upward movement of MAs affect the number of school leavers to be admitted to the medical school? No. For MOH workforce planning purposes we will assume that all MOH MAs are engaged in "doctoring" in some form or another, and so their up-grading to doctor level will not change the size of the total doctoring workforce and will not require additional entrants into the full medical course. This assumption will also mean that when an MA leaves MOH employment he or she will have to be replaced by a graduate from medical school.

The following projection table shows for each of the years 2006-2015 the projected numbers of doctors and medical assistants, the required intake of new doctors and the number of student entrants to medical school required year by year to maintain the 'doctor or medical' assistant to population ratio steady at 1:3,800 throughout the years 2006 to 2015.

Table 4.1: Projection: MOH doctors and medical assistants: required numbers, intake and training entries 2006 to 2015

	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Population (millions)	14.0	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.4	16.7
Popn per MOH Dr or MA	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800
MOH Doctors	2,300	In each of these years the number of medical assistants will decrease as they are progressively replaced by doctors.								
MOH MAs	1,400									
Total MOH Drs and MAs	3,700	3,754	3,833	3,910	3,988	4,068	4,149	4,232	4,317	4,403
Required annual MOH intake of Drs*	164	167	169	172	174	179	183	187	190	194

[17] In addition to the MA-to-doctor up-grading program at UHS, the private International University also runs a similar program. The students may be MOH employees, studying on a part-time basis. In early 2005 it was not clear what recognition would be given by MOH to the IU program.

Required new student entry to medical school	**201**	**205**	**209**	**214**	**218**	**222**	**227**	**231**	**236**	**241**

**There will be no intake of Medical Assistants – when an MA post becomes vacant it will, if it is to be filled, be filled by a doctor.*

The student intake numbers in the above table are for new entrants to the first year of the six-year under-graduate medical education program. The numbers do not include medical assistants who may enter the medical school with advanced standing. These up-grading and upgraded medical assistants are already included in the "Total Drs and MAs" numbers.

Table 4.1does not take into account the possibility that over the planned years there will be a move towards part-time MOH employment of doctors. This could require the production and employment of more doctors and thus increase the number of required entrants to medical school. One factor which may generate pressure for part-time employment is the increasing number of women entering the medical profession. In some other countries this is having a serious impact on the pattern of medical practice and is generating a demand for the production of more medical graduates.

Although here we are concerned with doctors and medical assistants working within MOH, it should be remembered that when a doctor or MA retires from the MOH on grounds of age, she or he may continue to practice in the non-government sector and so would not be 'lost' from the country's total doctor and MA workforce on leaving the MOH employment.

4.3.2 Deployment of MOH doctors and medical assistants

Elsewhere in this document we have noted the very great disparity between the MOH doctor: population ratio in Phnom Penh as compared with the rest of the country (see Tables 2.2 and 2.3 above). When one looks at the total medical staffing picture, the inequitable distribution is even more marked than these figures indicate, because the majority of the private sector non-MOH doctors are also in Phnom Penh.

Looking at the 'MOH doctor or medical assistant' picture the distribution appears less inequitable, because proportionately more medical assistants are employed outside of Phnom Penh. However, there is still a very considerable inequity in the distribution of this 'doctor and medical assistant workforce'.

In addition to this disparity in the ratio of doctors and medical assistants to population, it has to be borne in mind that there is very considerable difference in geographical accessibility of the "doctoring' workforce. In Phnom Penh access to a hospital or clinic where there is a doctor is relatively easy. Elsewhere in Cambodia this may not be the case. The Health Coverage Plan provided for very few MOH doctors at health centres, most MOH doctors being located at referral hospitals. The HCP also recommended that in populated areas a referral hospital should be within two hours drive and in rural areas not more than three hours drive or boat journey. This of course assumes that a vehicle will be available when required, and that there is at all times an accessible route from the patient's home to the hospital. Furthermore, a two-hour drive in an obstetrical emergency may have fatal consequences!

In order to increase access to doctors and to improve the range and quality of services at the health centre level, it is recommended (see Section 4.0 above) that MOH doctors be posted to selected health centres. Here they would be employed as "Sub-district medical officers" engaged in the provision, management and supervision of personal health, community health and environmental health services and activities at one, two or more health centres. Appropriate incentives and rewards will have to be made available to encourage acceptance of and retention in such postings.

4.3.3 Specialist Medical Practitioners

At present the MOH medical specialist workforce includes doctors who have completed what by international standards would be regarded as "postgraduate diploma" level training (programs of usually 6, 12 or 18 months duration and mostly conducted in-country). At a higher level are practitioners who have completed at least three years of structured training in a speciality. Within this category are doctors who have completed their post-graduate specialist training in foreign countries and thus have acquired what can be regarded as internationally recognised specialist qualification. Also at this higher level are some senior Cambodian specialists who have acquired their expertise through various combinations of on-the-job learning and formal study, but do not hold an internationally recognised qualification.

It is anticipated that over the years 2006-15 a relatively comprehensive range of in-country "higher level" specialist training programs will be developed. One notes that the International University in Phnom Penh recently (2005) announced the offering of a Master of Surgery program.

In 2004 attention was given to the training of medical specialists to be employed in CPA2 and CPA3 hospitals. Further work is required to assess training and specialist staffing requirements and develop policy relating to specialist medical practitioners for both the government and private sectors of the health care system (see section 1.0.6 above.)

4.3.4 Overproduction of Doctors

Although in tables of international comparison of doctor: population ratios Cambodia usually ranks near the bottom, one must be wary of producing more doctors can the health care system can, under its present structure and with its present inadequate resourcing, accommodate. Attention must therefore be given to the numbers of students entering medical pre-serve education programs.

Government policy regarding non-government medical schools requires careful formulation. The question as to the standard of training offered by a non-government medical school is of great concern. The establishment of private medical schools and their continued operation can be regulated through a strictly implemented and transparent process of registration and licensing. Permission to open a private school should not be given unless the applicant can demonstrate a real need for its graduates. It may be that permission to establish a new non-government medical school should only be given if the school were to be is located at a regional centre such as Battambang or Siem Reap. Although there are obvious challenges in meeting this desideratum, the location of a medical training centre at one or more regional centres

would certainly lift the level of expertise and service in those centres and the surrounding countryside.

An important question for consideration before permission is granted for the opening of a private school is what is to happen to students if the school closes either because it becomes insolvent, or because its license is cancelled, or for some other reason?

There are also important questions to be asked as to:

- how many graduates are the non-government schools to be permitted to produce,
- where are these graduates to be placed for internship,
- where and by whom will they be employed on completion of internship?

Once a non-government school is in operation, the adequacy of the school's management, facilities and actual performance can be assessed through a system of independent accreditation by a credible accreditation body and accreditation process.

If as time goes by non-government medical schools of an acceptable standard are in operation, consideration might have to be given to the possibility of some down-sizing of activities at UHS in order to prevent the wasteful 'over-production' of doctors.

4.3.5 Non-Government Sector Doctors And Medical Assistants

As noted above, a major component of the private sector 'doctoring workforce' is made up of MOH doctors and MAs working part-time in the non-government sector of the health system. There is no reliable and comprehensive source of information regarding the activities of these practitioners or of doctors and medical assistants working entirely in the non-government sector. It is extremely unlikely that the current legislation relating to registration of doctors will furnish the data required for proper monitoring and planning of this component of the doctoring workforce.

With inadequate information regarding the current non-government workforce situation, and in the absence of well defined service development plans, the future situation is difficult to foresee. Suppose there were to be, say, two or three really large private hospitals opened in Phnom Penh during the ten years covered by this workforce plan. A large number of doctors, including specialists already in short supply, would be taken on staff in either full-time or part-time positions. These doctors would be drawn from the then current medical workforce – and most of them would probably come from the MOH medical workforce.

Until more information is available, it may be reasonable to add to the numbers of MOH required annual intakes to the medical workforce 15-20 additional doctors, which would require an additional intake to medical school of say 17-22 students in addition to the numbers given for training entrants in Table 4.1.

4.3.6 Monitoring and Adjusting the Medical Workforce Situation

In medical workforce planning with inadequate baseline information from which to develop projections we are inevitably in very speculative territory, and the necessity for continuing monitoring of the medical workforce situation must be underlined. One must also always bear in mind that adjusting medical school intakes will have no

effect on the availability of doctors for at least six or seven years, unless one adopts substantial changes to policy such as:

- drawing medical school intake from the nursing workforce where the up-grading time frame might be three years, and/or
- reducing the length of the medical school course to say four years and require entrants to already have completed a first degree (the 'graduate entry' approach as adopted in a growing number of countries).

4.4 The Nursing Workforce

4.4.1 The Current Nurse and Midwife Situation

For most of Cambodia's population the MOH nurses and midwives based in health centres represent the 'front-line' of the government's health care system. MOH nurses and midwives in 2003 made up more than 60 per cent of the total MOH health professional workforce. Numbers of MOH nurses and midwifes practise their profession on a "part-time' basis in the private sector, a sizeable number are employed in private sector health facilities and facilities, and smaller numbers are employed by other government agencies (principally the defence force health services), international and other non-government agencies.

4.4.2 Nurses, Not Including Midwives

Within the Government sector the 8,000 or so nurses employed by MOH were augmented by some hundreds of nurses employed in the RCAF health services and a much smaller number working in some other government agencies. The MOH nurse: population ratio was around 1:1750 in 2004.

Cambodia's government health service was designed in the Health Coverage Plan to have very few doctors in the front-line acting in the traditional role of 'general medical practitioners'. Nurses at health centre level are to a very considerable extent the 'general practitioners' of the system. Although they may be in radio or telephone contact with doctors at a referral hospital regarding major problems, much of the work they do from day to day is similar to that of a general medical practitioner – diagnosis, treatment, triage and referral, the giving of advice and reassurance. In addition they have to manage their health centre and are supposed to participate in the delivery of a range of national programs and other community health activities. Health centre utilization at around 0.4 contacts per person per year are very low, but of course this does not give a full picture of MOH nursing and midwifery staff activity (since they may also be active in the private sector of the health system out of official working hours). Health centre nurses make up the largest component of the MOH nursing workforce.

Hospital based nurses make up the second large division of the MOH nursing workforce.

With some exceptions in the more specialized units of some of the larger metropolitan hospitals, the intensity of nursing in terms of nurse-time per patient per day is not high, and hospital utilization rates are generally low – the national average in 2003

was around 26 admissions per 1,000 people. The division of the nursing workforce between the pre-dominantly rural health centre cadre and the relatively urban hospital cadre may be important in terms of future recruitment and training program development.

A third division of the nursing workforce, or rather of people holding nursing qualifications, is the group of trained nurses who are not actually doing any nursing but are working in such jobs as program managers and program support staff, as office staff or filling a range of allied health personnel roles including work in laboratories and pharmacies, and radiography units.

The nursing workforce is stratified, with primary nurses at the lower level and above them secondary nurses. The secondary level is further stratified in terms of training depending on which particular variant of basic nurse training course was in vogue when they went through nursing school. In recent years the total number of the MOH nursing workforce has decreased. Because of the cessation of most primary nurses training activity[18] and arrangements for primary nurses to complete training for promotion to secondary nurse level, the ratio of secondary to primary nurses has changed over the past decade, with the secondary to primary nurse ratio reaching 45:34 in 2003.

It is important to note that the MOH general (secondary) nursing curriculum now includes obstetrics (principally the management of the normal delivery) and therefore the clear demarcation between "nurses" and "midwives" is to some extent becoming blurred. This extension of the role of the general nurse, particularly when working at health centre level, is highly desirable in view of the existing limited number of trained midwives based in health centres.

In addition to advanced training in midwifery for secondary nurses, a range of formal post-basic specialty-nursing programs provide opportunity for nurses to qualify for other specialised nursing positions.

4.4.3 MOH Nursing Workforce Projection

For MOH nursing personnel projection purposes we make the basic assumptions listed earlier in this document (see 4.1.2 above). The projection covers the nursing workforce as a whole, including secondary, primary and specialist nurses together BUT excluding midwives. There will be movement between nursing sub-categories as time goes by, but the direction and scale of movement will depend on the interaction of several factors, including service requirements which we cannot foresee at present.

The projection provides for the maintenance of the current total MOH nurse to population ratio of around one MOH nurse to 1,750 people.

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[18] One MOH Regional Training Centre provides a program to train small intakes of local residents as primary nurses to work in Cambodia's sparsely populated north-eastern provinces.

Table 4.2: Projection - MOH secondary and primary nurses: required numbers, intakes and training entries, 2006 to 2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Population (millions)	14.0	14.3.	14.6	14.9	15.2	15.5	15.8	16.1	16.4	16.7
Popn per MOH SN or PN	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750
Total MOH SNN + PNN	8,000	8,515	8,693	8,876	9,062	9,253	9,447	9,645	9,848	10,055
Required annual SNN + PNN intake required	353	360	367	375	382	390	397	405	414	422
Required student entry to training school	412	420	429	437	446	455	464	473	482	491

Note: SN = Secondary Nurse SNN = Secondary Nurses, PN = Primary Nurse PNN = Primary Nurses

In Table 4.2 the secondary and primary nurse categories are combined. The total numbers in the table also include the relatively small number of specialist nurses such as "Eye Nurses" etc. The actual number of primary nurses to be trained and recruited into MOH employment on graduation is a small fraction of the total numbers shown in the table and will depend on consideration of the local requirements of the MOH services in the provinces to which they are to be posted.

Note that the training intake in Table 4.2relates ONLY to nurses who are to continue to be employed as nurses and not to become midwives. The entry to nurse training school MUST take into account the basic RN training of nurses who will later become midwives, and this is dealt with in 4.4.3 below.

Note that this projection relating to nurses does not take into account the potential losses to the nursing workforce if nurses are taken from the active nurse workforce to be trained as midwives. This matter is taken up again later in this section.

4.4.4 Nursing Workforce Productivity

We have already noted the low utilization rate of health centres and referral hospitals. We will mention a few among a number of factors that determine MOH nursing workforce productivity. They are of course basically factors which influence the productivity of virtually any workforce anywhere:

- The first is the behaviour of the community. The utilization of services offered at a health centre, and the extent of community participation in activities organized from the health centre will to some degree affect the motivation of the health centre staff Local health committees etc may play an important role here in generating support for the health centre or hospital and by encouraging proper us of the full rang of services and activities offered by the facility.

- Supportive supervision of health centre staff from the referral hospital and the Operational District Office.

- Productivity-linked monetary and other material incentives and rewards available to health centre staff.

- Friendly competition between similar level units, e.g. between health centres, between similar referral hospitals by way of sharing targets and achievement information, star ratings (as used in the English National Health Service), Centre of the Year, Service achievement certificates and so on. Motivation management is an important part of the job of managerial staff and they should be aware of the range of techniques etc that may be employed. .

- Career advancement prospects for nurses. Medical assistants may under certain conditions apply for admission to UHS to complete the final years of the medical course and so become fully qualified doctors. No such opportunity is currently open to nurses. Should it be?

4.4.5 Deployment of MOH Nursing Personnel

The marked disparity between MOH nurses to population ratios in the Phnom Penh area as compared with the rest of Cambodia was noted earlier in this document. Freezing of the number of nurse posts in Phnom Penh and/or local natural attrition with transfer of vacant posts to locations outside Phnom Penh have been explained in relation to doctors and medical assistant pots – similar considerations apply in relation to posts for nurses.

As to the posting of nurses outside of Phnom Penh, having regard to the importance attaching to providing the population with ready access to frontline care, prime consideration must be given to filling vacant posts and creating additional posts for nurses at health centres elsewhere.

4.4.6 The Non-Government Nursing Workforce

This section has so far been concerned only with nurses working or being trained in anticipation of their being employed within MOH. We have included a 10 per cent non-entry to MOH employment in calculating require student entry to nurse training. Some of this ten per cent may enter employment in the non-government sector.

The International University nursing graduates will swell the number of trained nurses looking for employment, and opportunities will arise in the non-government sector.

With a significant expansion in the number of large hospitals in Phnom Penh (or elsewhere), then a serious movement of experienced MOH nurses into such hospitals must be anticipated. At this moment, we are not in a position to examine the full implications of such private sector developments, but again we have to underline the necessity to closely monitor the workforce situation and if necessary make adjustments to entry to training and intake to MOH employment.

4.4.7 Future Structure of the Nursing Workforce

In a review of the implementation of the first national health workforce plan[19] a thorough and independent review of the future structure of Cambodia's nursing and midwifery workforces was recommended. This recommendation still stands. It is likely that such a review would generate recommendations for changes that would require adjustment of the projections presented here.

4.5 The Midwifery Workforce

4.5.1 The Current Midwifery Situation

The current state of the government midwifery service in Cambodia is reflected in the official statistics:

- Only one in five MOH reported births is attended by trained MOH personnel
- Four per cent of babies are born in health centres and about one in ten births outside of Phnom Penh is a home delivery attended by staff from either a health centre or referral hospital (The MPA proposed deliveries as a major function of health centres and their staff)
- Over 50 percent of all hospital government hospital deliveries occur in Phnom Penh
- Maternal mortality rate is reported as over 400 per 100,000 live births – such a high mortality rate is invariably accompanied by a very much higher pregnancy and childbirth associated morbidity rate among mothers and high mortality and morbidity rates among neonates and infants.

A recent examination of data held in the MOH HRD Department database indicated that about one in four health centres had no midwife among its staff.

Improvement in the size, distribution and productivity of personnel trained in midwifery must be one of the most pressing priorities of the government health service in Cambodia.

4.5.2 Projection of the Midwifery Workforce Numbers, Required Intakes And Entries to Training

The following projection shows the staffing requirements over the years 2006-2015 if the present midwife to population ratio is to be maintained.

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[19] The Health Workforce Development Plan 1996-2005 - Third and Final Review (MOH, 2004)

Table 4.3: Projection - MOH secondary and primary midwives: required numbers, intakes and training entries, 2006 to 2015

	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Population (millions)	14.0	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.4	16.7
Popn per MOH SMW or PMW	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
MOH SMW + PMW	3,000	3,038	3,099	3,161	3,224	3,289	3,355	3,422	3,490	3,560
Annual intake required	133	135	137	139	142	145	148	151	154	157
Required annual student entry to MW training course	149	150	153	156	160	163	166	169	173	176

Note: SMW = Secondary midwife/midwives, PMW = Primary midwife/midwives

4.5.3 Effect of recruiting trainee midwives from the MOH secondary nurse workforce

Entrants to the one-year post-basic midwifery-training course are secondary nurses. Presumably entrants may be either (a) nurses who were actually employed in the MOH nurse workforce prior to entry or (b) nurses who were not actually MOH employees immediately prior to entry to midwifery training. When a nurse in group (a) graduates from the post-basic course and is then employed by MOH as midwife, she is "lost" to the secondary nurse workforce. In order to maintain the target nurse:population ratio she must be replaced by a secondary nurse – either a new graduate from a nursing school or from the pool of qualified "ex-nurses". This loss from the active nurse workforce was not covered in the Table 4.2 projections.

Replacing currently employed nurses who enter midwifery training will require the numbers of entrants to nurse training programs be increased. Table 4. 4 shows year by year the required total number of new entrants to secondary nurse training if all entrants to midwifery training are drawn from the MOH employed nurse workforce.

Table 4.4: Annual total number of required entrants to secondary nurse training programs if all MOH midwifery trainees are drawn from the MOH secondary nurse workforce

	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Required entrants to maintain target nurse:population ratio (from Table 4.2)	412	420	429	437	446	455	464	473	482	491
Required entrants to replace nurses entering midwifery training (from Table 4.3)	149	150	153	156	160	163	166	169	173	176
Required total entry to secondary nurse training programs	561	570	582	593	606	618	630	642	655	667

4.5.4 The Midwifery Workforce in the Non-Government Sector

As is the case in other areas of the health system, information regarding the workforce actually working in midwifery is sketchy. Undoubtedly the MOH midwifery workforce engages to some extent in private practice, and some non-government hospitals have sizeable obstetric departments. Statistics from the MOH P&HI Department released recently showed two 'maternities' operating under licence in the private sector and another 26 were also operating but unlicensed. This gives a very incomplete picture of what is happening in the private sector.

One hesitates to contemplate the number and outcome of births conducted by TBAs but not recorded in the official MOH statistics.

As for all other sections of the total health workforce, much more comprehensive data collection and analysis is required to adequately plan, manage and monitor midwifery services and the midwifery workforce in both the government and private sectors of Cambodia's health system.

4.5.5 Development, Deployment and Productivity of the Midwifery Workforce

The present state and performance of the MOH midwifery service underline the need for a thorough and objective review of the government nursing and midwifery services. This review must encompass nursing and midwifery in both the public and private sectors. Among matters for examination are the delineation roles of nurses and midwives, the present division between nurses and midwives as separate categories within the overall health workforce, the present low level of hospital and health centre delivery, the continued provision of midwifery training as a post-basic course, the inclusion of midwifery as an integral and expanded component of general nurse education, the training and utilisation of primary midwives, and the education and encouragement of women to have their babies in a safe (i.e. institutional) setting. This list is by no means exhaustive of the matters that need to be looked into.

As an urgent priority the present lack of trained midwifery staff 'at the frontline' in health centres calls for immediate action.

4.6 The Dental Workforce

Published MOH statistics for 2003 show a total MOH dental workforce of 220 in 2003, 131 being dentists and 89 dental assistants. This represents an MOH dental personnel to population ratio of around 1:60,500. One in three members of this MOH dental workforce is employed in Phnom Penh.

In the absence of information regarding MOH dental service policy no attempt to project future MOH staffing and training requirements will be made here.

The MOH Office of Ethics and Regulation reported in 2004 that it had recorded 53 licensed and 421 unlicensed dental clinics in operation. No information regarding dental personnel working in the non-government sector was located in the course of preparing this workforce plan.

Among the many tasks calling for attention are the establishment and operation of a central information collection and processing system to permit proper monitoring, planning, management, staffing and regulation of dental services – both public and private - in Cambodia.

4.7 The Pharmaceutical Services Workforce

Much of the activity in the pharmaceutical field takes place outside of the MOH services. Around 550 trained pharmacy personnel are employed within MOH, the largest single group (around 80) being based at the MOH Department of Drugs and Food.

More than three thousand pharmaceutical facilities of different kinds have been identified by MOH as working in the non-government sector (more than two-thirds of them without the licence required by law).

The establishment and operation of a central information collection and processing system to permit proper monitoring, planning, staffing, management and regulation of pharmaceutical services – both public and private - in Cambodia is a matter calling for attention.

4.8 The Laboratory Workforce

4.8.1 MOH Laboratory Personnel

Small numbers of personnel holding degrees in medicine or laboratory science staff the top echelon of the MOH laboratory workforce. At present they are included in official statistics under the rubrics "Doctor" and "Pharmacist". The posts for doctors are included in the "Doctor and Medical Assistant" projection as shown in Table 4.1.

Although MOH statistics show around 470 people formally qualified as laboratory technicians on the payroll, the number of personnel actually working as laboratory technicians is difficult to determine because much of the laboratory work in MOH hospitals is done by medical assistants, nurses and others who do not hold formal qualifications in laboratory technology. Simple laboratory procedures may be performed at health centre level and these are carried out by nursing staff, medical assistants or other personnel.

4.8.2 Private Sector Laboratory Personnel

Although some progress is being made towards the registration and regulation of private medical laboratory services, there appears to be no arrangement for the continuing monitoring of their staffing. It is assumed that some MOH employees are engaged in these activities on an "out-of-working-hours" basis.

4.8.3 Future Requirements - Laboratory Personnel

4.8.3.1 Pathologists, Medical Scientists Etc

Detailed workforce planning for MOH staffing at this level must await the production of a detailed plan for the future provision of MOH laboratory services. For the

purposes of this document MOH staff at this level have been included within the "Doctor" category, as have all other medical specialists.

4.8.3.2 Medical Laboratory Technicians

A two-year course in medical laboratory technology (LT) is conducted at the UHS affiliated Technical School for Medical Care. The premises occupied by TSMC are currently (2004-05) undergoing renovation with financial support from JICA, and training activities at TSMC are being reviewed. In connection with this project a review of the requirements for graduates from the TSMC LT training program was recently conducted.

It was concluded that there was in 2003 a shortfall in LT numbers of around 50. It was estimated that with a proposed annual entry of 40 students from 2006 onwards any shortfall would be eliminated and that within the life of this workforce plan the supply could possibly exceed the demand.

As for all categories of health personnel the demand and supply situation in both the public and private sectors of the health system must be regularly and systematically monitored and training intakes appropriately adjusted.

4.9 The Medical Imaging Workforce

4.9.1.1 Radiologists

A small number of medical practitioners hold formal post-graduate qualifications in radiology and may be practising their speciality in either or both of the public and private sectors of the health system. For the purposes of this document MOH staff at this level have been included within the "Doctor" category, as have all other medical specialists.

4.9.1.2 X-Ray Technicians

There are few formally qualified X-ray technicians within the health system at present and no formal training program leading to a professional qualification has been offered in recent years. As for laboratory technology, a range of health personnel undertake medical imaging work having learnt on the job or completed brief training courses. With JICA support a three-year training program will commence at TSMC in 2006, with a proposed annual entry of 20 students. Following a review of the demand and supply position, including both the public and private sectors, it was concluded that this level of student entry would eliminate any shortfall in supply by the year 2015.

4.10 The Physiotherapy Workforce

Currently less than sixty physiotherapists are employed within MOH. Small numbers of formally qualified physiotherapists are working in other government agencies or in the non-government sector. The JICA-supported project at SMC proposes an annual entry of 40 students to the three-year physiotherapist training course there (the only course currently offered in Cambodia).

The scope for employment of physiotherapists in the small number of government hospitals in Cambodia, most of which have low rates of utilization, is obviously limited. New employment opportunities for graduates will probably be mainly in the private sector. The situation must be monitored and entry to training numbers adjusted to appropriate levels.

4.11 Other Health Professional Cadres

Over the period 2006-2015 one would expect to see improvements in the range and quality of health services offered in both the government and non-government sectors of the health system. Among the areas in which progress might be expected are further development of managerial competence and practice in relation to service planning and management, financial management, personnel administration; specialized clinical nursing; some extension of the medical sub-specialties offered; improvement in medical record keeping as an aid to quality improvement and quality assurance; increased use of information technology for both clinical service delivery and service administration; wider use of more advanced medical technical equipment and the development of skilled personnel to maintain and repair the equipment; registration of all professional health personnel; hospital risk management; greater attention to occupational health matters . . . the list could be extended.

These developments would demand the training of, generally, relatively small staff cadres. It is obviously important that any proposals for such developments give appropriate attention to the financial implications of their introduction and continuing implementation. It is also important that appropriate attention be given to their staffing and training implications.

As decisions are made regarding innovations and further development of new cadres, the workforce plan will have to be adjusted to incorporate the required staffing, training and costs.

5. Workforce and Training Costs

5.1 Costing the Health Workforce Plan

In every country throughout the world costs relating to personnel training and employment amount to a major item of the annual national total health expenditure. A national health accounting system may provide the basic information required for projection of future expenditure in both the public and private sectors of the health care system. No national health accounts are kept in Cambodia. By far the largest burden of staffing costs, whether incurred in the public or private health service sectors, are presently borne by payments directly out of the pockets of people who use health services. It is possible, given time and access to records, to make indicative estimates of future staffing costs of government services and government training programs. Estimates relating to present and future staffing and training costs incurred in the private sector are, in the current absence of data, matters of speculation.

5.2 MOH Staffing and Training Costs

The future costs to government of MOH staffing as projected in this plan would amount to something of the order of an average annual increase of less than three per

cent at current salary and other benefit payments. MOH does not routinely publish detailed annual reports on staffing expenditures from which more detailed projections may be developed.

Indicative estimates of the future costs of training health personnel in government institutions may be derived from an analysis of present costs and their application to the projected student intakes.

Current staffing costs of health-related services and training activities in other government agencies (notably the RCAF) are not readily available.

5.3 Staffing and Training Costs in the Private Sector

This workforce plan, at its early stage of development, does not attempt to cover the current and future staffing and training activities within the not-for-profit and for profit sub-sectors of the health care system.

It is important that efforts be made to obtain reasonably accurate estimates since these must be given consideration in future discussions and negotiations regarding costs in the public sector. They also are matters of concern when considering the future respective roles of the government and other agencies in the operation of service and training programs.

6. External Support Needs and Priorities

Cambodia relies on contributions from external sources to assist in meeting health service staffing costs, the costs of importing expertise and costs of training health personnel both in-country and elsewhere. This reliance appears likely to continue throughout the life of the 2006-15 health workforce plan. However the volume and content of this support appears likely to diminish as the years go by.

As time goes by the support needs and their relative priorities may change. Arrangements to meet changing demands to cover or subsidise government payments to staff, to meet or contribute to training costs or other workforce related costs should be worked out in advance rather than waiting for events to precipitate crisis-driven responses.

7. Plan Development, Implementation, Monitoring, Review and Evaluation

7.1 Workforce Plan Development

Workforce planning is never finished. This document represents the framework – an inevitably incomplete framework – within and upon which further planning is to proceed. At many points in this document the need for further detailed investigation and consequent decision making has been mentioned. Among areas which call for further development are those relating to the staffing of private sector workforce; the introduction of new categories of health professional personnel; the production of medical and other specialist practitioners; and strengthening of the management cadre. Much more detailed attention must be given to the delivery of health services at the community ("grass-roots" or "frontline") level and the implications of this for the

deployment of staff require detailed attention to planning, staff management, the respective roles of government and other providers, and staff training. The whole field of worker incentives and rewards and the related matters of finance mobilisation and allocation require clear definition of policy and firm implementation. The definition and regulation of the activities of non-government providers of health professional education is an urgent matter.

The detailed planning and decision-making will require information inputs and analytic competence not currently available or not sufficiently utilised within MOH. These deficits were reflected in the need recently to import a consultant to prepare a report on the recruitment of midwives[20] - an example of just one of the very many other workforce-related matters that need further examination during the life of the 2006-15 national workforce plan.

It is important that the present pool of in-country expertise, including the numbers of government and other personnel who have completed relevant study programs out-of-country, be fully utilised in the ever-continuing processes of service, financial and workforce planning and management. It is obviously important that this pool of national expertise be expanded, in part by continued out-of-country training arrangements, but also by the strengthening of in-country training facilities and programs relating to health service development. The potential of the National Institute of Public Health as the focal point for this essential activity must be considered.

It must be stressed again that the development of the workforce plan must reflect overall health policy and operational plans. It and therefore requires the participation of personnel responsible for policy development and service planning, in addition to those responsible for health personnel training and personnel management.

7.2 Arrangements for Workforce Plan Adoption, Implementation, Monitoring, Review and Evaluation

The adoption of the policies and proposals presented in this first version of the 2006-15 national health workforce plan, with any amendments deemed appropriate by senior officers of MOH, will provide the framework for further detailed planning and decision-making regarding implementation.

The systematic monitoring of the health workforce situation in both the government and private sectors is essential to effective and efficient management of the country's health care system. The production of a well-structured annual report on the situation and its presentation to the Minister would be a desirable part of the monitoring and reporting process.

The annual reports would serve as the basis for on-going review of the workforce plan and its adjustment in the light of then current and emergent needs for change. A major review in the fifth year of the plan's life would be appropriate. As the life of this plan draws to its close a wide ranging evaluation of the workforce situation, commencing in late 2014, would lead on to the formulation of the next national workforce plan.

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[20] Hansen J. *Evaluation of the Ministry of Health's 2005 Recruitment Process and Related Factors Affecting the Number of Midwives Employed in Cambodia*. MOH, 2005.

7.3 The Health Workforce Information System

Workforce planning, monitoring, management, regulation and training call for timely and reasonably comprehensive information. As has been very apparent throughout this document, much of the information required for planning even at the broad level attempted here is either not collected or not readily available for planning purposes. This limited availability of essential information extends throughout all aspects of Cambodia's health care system. An obvious and glaring deficiency is information relating to the extensive private sector activity that is a major component of the system.

It is recommended that a wide ranging review of information requirements be conducted by an experienced outside agency with a view to the installation of an appropriately comprehensive and integrated system. This will be an expensive and relatively long term undertaking.

7.4 Direction and Co-Ordination of Health Workforce Planning

The MOH Working Group on Health Workforce, with representation from both the public and private sectors of the health system will play a key role in the development of the workforce plan and its adoption, implementation, monitoring, review and evaluation. However such a body cannot be expected to do the day-to-day, detailed and time consuming work required for the proper performance of these tasks.

Appointment within MOH of a full-time Health Workforce Adviser is recommended. The Adviser's work covers all aspects of the planning-related activities referred to in this health workforce plan. The Adviser would facilitate interaction between the Departments of Personnel, Human Resources Development, Planning and Information and the service delivery units, other government agencies and non-government sector agencies in matters relating to the health workforce in both the public and private sectors. The Adviser's office would require two full-time support staff, one probably being a research and planning officer and the other a research assistant. This office will act as secretariat to the Working group on Health Workforce.

The Adviser reports directly to a nominated top level MOH officer (eg Director-General or Deputy Director-General, not a departmental director). This appointment may require the recruitment of an ex-patriate with appropriate expertise and experience in health service development and management, as well as in workforce related matters. Although external funding may be required, the Advisor should be seen as a member of MOH staff, not as the employee or representative of an external agency.