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Indonesia's Doctors, Midwives and Nurses:
Current Stock, Increasing Needs, Future Challenges and Options

January 2009

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This review paper is an input to the ongoing broader Government of Indonesia-led Comprehensive Health Sector Review which informs the GoI's next five-year National Development Strategic Plan. It is a review paper produced as part of the Health Workforce Economic Sector Work (P101723) conducted by the World Bank in Indonesia.

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List of Abbreviations and Acronyms

AAA	Advisory and Analytical Activities
ADB	Asian Development Bank
AFTA	ASEAN Free Trade Area
AIPKI	*Asosiasi Institusi Pendidikan Kedokteran Indonesia* (Association of Medical Education Institutions)
ASEAN	Association of Southeast Asian Nations
AUK	*Amal Usaha Kesehatan* (Health Enterprise Charity)
BAN-PT	*Badan Akreditasi Nasional Perguruan Tinggi* (National Accreditation Board for Higher Education)
BDD	*Bidan di Desa* (Village Midwife)
BKD	*Badan Kepegawaian Daerah* (Regional Civil Service Agency)
BKN	*Badan Kepegawaian Nasional* (National Civil Service Agency)
BPPSDMK	*Badan Pengembangan dan Pemberdayaan Sumber Daya Manusia Kesehatan* (National Institute of Health Human Resources Development and Empowerment)
CBC	Competency-Based Curriculum
CCT	Conditional Cash Transfers
CPDMS	Clinical Performance Development and Management System
DAU	*Dana Alokasi Umum* (General Allocation Grant)
DEPKES	*Departemen Kesehatan* (Ministry of Health)
DGHE	Director General of Higher Education
DIKTI	*Pendidikan Tinggi* (Directorate General for Higher Education, MoNE)
DPR	*Dewan Perwakilan Rakyat* (People's Representative Council – Indonesian Parliament)
DSP	*Daftar Susunan Pegawai* (Staff List)
GDS	Governance and Decentralization Survey
GoI	Government of Indonesia
GTZ	*Deutsche Gesellschaft fur Technische Zusammenarbeit* (German Technical Cooperation)
HPER	Health Public Expenditure Review
HRH	Human Resources for Health
HWF	Health Workforce
HWS	Health Workforce and Services (World Bank-funded project)
IBI	*Ikatan Bidan Indonesia* (Indonesian Midwives' Association)
IDHS	Indonesia Demographic and Health Survey
IDI	*Ikatan Dokter Indonesia* (Indonesian Medical Association)
IFLS	Indonesia Family Life Survey
IMR	Infant Mortality Rate
ISN	Indicator of Staff Need
Jamkesmas	*Jaminan Kesehatan Masyarakat* (Community Health Insurance Scheme)
KDI	*Kolegium Dokter Indonesia* (College of Indonesian Doctors)
KDP	*Kecamatan* (Subdistrict) Development Program
KKI	*Konsil Kedokteran Indonesia* (Indonesian Medical Council)
LAN	*Lembaga Administrasi Negara* (National Institute for Public Administration)
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MENPAN	*Kementerian Negara Pendayagunaan Aparatur Negara* (Ministry of State Apparatus Reform)
MMR	Maternal Mortality Rate
MoH	Ministry of Health
MoHA	Ministry of Home Affairs
MoNE	Ministry of National Education
MRA	Mutual Recognition Agreement

MTKP	*Majelis Tenaga Kesehatan Provinsi* (Provincial Health Workforce Council)
NCD	Non-Communicable Disease
PBL	Problem-Based Learning
PER	Public Expenditure Review
PNPM	*Program Nasional Pemberdayaan Masyarakat* (National Program for Community Empowerment)
PNS	*Pegawai Negeri Sipil* (Permanent Civil Servant)
PODES	*Potensi Desa* (Survey of 'Village Potential')
PPNI	*Persatuan Perawat Nasional Indonesia* (Indonesian National Nurses' Association)
PTT	*Pegawai Tidak Tetap* (Temporary/contracted civil servant/doctor)
PUSDIKLAT	*Pusat Pendidikan dan Latihan* (Center for In-service Education and Training – MoH)
PUSDIKNAKES	*Pusat Pendidikan Tenaga Kesehatan* (Center for Health Workforce Education)
Puskesmas	*Pusat Kesehatan Masyarakat* (Community Health Center)
PUSPRONAKES	*Pusat Pemberdayaan Profesi dan Tenaga Kesehatan Luar Negeri* (Center for Foreign Health Personnel and Professional Empowerment)
PUSRENGUN	*Pusat Perencanaan dan Pendayagunaan* (Center for Human Resources Efficiency and Planning)
Repelita	*Rencana Pembangunan Lima Tahun* (Five-Year Development Plan)
Sakernas	*Survei Tenaga Kerja Nasional* (National Labor Force Survey)
SIB	*Surat Izin Bidan* (Midwife's License)
SIMPEG	*Sistem Informasi Kepegawaian* (Civil Service Information System)
SIM-PPSDMK	*Sistem Informasi Manajemen - Badan Pengembangan dan Pemberdayaan Sumber Daya Manusia Kesehatan* (Health Human Resources Empowerment and Development Agency – Management Information System)
SIP	*Surat Izin Praktek* (License to Practice)
SPK	*Sekolah Perawat Kesehatan* (Nursing School for Junior High School Graduates)
Susenas	*Survei Sosial Ekonomi Nasional* (National Socioeconomic Survey)
TBA	Traditional Birth Attendant
UCT	Unconditional Cash Transfer
UGM	*Universitas Gadjah Mada* (Gadjah Mada University)
UKP3KR	*Unit Kerja Presiden untuk Pengelolaan Program Kebijakan dan Reformasi* (Presidential Work Unit for the Management of the Policy and Reform Program)
WB	World Bank
WFME	World Federation of Medical Education
WISN	Workload Indicator of Staffing Need
WHO	World Health Organization

Executive Summary

This paper is one of several inputs prepared for a comprehensive Health Sector Review that the Government of Indonesia is currently conducting. It compiles, analyzes and interprets available information on Indonesia's health service providers; doctors, midwives and nurses. Within the limitations imposed by questions about the accuracy and timeliness of current workforce data, the paper describes the stock and distribution of health workers. The paper draws attention to weaknesses in the workforce planning methods in use, and then reviews the human resource policies, including governance structures and the regulatory framework, that affect health workers. It concludes by describing future challenges and some suggested ways of addressing these challenges.

The number of medical doctors and specialists, midwives, and nurses in Indonesia rose significantly between 1995 and 2006. There was a commensurate improvement in the ratio of doctors and other health service delivery staff per 100,000 population during this period but, despite these gains, Indonesia's overall ratios still lag behind other countries in the region. In addition, inequities in distribution between urban and rural areas as well as between affluent and less affluent areas persist. There are now almost 80 thousand midwives in Indonesia. The ratio per 100,000 population and their geographical distribution have improved over time and there were more midwives in rural than in urban areas in 2006. However, the data do not allow credible estimates of current numbers and distribution of nurses to be determined.

An estimated 60 to 70 percent of health service providers who are publicly employed have second jobs or operate a private practice after hours. Initially, the opportunity to engage in a dual practice was offered as an incentive to encourage workers to move to remote areas by providing a government salary that was, in effect, an income floor. Over time, however, various adverse consequences of the dual set-up have been experienced, for example competition for public time resulted in absenteeism, resource misallocations and the diversion of public patients to private practices.

Health facility utilization patterns are an important indicator of the efficiency of dual practice arrangements and the quality of participating health providers. In Indonesia, the utilization of health facilities by those seeking treatment for an illness has declined since the economic and political crisis which began in 1997 and, although some improvements have been seen in the past three years, the rates remain below the 1997 level. In addition to a reduction in overall utilization rates, there has been a shift in choice of providers; in 1997 more than half of those seeking care did so at a private facility, but by 2004 most patients were seeking treatment at public facilities.

When correlating health worker ratios with utilization, there is a positive linkage between doctor 'ratios' and utilization. The correlation remains positive when analyzing public utilization, but is weaker than for private utilization. This may explain a preference for private utilization in the case of doctors. In the case of midwives, there was a positive correlation between skilled birth attendance and higher numbers of midwives in 1996, but a negative correlation in 2006. The impact of the doctor ratio is discerned in these surprising results--when there is a choice there is a preference for a doctor for skilled delivery.

It is likely that demographic and epidemiological transitions, as well as increased utilization of services as health insurance coverage expands, will drive the increased demand for health services and health workers. Indonesia has increased its capacity to produce health workers during the last two decades. For example, in the 1990s there were 183 *Sekolah Perawat Kesehatan* (SPK) and 76 diploma (D3) nursing schools. There are now some 682 nursing schools altogether producing some 34 thousand nurses each year. There are also 52 medical schools producing an average of 5 thousand new medical doctors each year as well as 465 midwifery schools producing 10 thousand midwives.

This expansion, however, has focused on multiplying the number of workers, with quality given less attention. In particular, there are serious quality concerns around the education provided in a large number of the more recently established and privately-owned schools as well as quality concerns about the subsequent certification of the graduating health professionals coming out of these schools. Similar concerns apply to some publicly-owned schools. For example, a review of the current governance set-up and accreditation and certification processes of schools and graduates noted the absence of standards and the lack of staff and institutions that can conduct proper accreditation and certification according to nationally agreed norms. As a result, there are wide variations in the quality of graduates and subsequent service provision.

Policies regarding health human resources in Indonesia have undergone various changes over time but there has not been a comprehensive evaluation of the effect of these policies.[1] The most important policy changes centered on sustaining the health workforce numerically after the zero-growth policy was instituted and improving the distribution of health workers in remote and underserviced areas. Allowing dual practice, hiring medical doctors on attractive contracts with the possibility of further training for working in remote areas, as well as compulsory service were among the measures instituted. However, when decentralization was implemented, some policies continued and some changed. In the confusion some responsibilities are not being handled as expected, for example information on where health workers work is not being collected.

Meanwhile, new challenges are further complicating the management and planning of the health workforce in Indonesia. The demographic and epidemiological transitions change the demand for services; increasing demand from a larger group of older people; increasing demand for more sophisticated services as well as more inpatient services. A number of programs that have been introduced such as *Desa Siaga*[2], Conditional Cash Transfers (CCT) and *Askeskin*/*Jamkesmas* have increased, and are likely to continue to increase, demand for primary health services as well. Health workforce planning in Indonesia has long been based on ratios rather than demand and need projections and the described changes in demand will make planning even more complex in the future.

In brief, this paper identifies a number of main challenges in the health workforce in Indonesia. These are: (i) there is a shortage and inequitable distribution of medical doctors and specialists; (ii) the education of health professionals is of poor quality and the accreditation and certification system is weak; (iii) health workforce policy development and planning are not based on evidence or demand, but rather on standard norms that do not reflect real need or take into account the contribution of the private health sector; nor have they adapted to a decentralized paradigm, and finally; (iv) the growing and changing demand for health care due to demographic and epidemiological changes will increase the burden on the already ineffective health system. The final section of this paper makes nine suggestions designed to address these main challenges.

1 Although the Ministry of Health has commissioned a study of the contracted doctor program, no draft report was available at the time of writing this paper.

2 *Desa Siaga (Desa Siap Antar Jaga)*: Prepared Village.

Introduction

Chapter 1

This review paper compiles, analyzes and interprets information currently available on Indonesia's health workforce. The paper serves two purposes: to stocktake and identify the challenges and options for the GoI-led comprehensive Health Sector Review and to provide a background overview for the upcoming Health Labor Force Study (see Appendix B). As part of this work, the paper also includes an in-depth analysis of current information and data on the health labor force and smaller-scope studies on recruitment policies and the education of health professionals in both private and public practice.[3] The GoI is strongly committed to improving health workforce management policies with the end goal of improving the quality of service provision, especially the MDG-related outcomes. A strong sign of its commitment, not only to strategies but also to implementation, is that the government has borrowed substantial funds through three World Bank loans and a new project[4] is being identified.

The Government of Indonesia requested the World Bank and other donors to assist in a comprehensive review of the health sector and an assessment of the functioning of the health system. The background study for this comprehensive review identified some policy questions to guide the stocktaking in this sector paper and the Health Labor Force Study. These were:

- How does the phenomenon of dual practice and the growth of the private sector affect access to care for the poor and non-poor?
- How do current civil service rules and procedures associated with decentralization affect the ability to staff health facilities?
- Are there any incentives built into compensation packages that enhance health facility staffing, especially in remote areas? If so, what are they and how do they work?
- Is it more cost-effective for government to rely on other appropriately-skilled health practitioners such as nurse practitioners rather than doctors in underserviced communities?
- What are the key strengths and weaknesses in the current system for training, distributing, and motivating health personnel?
- What accreditation and regulatory procedures are being implemented to guarantee quality care through both the public and private sectors?
- What policies are needed to improve the quality of service delivery, especially in the private sector?
- Should accreditation of private and public providers be a criterion for inclusion in the provider network and reimbursement in the government- supported health insurance scheme?

The paper starts by describing the current supply of health workers (the stock) including, for example, the number of workers by category and how they are distributed (that is where do they live and work). This is followed by an overview of the system that produces new health workers in Indonesia and a discussion of the regulatory framework guiding the education of health professionals. Recruitment and deployment policies are described and there is a discussion on the progress in reforming these policies as well as past reforms. Both long-existing problems and new challenges that have arisen since decentralization, demographic and epidemiological transitions as well as new programs and policies to meet future demand for health workers are all identified. Finally, the paper consolidates the prospects and issues and provides a number of ideas to address them in future policy decisions.

3 See also Kluyskens & Firdaus "Assessment of Regulatory Responsibilities and Management of Health Work Force", June 2007; Nida Nasution " Health work force deployment policies and data collection on PTT-PNS program, Indonesia, August 2007; Rosalia Sciortino & Neni Ridarineni "Muhammadiyah Health Care Provision; a case-study", August 2008; and Pierre Jean "Assessment of Medical Education in Indonesia", 2008.

4 The GoI and the World Bank are jointly preparing a new project to improve the quality of medical and health professional education.

1.1 Objectives

There are several reasons why a review of the health workforce in Indonesia is relevant and timely:

- **The performance of the health system is intrinsically linked to the availability and effectiveness of health workers.** The most recent estimates show Indonesia's maternal mortality rate at 420 per 100,000 live births, one of the highest rates in East Asia (Lancet 2007). Indonesia is also falling behind on other important MDGs, such as malnutrition among young children and progress on infant mortality appears to have stagnated. Health system outputs such as immunization rates, skilled birth attendance, and institutional deliveries show poor performance in remote and poor areas of Indonesia and these trends inevitably raise questions about the allocation, staffing and training of health workers.
- **Since the early 1990s, Indonesia has made important adjustments and introduced new health workforce policies.** Most notable is the introduction of the contracted doctor scheme (PTT) to improve geographical deployment; the *Bidan di Desa* program to increase access to skilled birth attendance in non-urban areas and private sector initiatives such as the *Bidan Delima* program to improve the quality of care. Where possible, the impact of these policies will be addressed in this paper using information from earlier publications and case-studies to inform policy options for future reform.
- **The health workforce constitutes a substantial share of expenditures for health.** Indonesia currently has more than 70 thousand medical doctors--15 thousand specialists and 55 thousand general practitioners (KKI, cited in Nasution 2007)--about three times as many nurses and almost 80 thousand midwives (PODES 2006). Overall salaries and allowances for personnel comprise more than half of the total public budget for health (World Bank 2008b). At the subnational (province and district) level, in particular, personnel expenditures are a significant portion of budgetary expenditures, at approximately 80 and 65 percent of the available health budget respectively. However, many *Puskesmas* do not have a doctor and, of those that do, a recent audit study (Chaudhury et al 2006) found that nearly 40 percent of medical doctors were absent from their posts during working hours. Midwives and nurses are also not distributed equitably in remote areas. These facts raise the question of how well this public money is being spent.
- **Private health sector growth and changes in the demand for health services have implications for the health workforce.** The number of private health providers has grown dramatically in Indonesia since the legalization of dual practice[5], liberalization of hospital ownership, the introduction of a zero-growth policy on civil service numbers and the passing of decentralization legislation in 1999. Dual practice was even encouraged from the 1970s with GoI recognition that public salaries were low. An expanding source of investment in the health sector comes from local Indonesian construction and property development companies (including the Lippo Group and Astra Group). Foreign interest has also been growing since the formation of the ASEAN Free Trade Area (AFTA) in 1992, and the opening of the health sector to foreign investment up to a 65 percent ownership limit. As the market tightens, competition between private and public providers can be expected to intensify, impacting in multiple ways on health care quality, utilization and outputs.
- **The quality of care is an important determinant of both demand for health services and health outcomes** and is often measured as physical infrastructure and equipment, availability of drugs and total number of personnel. However, what is often not measured, because it is inherently very complicated, is the quality of health personnel, including their competency. To the extent possible, this review includes a discussion on health personnel education and quality in Indonesia, and their changes over time. The Health Labor Force Study, using Indonesia Family Life Survey (IFLS) vignettes data results, includes an analysis of the quality of service provision by the various types of health workers.
- **The introduction of the health insurance program *Jamkesmas* has increased access to, and utilization of, health services by the poor (World Bank 2008b).** The implications of Law No. 40/2004 calling for universal coverage and health insurance need to be assessed. The insurance scheme will have major

5 Dual practice allowed health workers to work in both the public and private sector.

implications for the workforce, not only in terms of numbers, but also in terms of policies regarding recruitment, production, incentive structures, competition, and accreditation, certification and licensing to ensure quality of services.

1.2 Scope and Audience

This review paper builds upon earlier reports and papers, compiling what already exists and adding new information. The *Indonesia's Health Work Force; Issues and Options* report (World Bank 1994) conducted a stocktake and reviewed health human resources policies as of 1994 and provided recommendations. The 2002 *Health Strategy in A Post-Crisis, Decentralizing* Indonesia (World Bank 2002) provided an update emphasizing the opportunities brought about by the decentralization of government authority and services in 2001. These papers and others are used as the basis for this report.

This review paper will emphasize the health service delivery workforce as opposed to administrative staff. Within the service delivery workforce, doctors, nurses and midwives are the key categories that will be addressed. Although allied workers[6] constitute about 15 to 20 percent of total health workers, there is very little information available on them, and so examining these workers has not been considered within the scope of this paper. In addition, no specific references have been made to the international experience in this paper as a separate paper is being developed.

In addition to the Ministries of Health, Planning and Finance, the GoI stakeholders include the Ministry of Education (specifically the Director General of Higher Education), Ministry of State Apparatus Reform, Ministry of Home Affairs and provincial and local officials and members of parliament. The non-Indonesian stakeholders include World Bank staff, other donors and their staff as well as the general health community for whom this work will supplement the global evidence base.

1.3 Government Strategy for Human Resources for Health (HRH)

The government's strategy for HRH is laid out in the *Revised Strategic Plan for Health 2005-2009* and the *Healthy Indonesia 2010* strategy. The main objectives of the strategy are to improve the amount, type, quality, and distribution of human resources to improve health outcomes. The strategy aims to improve equity, accessibility and quality of health services, especially for the poor, through the provision of free-of-charge access for the poor to health centers and hospitals. To achieve both adequate numbers and an equitable distribution of health service providers, the government has set targets for additional health personnel by 2010 (see Table 1-1). From Table 1-1 it appears that private sector providers are included but underreported.

The implementation policies to achieve these targets include the preparation of appropriate policies, manuals and legislation, and direct advocacy and socialization of these policies. In addition to policies and advocacy, much attention will be given to developing a system for more efficient planning and the creation of partnerships with the private sector and nongovernmental institutions. Information systems, including those for training and management of education of health workers, will be improved at the national and regional levels. More details on these policies are discussed in subsequent sections of this paper.

6 Pharmacists, nutritionists, sanitation workers and so forth.

Table 1-1: Health Personnel Numbers (2006)

No	Types	Indicator /100,000 population (2010)	Need of Health Personnel (2010)	Number of Health Personnel up to 2006	Ratio /100,000 population 2006
A	Medics		117,969	68,227	
1	Specialist	9	21,234	12,374	5,53
2	General Practitioner	30	70,782	44,564	19,93
3	Dentist	11	25,953	11,289	5,05
B	Nursing		587,487	395,688	
4	Nurse	158	372,783	308,306	137,87
5	Midwife	75	176,954	79,152	35,40
6	Dental Nurse	16	37,750	8,230	3,68
C	Pharmaceutical		63,703	49,313	
7	Pharmacist	9	21,234	10,207	4,56
8	Assistant Pharmacist	18	42,469	39,106	17,49
D	Public Health		42,469	27,833	
9	Graduate of Public Health	8	18,875	9,739	4,36
10	Sanitarian	10	23,594	18,094	8,09
E. 11	Nutrition	18	42,469	15,342	6,86
F. 12	Physical Therapy	4	9,438	5,290	2,37
13	Medical Technique	6	14,156	10,318	4,61

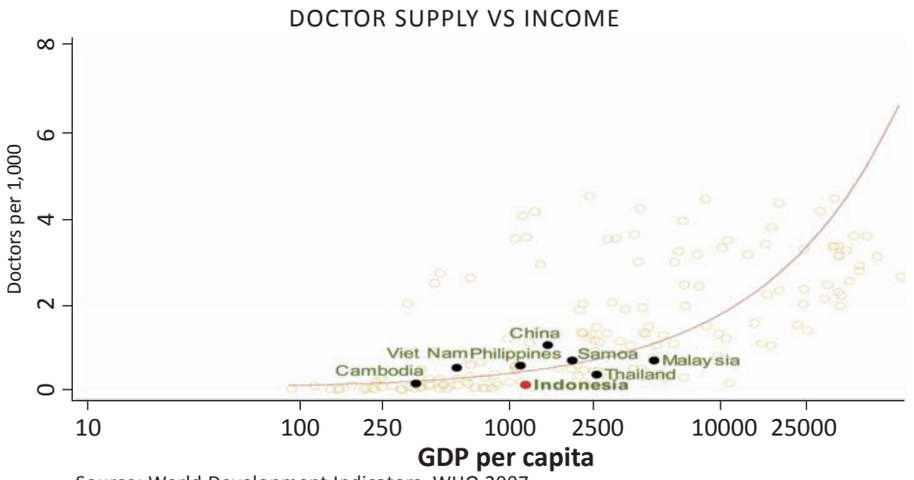
Source: BPPSDMK Profile 2007 (MoH 2007:30)

Professionalizing the management of human resources is also a key objective in the *Healthy Indonesia 2010* strategy. It stresses the importance of re-examining human resource management and then strengthening management practices to improve effectiveness and efficiency. This includes defining clear roles and responsibilities (for health workers and their managers), developing job descriptions and policies on recruitment, deployment, education, training evaluation, promotion, incentives and career development. The strategy acknowledges that with decentralization, each administrative level requires new competencies and skills. At the provincial and district level, new skills were required for planning, program management, decision making and problem solving; all functions initially performed by the central government.

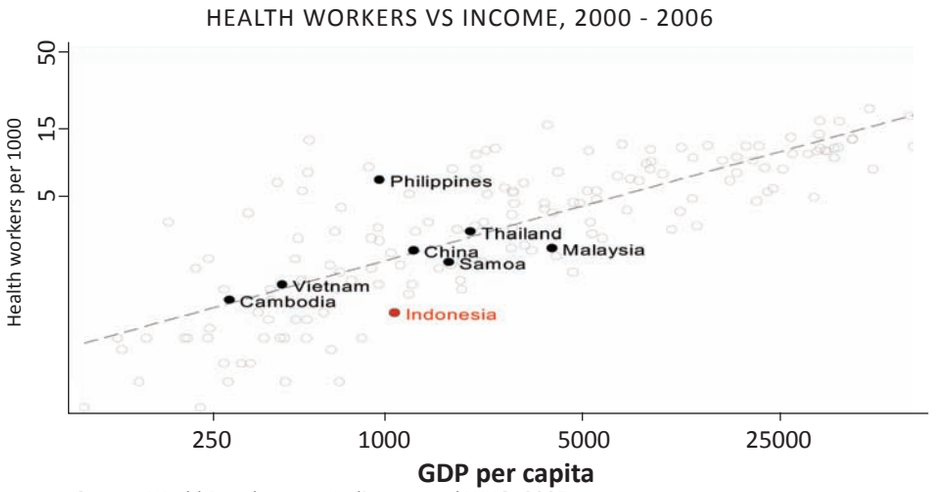
1.4 International Comparison

Indonesia's health workforce is low in numbers and service ratios relative to other countries in the region. Compared with countries that have similar income levels, Indonesia has considerably smaller doctor to population ratios; 21 doctors per 100,000 compared with 58 in the Philippines and 70 in Malaysia. Even when compared with countries with lower income per capita than Indonesia, such as Vietnam and Cambodia, Indonesia has a lower ratio (Figure 1-1). Indonesia does somewhat better, however, in regional comparisons of midwives and nurses to population ratios with 62 nurses and 50 midwives per 100,000 head of population.

Figure 1-1: Global Health Workers to Population Trendline



Source: World Development Indicators, WHO 2007
Note: GDP per capita in current US$; Log scale



Source: World Development Indicators and WHO, 2007
GDP per capita in current US$ in exchange rates, log scale
Health worker and GDP per capita data are for latest available year

While Indonesia does not compare very favorably with other East Asian countries, globally Indonesia is one of the low-income countries addressing human resources stock, distribution as well as quality of workers. Indonesia is also considered ahead of many countries in dealing with health worker shortages thanks to an impressive growth in the number of schools for health professionals over the past decade as well as having a very high level of interest in careers as a health worker in Indonesia.

The Present: Indonesia's Health Workforce

Chapter 2

2.1 Current Status/Stock and Distribution of Health Workers in Indonesia

2.11 Available Data

There are few sources of publicly available survey data that can be used to estimate the current stock of health workers in Indonesia. PODES (*Potensi Desa*) and the *Governance and Decentralization Survey* (GDS-2) are two surveys that provide the most up-to-date information as of 2006 when the latest rounds of each survey were conducted.[7] With PODES, it is also possible to distinguish trends as multiple rounds of the same survey have taken place since the early 1990s. PODES is census data that is gathered by interviewing *desa* (village) and *kelurahan* (city block) heads using detailed questionnaires. Each *desa* and *kelurahan* head represents a population of approximately 3,000 and they are knowledgable on the workforce and people living in their jurisdictions.

The PODES survey covers almost all villages in Indonesia, of which there are nearly 70 thousand. PODES asks the village head about the number of health providers located within the village (including hospitals and pharmacies) and the number of each type of health worker--doctor, nurse and midwife--who live within the village boundaries. We assume that the majority, if not all, health workers who live in the village were active and are providing health services. The number of health workers in PODES includes those working in both the public and private sectors but, unfortunately, there is no information in PODES that can be used to distinguish between those who work as private or public providers. Although *kelurahan* heads are familiar with the people living in their area, they are less well-informed about the health workers living there and therefore PODES may underreport the number of urban health care providers. Another caveat to keep in mind is that PODES records where health professionals reside, which is not necessarily the same location as where they practice.

With PODES data it is possible to distinguish trends, since it, unlike GDS, has multiple rounds of the surveys. However, we focus only on PODES 1996 and 2006. The other two rounds, PODES 2000 and 2003, suffer from anomalies that can not be explained by policy changes that occurred before and after the surveys.[8]

GDS-2 may provide more straightforward information on the stock of health workers than PODES. GDS-2 copied information on the numbers of doctors, midwives and nurses working within the district area from secondary documents obtained from the district health office (*Dinas Kesehatan*).[9] However GDS-2 only sampled 139 out of more than 400 districts in 2006 and those that were sampled are not necessarily representative across Indonesia. Therefore, even if all active doctors, nurses and midwives operating within the district boundaries were registered at the *Dinas*, one still needs to correctly weight these values to estimate the population of health workers both at provincial and national level. Unfortunately, GDS-2 does not provide the necessary weight for such a purpose. This report will later explain how a weight was constructed in order to compare the data from GDS-2 with the data from PODES. Nevertheless, there are some provinces that lack representation (including DKI Jakarta, Southeast Sulawesi, West Sulawesi and West Papua) as GDS-2 did not sample any *kabupaten/kota* in these four provinces.

7 *Sakernas*, the labor force survey, would have been another good data source to estimate the stock of health workers, however there have been changes in the sampling methodology and occupation code that make it difficult to compare the number of health workers before and after 2000.

8 One possible explanation for why the 2000 and 2003 rounds of PODES produced inconsistent numbers across periods is that there were changes in geographical boundaries of the village due to merging/splitting, changes of status, or reassignment of a village to a new *kabupaten* or province. PODES data indicates that some villages no longer existed in the following rounds while there are also new villages that did not exist in a previous round. This caveat should be kept in mind when comparing the distribution of health workers across provinces from the 1996 and 2006 rounds. A decline in the number of doctors, for example, could be due to one of these geographical reasons and not necessarily due to a change in HRH-related policy.

9 *Dinas:* A regional government service agency.

Other data sources include the annual *Indonesia Health Profile* published by MoH and the Indonesian Medical Council (KKI). The profile data, which is administrative data, is gathered by the central level MoH administration from district and provincial health administrators and reports the number of public doctors, nurses and midwives by province. However, an analysis of this data shows many discrepancies and missing data points. Districts are no longer legally responsible for submitting human resources information to the province or central governments. Most recently the Indonesian Medical Council (KKI) was authorized to require the registration of all medical doctors before licensing. Whether doctors register as public or private providers is not known and the registry information does not allow for the disaggregation of this information. Although this source is considered very reliable, the registration data is only available for 2007 and there may be overregistration–nonpracticing doctors who have registered to preserve the opportunity to practice in the future.

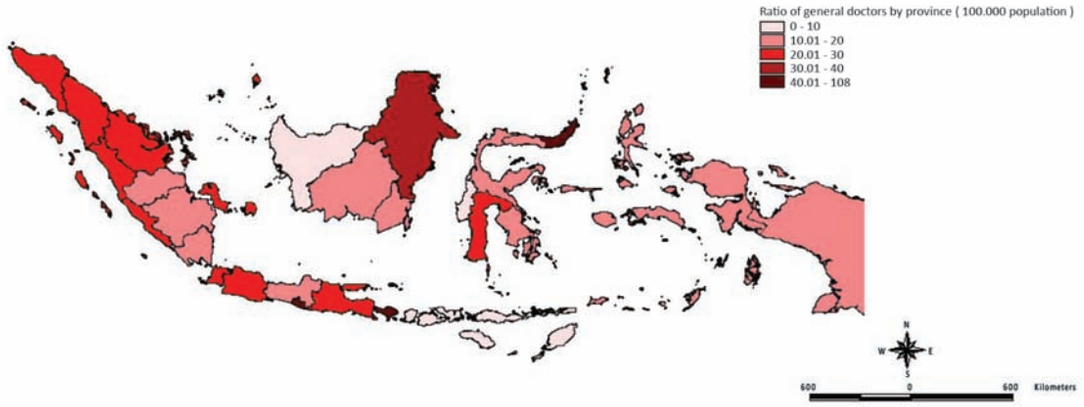
A number of other agencies and institutions also maintain information on the health workforce. The Board for Health Human Resources (BPPSDMK), together with the Bureau of Personnel at the MoH and IDI all maintain databases. The midwives and nurses' associations, IBI and PPNI, are in the process of putting together databases. However, these databases include information on a voluntary membership. Basic information on workforce numbers by category are contained in these Health Management Information Systems. The Health Human Resources Information System (SIM-PPSDMK) database on the stock of the health workforce in Indonesia is primarily obtained from administrative data from MoH and local government.

This review suggests it is critical for policy and decision makers to have access to better information on the health workforce. Information should include numbers and distribution based not only on supply-side ratios but also on workload and actual demand for services. It should take into account private providers and information should be available at the national as well as subnational level where decisions about recruitment and deployment are--or should be--made. Not only is collecting information in different databases important, but it is also important to share it across agencies, ensuring harmonization of data entry and analyzing the data for the impact of policy and other changes. Last, but not least, information on the performance of the health workforce is crucial for policy decisions on incentives and deployment.

2.12 Medical Doctors and Specialists

According to the KKI, as of July 2007, a total of 72,249 doctors, including 15,499 specialists, were registered nationally. This number is very likely to be the most accurate information available for 2007 because registration with the KKI is a legal prerequisite for obtaining a license to practice medicine, and therefore, there is a strong incentive for doctors to register. At the same time, it should be noted that this number may include an overestimation of the number of available doctors as nonpracticing doctors may also have registered. This first registration was a one-off registration without a competency test, with the exception of new graduates. Registering after 2007 requires competency testing. The aggregate numbers mask large inequities in the distribution across provinces. Figure 2-1 illustrates the differences in the ratio of medical doctors to population by province using the most recent KKI data.

Figure 2-1: Ratio of General Doctors per 100,000 Population by Province (2007)



Data source: KKI, 2008

PODES 2006, which is the most appropriate current source for trend analysis, puts the total number of medical doctors at almost 40,000 (Table 2-1). Using this number, Indonesia has more than 18 medical doctors for every 100,000 people, representing a 6 percent increase in the doctor per 100,000 population ratio since 1996. In 1996 there were 17.3 doctors per 100,000 population while in 2006 there are 18.4 doctors per 100,000 population (PODES). The most recent medical doctor registration data from KKI shows a ratio of 25 doctors per 100,000. While these ratios remain low by international standards, there has been an increase in the ratio over time.

Table 2-1: Total Number and Ratio of General Practitioners to Population (1996-2007)*

Source	Total Doctors			Ratio per 100,000 Population		
	1996	2006/7	% change	1996	2006	% change
Profiles (MoH)		44,564			20	
PODES**	31,543	39,684	25.81	17.30	18.40	6.36
KKI (2007)		55,379			25.00	
GDS-2***		28,161			18.80	

Note: * Profiles totals do not include West Sulawesi, North Maluku, West Papua, Banten, Kep. Bangka Belitung and Kep. Riau due to lack of data.
** Represents the number of doctors living in the village.
*** Adjusted using a scaling factor derived from the PODES report of the number of doctors living in the village.

The aggregate numbers mask significant inequity in the distribution between urban and rural areas with a clear urban-bias. Urban areas in all regions consistently have more doctors per 100,000 people at ratios at least five times greater than in rural and remote areas.[10] PODES data shows that the number of

10 BPS does not provide common definition on remoteness. Accordingly we have created a definition of remoteness in which we use some characteristics listed in PODES. For consistency, we use characteristics that are available in all rounds of PODES. We define a remote village as a rural village which is located in a hilly area. Remoteness in PODES may also be based on distance from the district capital but this information is not available for all villages in PODES. In addition, while one may argue that the distance from village to district capital is likely to remain constant over time, the recent creation of many new districts has shortened the distance of previously remote villages to the new district capital, so changing the status of a village that at one time was classified as remote to one that is no longer remote. The definition of remoteness here is not necessarily comparable with the one used in MoH which uses information from village heads to classify a village as remote or non-remote.

doctors in both 1996 and 2006 was much higher in Java/Bali than outside Java/Bali[11] (Table 2-2) with the distribution following population size in each region. After normalizing the number of doctors per 100,000 head of population, the urban ratio is more favorable outside Java/Bali with 40 doctors for every 100,000 population. However, this normalization does not take into account the discrepancies due to remoteness and inaccessible areas which are more important outside Java/Bali. While in urban areas in Java/Bali there is a doctor for every 3,000 people, in rural areas in Java/Bali there is only one doctor for every 22,000 people. Outside Java/Bali there are more doctors per head of population, but still only one doctor for every 12,000 people in rural areas and one for every 15,000 people in remote areas while there is one doctor for every 2,430 people in urban areas.

There have also been significant fluctuations in the ratio of doctors to population with improving ratios in rural and remote areas of Indonesia and declining ratios in urban areas. The 13 percent decline in the ratio of doctors to population in urban areas of Java/Bali since 1996 is most likely due to migration from rural to urban areas, resulting in increased population density in these areas. The substantial increase[12] in the number of doctors in remote areas may be the effect of changes in the definition of remoteness or the effect of *pemekaran*–the creation of new districts and the redefinition of district capitals. As a result of this process, some areas that were earlier considered to be rural may now be deemed sub-urban.

Table 2-2: Number of General Practitioners in Indonesia by Region (1996-2006)

Region	Level			Ratio Per 100,000 Population		
	1996	2006	% change	1996	2006	% change
Java/Bali	19,635	23,944	21.95	16.2	18.5	14.20
Urban	16,141	20,896	29.46	39.0	34.1	-12.56
Rural	3,494	3,048	-12.76	4.4	4.5	2.27
Outside Java/Bali	11,908	15,740	32.18	14.8	18.1	22.30
Urban	7,738	11,187	44.57	43.2	40.9	-5.32
Rural	3,638	3,141	-13.66	7.1	8.3	16.90
Remote	532	1,412	165.41	4.7	6.6	40.43

Source: Various years of PODES.
Note: The number of doctors in these tables was obtained from a question in PODES that asked the head of the village about the number of doctors living within the boundary of the village.

The data for the number and ratio of specialists in Indonesia is very limited (Table 2-3). The most reliable current estimate comes from KKI which has 15,082 registered specialist doctors or only seven specialists for every 100,000 Indonesians. Even in Jakarta, the ratio is only 42 per 100,000 population. In addition, there are also large differences in the number of specialists between provinces, with the large majority of specialists, over 10,000, in Jakarta, Yogyakarta and West, Central and East Java (UGM 2005). Data are not provided in disaggregated form, and it is not possible to calculate the distribution of specialists across urban, rural and remote areas. However, the distribution is not expected to have improved significantly since 1992 as no specific policies have been initiated to vary this distribution. The province with the lowest specialist to population ratio is NTT with only one specialist per 100,000 population, while Bengkulu, Lampung, Central Kalimantan, NTB, Central Sulawesi, and Southeast Sulawesi have two specialists per 100,000 population.

11 Java/Bali includes: Banten, West Java, Central Java, Yogyakarta, East Java and Bali. Outside Java/Bali includes: NTT, NTB, Sumatra (all), Riau, Jambi, Bengkulu, Lampung, Bangka Belitung, Aceh, Kalimantan (all), Sulawesi (all), Maluku (all) and Papua.

12 It should be noted, however, that this increase has been from a comparatively low base.

Table 2-3: Total Number and Ratio of Specialists to Population (1994-2007)

Source	Total Specialists			Ratio per 100,000 Population		
	1996	2007	% change	1994-6	2006	% change
Profiles	6,832	9,717	42.23	3.21	5.18	61.37
KKI		15,082				

Note: Profiles totals do not include West Sulawesi, North Maluku, West Papua, Banten, Kep. Bangka Belitung and Kep. Riau for lack of data.

2.13 Midwives and Nurses

Aside from voluntary registration with the professional associations, there is no central registration system for nurses or midwives. This fact, together with incomplete information in the administrative databases maintained by the Ministry of Health, confirms there is no up-to-date information on the number of midwives and nurses in Indonesia as there is for medical doctors.

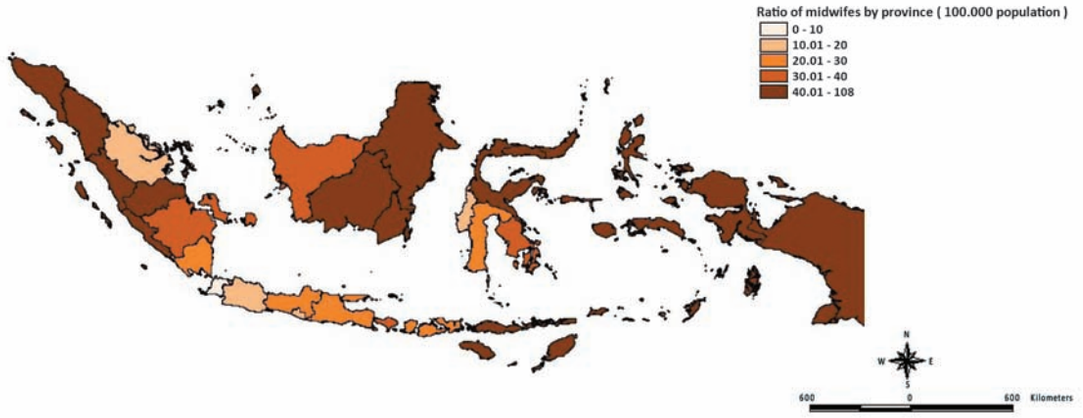
According to PODES, the most accurate data source for nurses and midwives at present, Indonesia had almost 80,000 midwives in 2006. This represents about 50 midwives per 100,000 or about one per village, fulfilling the MoH policy of one midwife per village (Table 2-4). The ratio for midwives has improved significantly over time, from 42 midwives per 100,000 in 1996 to 49 midwives per 100,000 in 2006, an increase of 17 percent. However, as with medical doctors this aggregate figure masks imbalances in distribution. Unlike the distribution of doctors however, rural areas show higher ratios than urban areas (Table 2-5). PODES data for both numbers of midwives and nurses per 100,000 population are also higher in provinces outside Java/Bali and in poorer provinces of Eastern and Central Indonesia. These two findings indicate a more equitable distribution of midwives in Indonesia (Figure 2-2).

Table 2-4: Total Number and Ratio of Midwives to Population (1996-2007)

Source	Total Midwives			Ratio per 100,000 Population		
	1996	2006	% change	1996	2006	% change
Profiles		66,860			30.1	
PODES2*	71,015	79,661	12.17	41.7	48.6	16.55
GDS-2**		68,644			31.8	

Note: Profiles totals do not include West Sulawesi, North Maluku, West Papua, Banten, Kep. Bangka Belitung and Kep. Riau for lack of data.
*Represents the number of midwives living in the village.
** Adjusted using factor obtained from number of midwives living in the village.

Figure 2-2: Ratio of Midwives per 100,000 Population by Province (2006)



Source: *Indonesia Health Profile* 2006, MoH 2008.

The total number of midwives in Java/Bali did not change over time, but a shift has taken place between urban and rural areas (Table 2-5). While in 1996 in rural areas there were almost 30 midwives per 100,000 population (one midwife for every 3,300 people), in 2006 there are 27 midwives per 100,000 population (one midwife for every 3,700 people). In urban areas, the opposite trend took place. In 2006 there are more midwives (25) per 100,000 population than there were in 1996 (less than 24). Nevertheless, in comparing urban and rural areas in both 1996 and 2006 there continue to be more midwives per 100,000 population in rural than urban areas, although this gap had narrowed from 5.7 percent in 1996 to just 2 percent in 2006.

Outside the Java/Bali region, there has been an overall increase in the number of midwives in the past decade from a ratio of 47 to almost 53 midwives per 100,000 population. A significant increase in the absolute number of midwives in remote areas has contributed to this change while the ratio of midwives to population has shown the largest increase in rural areas (from 46 to 55 per 100,000 population over the decade). Some of these shifts may be explained by changes in the definition of remote areas, but the main explanation is the strong emphasis of the government in placing midwives in rural areas through the *Bidan di Desa* (BDD or village midwife) program which was started in the early 1990s. Outside Java/Bali, the highest ratio of midwives to population can be found in remote areas, the lowest in urban areas. In Java/Bali there is a midwife for every 4,000 people in urban areas and one for every 3,700 people in rural areas. Outside Java/Bali, there is a midwife for every 2,200 people in urban areas, one for every 1,800 people in rural areas and one for every 1,700 people in remote areas. Changes over time have been mainly positive for the rural and remote areas.

Table 2-5: Number of Midwives in Indonesia by Region (1996-2006)

Region	Level			Ratio Per 100,000 of Population		
	1996	2006	% change	1996	2006	% change
Java/Bali	33,436	33,755	-0.18	27.5	26.1	-5.09
Urban	9,874	15,388	55.84	23.8	25.1	5.46
Rural	23,562	18,367	-22.05	29.5	27.1	-8.14
Outside Java/Bali	37,579	45,906	22.16	46.8	52.8	12.82
Urban	8,084	12,421	53.65	45.1	45.4	0.67
Rural	23,487	20,957	-10.77	46.0	55.1	19.78
Remote	6,008	12,528	108.52	53.4	58.1	0.09

Source: PODES.
Note: The number of midwives in this table was obtained from a question in PODES that asked the head of village about the number of midwives living within the boundary of the village.

The number of midwives per 1,000 births follows a similar pattern (Table 2-6). Combining the data on number of births from the *Indonesia Health Profile* and PODES shows that, at the national level, there were about 20 midwives per 1,000 births in 2006 which represents an increase from 16 in 1996. These numbers, however, mask large discrepancies between provinces in and outside Java/Bali.[13] In Java/Bali, there were about 12 midwives for every 1,000 births in 1996 with little change in 2006. Outside Java/Bali, however, the number of midwives increased by 26 percent (from 17.5 to approximately 22) over the same period. These findings, on one hand, might reflect an unequal placement or distribution of midwives across provinces but, alternatively, may also indicate the local preference for a provider to help with a delivery. In other words, the much lower number of midwives per 1,000 births in provinces in Java/Bali may reflect a lower demand for a midwife's service relative to other more modern private health providers.

Table 2-6: Number of Midwives per 1,000 Births by Region (1996 and 2006)

Region	Level		
	1996	2006	% change
All districts	16.29	19.93	22.34
Java/Bali	12.25	12.51	2.12
Outside Java/Bali	17.50	22.09	26.23

Source: *Indonesia Health Profile* (1996 & 2006), PODES (1996 & 2006), calculated by authors.

The data regarding the number of nurses do not appear to be reliable. PODES shows a significant decrease in numbers of nurses of almost 50 percent between 1996 and 2006, while there is reasonably reliable data that an estimated 34,000 new nurses enter the labor market every year. It is very unlikely that none of these would be recorded in the PODES survey. Using PODES data, one may expect a downward bias in estimates of nurses because nurses do not run their own practices (at least legally), and so village heads may underestimate the number of nurses in the community. On the other hand, *Indonesia Health Profile* and GDS-2 each provide significantly higher numbers of nurses than PODES. The 2007 BPPSDMK reports a total of 308,306 nurses in Indonesia as of 2006.

13 The data does not allow an urban/rural analysis.

Nurses are often the only health workers in remote and poor rural areas and end up carrying out services and medical treatment for which they are neither trained nor allowed to perform under the Medical Practice law. Given that Eastern Indonesia has the lowest ratio of medical doctors to population, it appears that this region relies, to a greater extent, on midwives and nurses to provide health care.

2.2 Private–Public Providers

An estimated 60 to 70 percent of publicly employed health staff have second jobs, many in private solo practice or private facilities. GDS-2 data, in particular, show that the proportion of *Puskesmas* medical staff--which includes doctors, midwives and nurses--who also operate private practices in Java/Bali and outside Java/Bali respectively is 72.80 and 59.75 percent (Table 2-7). In some provinces, especially some new ones such as Jambi, Kepulauan Riau and Gorontalo, all of the interviewed *Puskesmas* health staff are operating their own private practice (see Attachment 17). In addition, the data show that *Puskesmas* health workers who also operate private practices spend about 70 percent of their weekly working hours in the *Puskesmas* and on other *Puskesmas*-related work (meetings with *dinas* personnel, supervising *Pustu*[14] and so forth). Other evidence is probably more indicative of the potentially negative effect of dual practices: the proportion of income earned from public practice is, on average, less than 50 percent. In some provinces the number is as low as 27 percent (Bangka Belitung and Kepulauan Riau).

14 *Pustu*: *Puskesmas Pembantu*: A secondary health center that provides a more basic range of services than a *Puskesmas*.

Table 2-7: *Puskesmas* Health Workers Engaged in Dual Practice

Region	Staff with Dual Practice (%)	Hours Served Last Week	Income from Public Practice (%)
All Districts	63.78	70.54	46.87
Java/Bali	72.80	70.90	44.05
Outside Java/Bali	59.75	70.77	48.35

Source: GDS-2, calculated by authors.

Given that private practice can provide substantial supplemental income, especially for medical doctors, the lack of private practice opportunities in poor and remote regions is a factor that deters deployment to these regions. There are benefits and costs to dual practice. A benefit arises if the government can only afford to offer below-market wages. In this case, dual practice helps the public sector to retain a share of a doctor's time despite public budget constraints. The possible negative consequences of dual practice include resource misallocation, competition for public time, and the diversion of public patients to private practices. The major cost is the continual balancing of where a civil servant allocates his or her time. However, there are no definitive studies that have documented either the positive or negative impacts of dual practice and the debate, therefore, remains theoretical and anecdotal.

It is important to note that, in Indonesia, the practice of holding second jobs is tolerated across the entire civil service and is not simply an issue for the health sector alone. In addition, the introduction of *Jamkesmas* and a growing number of insured people in rural areas will boost the demand for, and thus attract, more private providers to those areas. Nevertheless, there are many other determinants of a doctor's decision to settle in rural areas including, among others, children's education, entertainment and spouse employment.

Data show that outside Java/Bali, about two-thirds of doctors are civil servants (PNS) while in Java/Bali only 46 percent are PNS (Table 2-8 and 2-9). To determine who is working in the public and private health sectors, we use information from the GDS-2 which asks about the civil service status of private health providers. Districts outside Java/Bali rely more heavily on public providers. This confirms the importance of public providers of health care outside the Java/Bali region and has implications for deployment policy options; the promise of appointment as a PNS may increase the willingness of young graduates to serve in remote areas outside Java/Bali. In Java/Bali, by contrast, private sector opportunities are greater and provide stronger incentives. This updates and reconfirms earlier work (Chomitz et al 1998) on incentives for medical doctors to relocate to remote areas (see Chapter Three for more details).

According to the data, the proportion of midwives and nurses who are civil servants is more than two-thirds for the country overall and highest outside of Java/Bali. However, there is doubt that this is a true reflection of the situation as there are many more graduates per year than can be absorbed by the civil service. It is estimated that only 10 percent of those midwives who graduate can be absorbed into the civil service (Cumberford 2003). Other information obtained from interviewing private health providers for GDS-2 shows similar results.

Table 2-8: Proportion of Private Health Workers Who are Civil Servants (PNS)(%)

Region	Doctors	Midwives	Nurses
All Districts	58.92	71.66	79.92
Java/Bali	46.03	67.19	73.28
Outside Java/Bali	66.08	73.90	83.37

Source: GDS-2, calculated by authors.

Table 2-9: Proportion of Private Health Providers Who Also Operate Public Health Practices (%)

Region	Doctors	Midwives	Nurses
All Districts	60.62	68.08	68.70
Java/Bali	44.44	61.66	62.75
Outside Java/Bali	69.60	71.31	71.79

Source: GDS-2, calculated by authors.

2.3 Consequences of Utilization of Health Care for Health Workforce

Utilization patterns in respect of who is providing services and the locations where services are provided are both important for policy decisions regarding future investments in health workers. Correlations of numbers of health workers and utilization rates at province level are analyzed and discussed after a more general description of utilization patterns and changes over time. It should be kept in mind that utilization of private services refers to both private facilities and individual private providers. We begin with a brief analysis of the changes over time in reported morbidity.

Box 2-1: Large Providers Outside the Public Sector: The Muhammadiyah Case

1. Since its founding, Muhammadiyah, the second largest Muslim organization in Indonesia, has devoted attention to improving the education and health of the Indonesian population. Muhammadiyah comprises a parallel structure for women members, Aisyiyah, to promote women and family welfare from an Islamic perspective. Muhammadiyah-Aisyiyah also manages medical and paramedical education. The number of Muhammadiyah health facilities (AUK – *Amal Usaha Kesehatan*) is significant although they are concentrated in Java; these include 98 polyclinics, 69 general and specialized hospitals, 62 maternity clinics, 25 MCH centers and 16 health centers.
2. Muhammadiyah-Aisyiyah health services have similar problems as their public counterparts in finding sufficient numbers of personnel. The public sector still employs a large proportion of health personnel, especially at the primary health level, and wealthier corporate providers can offer more attractive options to independent practitioners, making it difficult for AUK to find regular employees and attract temporary staff. Furthermore, AUK's regular employees generally engage in dual or even multiple practices and are not always present in their assigned workplaces as they juggle conflicting interests. The problem of scarcity is especially acute for medical specialists. Most medical personnel are employed in the public sector, and when they have to choose additional practice options they may give up their association with smaller, less-profitable options, such as Muhammadiyah.
3. Polyclinics, maternity clinics and health centers find it difficult to employ doctors and, in many cases, doctors or specialists are simply 'hanging their shingle', with some attending as little as one hour per week. In Muhammadiyah-Aisyiyah health services, nursing and midwifery personnel are the main providers of primary level health care. Midwives govern MCH care and nurses provide a 'cure' as well as 'care'. As their colleagues in public health centers have done for decades, nurses in smaller AUK units *de facto* engage in curative practices.
4. The minimum staffing requirements for AUK are somewhat lower than for their public counterparts. These lower requirements are understandable because AUK operates in areas where *Puskesmas* are available and, unlike their government counterparts, they are not designed to serve an average of 30,000 persons. Still, questions remain on the adequacy of the AUK workforce, especially in relation to the AUK comparative advantage in providing quality primary health care services.
5. The students of Muhammadiyah's educational institutions do not necessarily choose to work at an AUK facility. In part, this is because their enrollment is not always motivated by their membership or affiliation with the organization, with students coming from all walks of life and having diverse religious backgrounds. Even when their educational choice has been inspired by Muhammadiyah's values, their first preference would normally have been to attend public universities and academies. Their inability to do so is because of the higher costs and/or due to their having failed at the entrance examination. In their view, and that of those students who have decided not to enroll at Muhammadiyah institutions, public education is of a higher quality and can lead to better employment opportunities in the future.
6. Muhammadiyah is trying to improve its human resources practices including its hiring, deployment, remuneration and incentive systems. This is both to enhance the quality of its services and to reduce its personnel costs which are burdened by the high number of non-permanent general practitioners and medical specialists. Better links between Muhammadiyah-Aisyiyah educational and health institutions are being considered to encourage more students to apply for a job at the AUK. In addition, Muhammadiyah has taken up the challenge of improving AUK's personnel policies to make the organization more competitive in attracting regular personnel.

2.31 Morbidity Across Indonesia

In 2006 there were more individuals reporting health problems than in 1996. *Susenas* data analysis shows a three percent higher incidence of reported illness in 2006 compared with 1996 (Table 2-10).[15] The increase in reported health problems is observed more outside Java/Bali than in Java/Bali (4.3 versus 1.2 percentage points). In addition, the increase in reported morbidity rates is higher in rural than in urban areas and this trend is consistent for provinces in and outside Java/Bali.

15 *Susenas*, across years, asks whether an individual has had a health complaint in the preceding month.

Table 2-10: Morbidity Rates Across Regions in Indonesia (1996 and 2006)(%)

Region		1996	2006	% change
National	Total	25.5	28.5	3.0
	Urban	26.2	27.5	1.3
	Rural	25.1	29.0	3.9
Java/Bali	Total	27.3	28.5	1.2
	Urban	28.9	27.1	-1.8
	Rural	26.3	29.4	3.1
Outside Java/Bali	Total	24.1	28.4	4.3
	Urban	23.5	27.3	3.8
	Rural	24.4	28.9	4.5

Source: Calculated from *Susenas* 1996 and 2006.

2.32 Utilization Patterns and Trends Over Time

***Susenas* data show an increase in the utilization of health facilities[16] during the period from 1996 to 2006.** This is measured as the number of people seeking treatment as a percentage share of the total population (for those reporting ill). The largest increase is found in provinces on Java and Bali. The trends tend to be similar in both urban and rural areas (Table 2-11). However, Indonesians have increasingly changed their treatment-seeking behavior away from outpatient facilities. In the years following the economic crisis of 1997/8 there was an increase in the number of people relying on self-treatment, with more than 50 percent of people in 2005 reporting that they relied on self-treatment during their last illness by obtaining medication at pharmacies or drug-stores. In 2006 however, there was a significant increase in visits to health facilities. Of those people who reported an illness in 2007, 42 percent sought treatment from an established facility. A higher percentage, however, continues to self-treat (45 percent) while 13 percent sought no treatment for an illness (Figure 2-3).

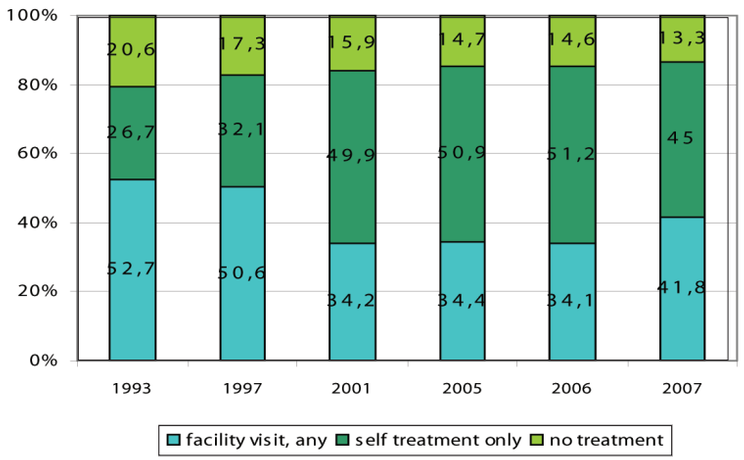
16 Health facilities include public and private facilities, ranging from a *Puskesmas* to a doctor's clinic and includes traditional medical treatments.

Table 2-11: Utilization of Health Facilities as Proportion of Population Reporting Ill in the Preceding Month 1996 and 2006)(%)

Region		1996	2006	% change
National	Total	15.1	33.7	18.6
	Urban	17.6	37.3	19.7
	Rural	13.9	31.7	17.8
Java/Bali	Total	12.7	38.0	25.3
	Urban	15.0	39.8	24.8
	Rural	11.1	36.2	25.1
Outside Java/Bali	Total	16.9	31.7	14.8
	Urban	20.8	35.2	14.4
	Rural	15.6	30.2	14.6

Source: Calculated from *Susenas* 1996 and 2006.

Figure 2-3: Care-seeking Behavior Among Those Reporting Ill (1993-2007)



Source: World Bank staff calculations based on various years of *Susenas*.

Since 2004, public service utilization has increased, while private provider utilization has decreased. Public health service utilization rates have increased from 5 to almost 10 percent since 2004, while private service utilization rates have decreased (Figure 2-4). This could be the result of a substitution effect, whereby those previously seeking private health services are now serviced by public providers. In 2007, public service provision accounted for 65 percent of total health service utilization, while the private sector's share had shrunk to less than 30 percent (Figure 2-5).

Figure 2-4: Outpatient Utilization in the Previous Month by Provider Type (1999-2007)(Percentage of Total Population)

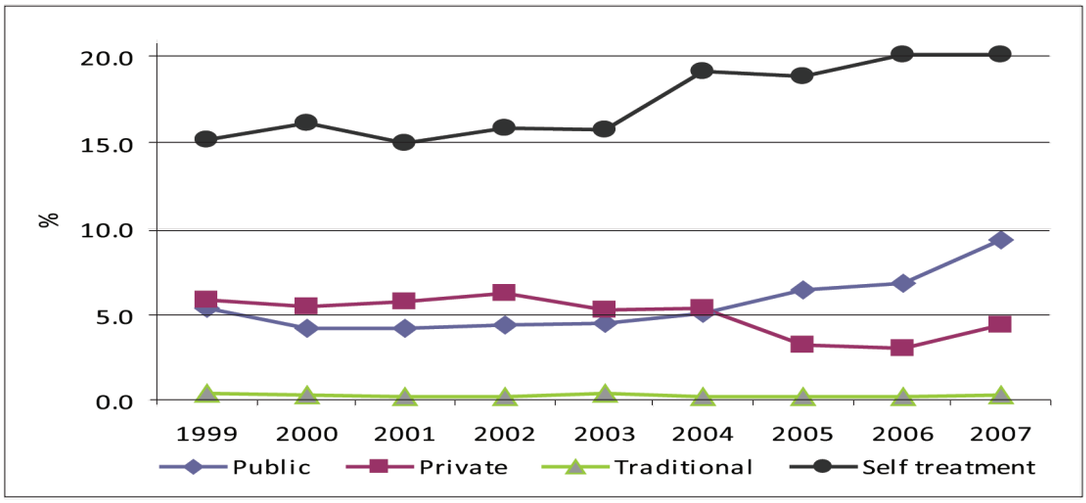
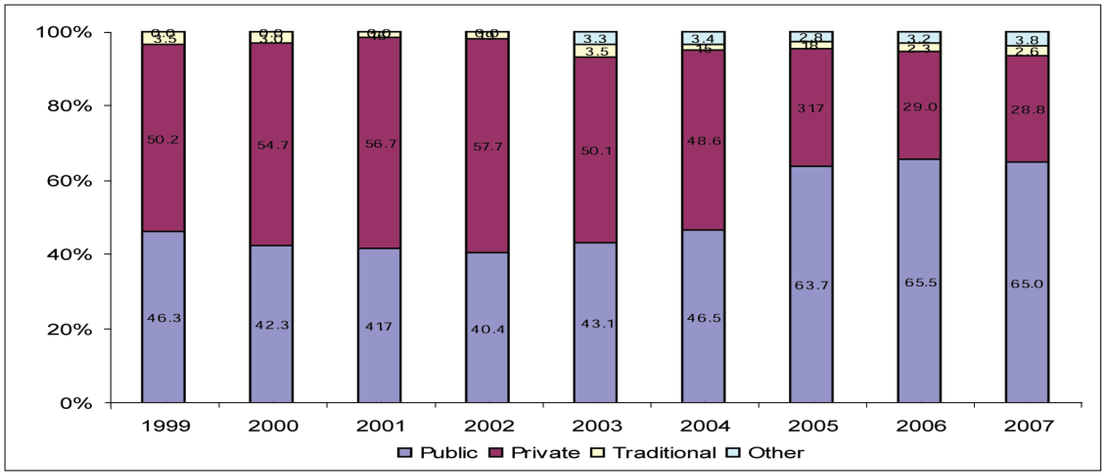


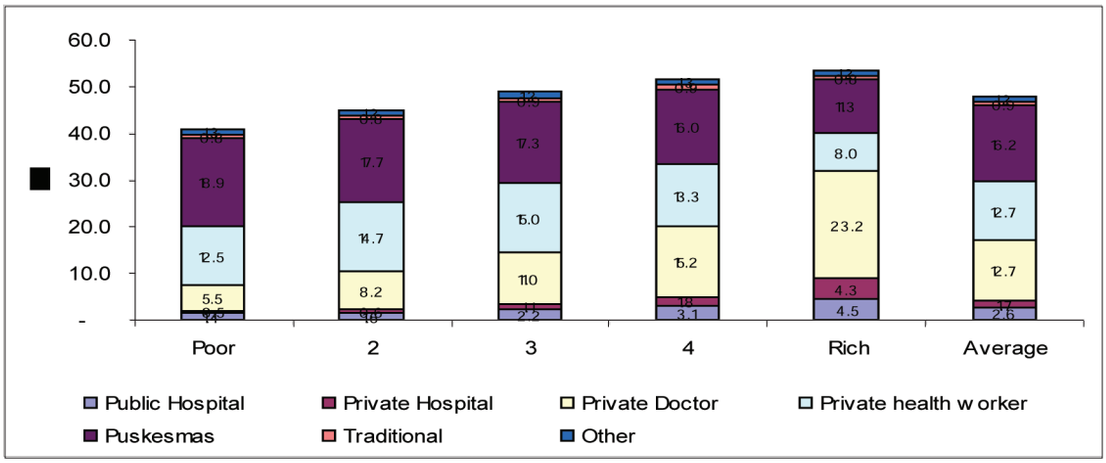
Figure 2-5: Choice of Provider for Health Services



Source: World Bank staff calculations based on various years of *Susenas*.

Analysis of utilization data for outpatient visits to public clinics, as well as for inpatient visits to public hospitals, shows that the poor increased their utilization of public health care providers in 2006 compared with 2005--an increase that is most likely explained by the introduction of the *Askeskin* program.

Figure 2-6: Contact Rates by Type of Health Care by Income Quintile



Source: World Bank staff calculations based on *Susenas*, 2007.
Note: Percentage of sick people who visited the provider at least once a month in the previous month out of the total number of sick people in the quintile.

In terms of the provision of health care and utilization, maternal care has made progress. While home deliveries are still the most common method of delivery for poor and middle-income women giving birth in Indonesia, more births are now attended by skilled personnel. In 2007, about 73 percent of live births were attended by a trained birth attendant, that is a doctor, midwife, or village midwife. At the same time, important inequity issues remain with large variations between provinces (Figure 2-7). At the national level the use of a skilled birth attendant increased by 20 percentage points between 1996 and 2006. Similar increases occurred in and outside Java/Bali, however the most significant increase has predominantly occurred in rural areas (Table 2-12).

Figure 2-7: Skilled Birth Attendance (1992-2007)(by Province)

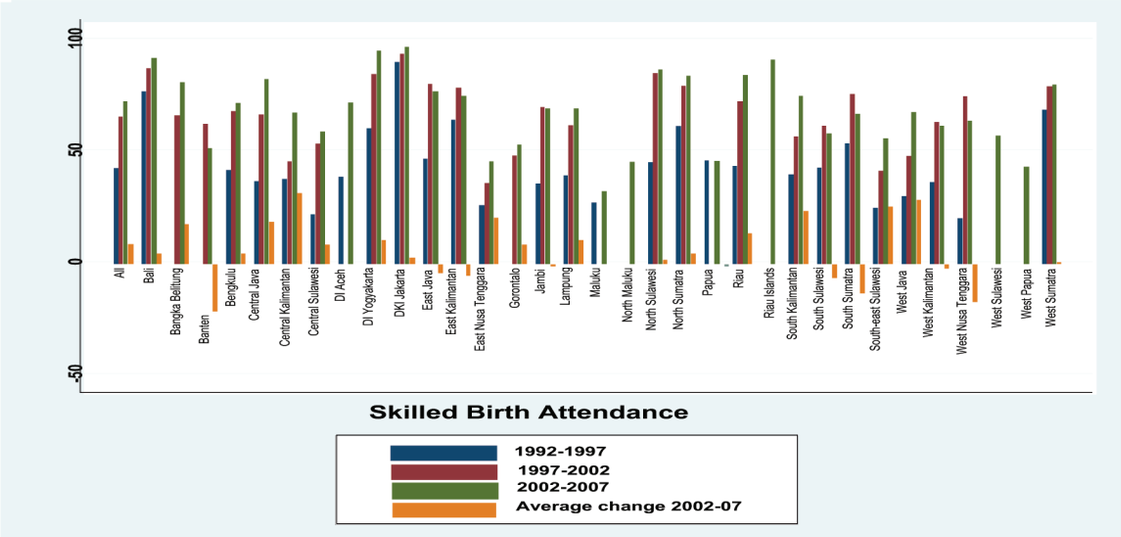


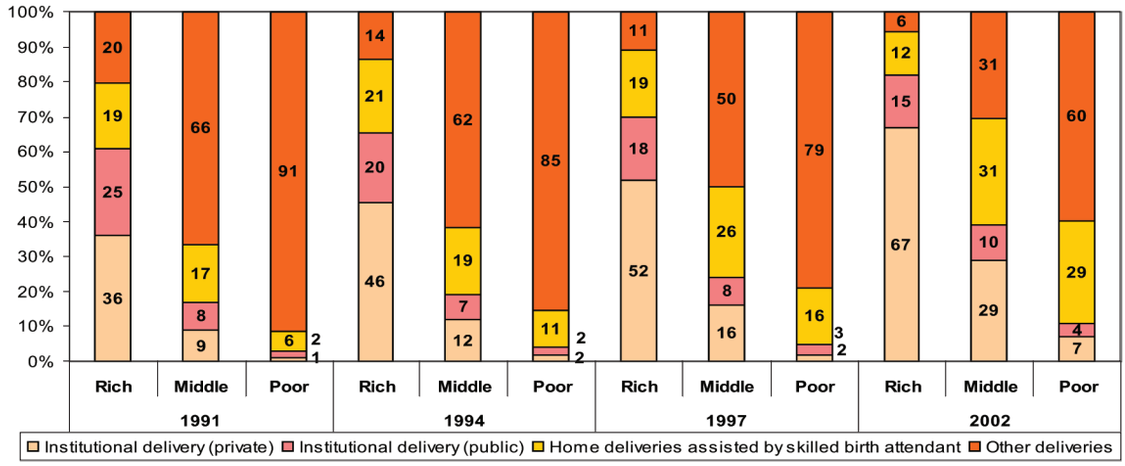
Table 2-12: Skilled Birth Attendance by Region (1996 and 2006)(%)

Region		1996	2006	% change
National	Total	46.8	67.5	20.7
	Urban	79.7	86.2	6.5
	Rural	33.7	57.1	23.4
Java/Bali	Total	50.8	70.9	20.1
	Urban	79.1	84.7	5.6
	Rural	35.2	55.6	20.4
Outside Java/Bali	Total	44.5	63.6	19.1
	Urban	80.2	84.6	4.4
	Rural	33.0	54.8	21.8

Source: *Susenas* 1996 and 2006.

The percentage of women giving birth in a facility instead of at home increased from 20.3 percent in 1997 to 46 percent in 2007 (IDHS 2007). Most institutional deliveries take place in private facilities or with private providers (midwives' homes). Across wealth groups and over time, more women are delivering in private facilities than in public facilities. Among the poor, the proportion of births in a facility is only 11 percent of which two-thirds (7 percent) happens in private clinics. For the middle-income group, nearly three-quarters choose a private facility when delivering their baby in a facility while the rich choose private in more than 80 percent of deliveries in a facility (Figure 2-8). In all three income groups these figures have increased over time, and for the poor and the middle-income groups this has been particularly the case since the crisis.

Figure 2-8: Delivery by Type of Care and Wealth Status



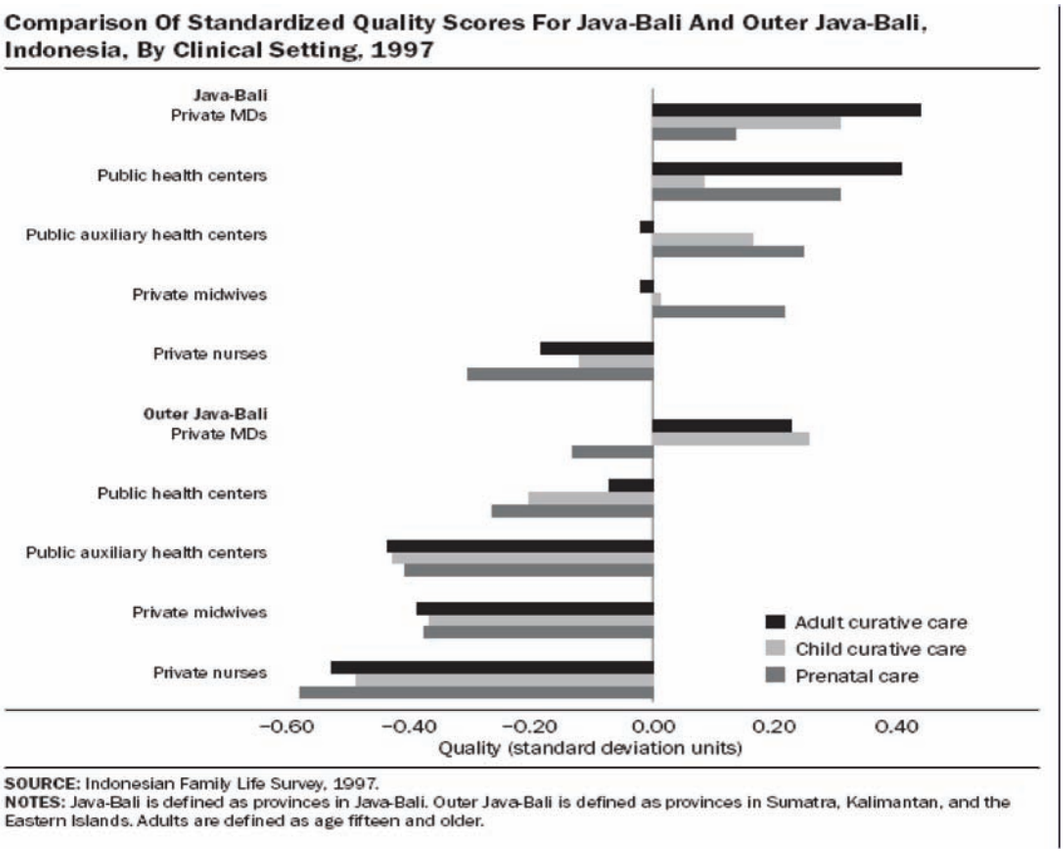
Source: World Bank staff calculations based on various years of IDHS.
Note: * the sum of two figures (public and private facilities) is the percent of institutional births.
The category 'other deliveries' are deliveries that are not assisted, or assisted by 'unskilled' personnel, such as TBAs or family help.

2.33 Quality of Health Providers

The Indonesia Family Life Survey (IFLS) is, to date, the only source of information on the quality of health providers. The survey measures technical capacity of different types of health provider using clinical case scenarios. There was a 10 year gap between the quality measurements in IFLS 1997 and the most recent, in 2007. The IFLS 1997 survey, in general, suggests there is a low level of knowledge of health providers in the

scenarios tested (Figure 2-9).[17] Private nurses, who at times are the sole provider in remote areas and are mostly used by the indigent population, performed poorly. Regional discrepancies in accessing quality care are shown by the differences in heath providers' performance from Java/Bali and those from outside Java/Bali (Barber et al 2007). The ongoing Health Labor Force Study will further analyze changes in trends in the quality of health providers as well as make an effort to link it to health outcomes.

Figure 2-9: Comparison of Quality Scores by Clinic Setting (1997)



SOURCE: Indonesian Family Life Survey, 1997.
NOTES: Java-Bali is defined as provinces in Java-Bali. Outer Java-Bali is defined as provinces in Sumatra, Kalimantan, and the Eastern Islands. Adults are defined as age fifteen and older.

2.34 Correlation of Utilization and Health Worker Ratio

In general, the increase in the ratio of doctors per 100,000 population is positively correlated with utilization rates at all types of health facility both in 1996 and 2006. The coefficients are mostly significant at a 95 percent confidence level (Table 2-13). The size of the coefficient correlation for total utilization rates at the national level is similar for both 1996 and 2006 (0.047 and 0.041 respectively). Comparing Java/Bali and outside Java/Bali, although the correlation is consistently positive in both years, the direction of the change differs. In Java and Bali there is an increase and change of significance in the correlation between ratio of doctors per 100,000 population and utilization levels. Outside Java/Bali, in contrast, we find that the strength of association between the two variables declines. Disaggregating the sample into rural and urban areas, the data show there is a large difference in the size of the coefficient correlation between the two variables in 1996. This implies that the doctor-to-population ratio is more strongly associated with utilization rates in urban areas than in rural areas. The urban-rural gap in the association between the two variables was smaller in 2006. Outside Java/Bali, the data indicate that the correlation between the doctor ratio and utilization rate is stronger in rural than urban areas.

17 An analysis of the IFLS 2007 will be undertaken and included in a later research paper.

Positive but weaker associations are generally found between the doctor ratio and utilization rate in public facilities. At the national level, the correlation between the two variables is stronger in 2006 than in 1996. This trend is consistent for both urban and rural areas. However, disaggregating the sample into Java/Bali and outside Java/Bali, the data show that an increasing trend of association between the two variables only occurred in Java/Bali from 1996 to 2006. On the contrary, outside Java/Bali, we observe that the association between the two variables weakens in 2006 relative to 1996.

Table 2-13: Simple Correlation of Ratio of Doctors to 100,000 Population to Utilization Rates (As Share of Total Population)

Region	Number of Doctors per 100,000 Population					
	1996			2006		
	Total	Urban	Rural	Total	Urban	Rural
National						
Utilization rates, all types of facilities	0.047*	0.037*	0.049*	0.041*	0.022*	0.048*
Utilization rates, public facilities	0.016*	0.013*	0.021*	0.022*	0.001	0.035*
Java/Bali						
Utilization rates, all types of facilities	0.004	-0.006	0.003	0.042*	0.015*	0.067*
Utilization rates, public facilities	-0.004	-0.008	-0.003	0.023*	0.007	0.037*
Outside Java/Bali						
Utilization rates, all types of facilities	0.083*	0.089*	0.073*	0.024*	0.013*	0.029*
Utilization rates, public facilities	0.039*	0.037*	0.042*	0.034*	0.006*	0.046*

Note: Calculated from *Susenas* and PODES. The number of doctors is estimated from the number of doctors living in the village as in PODES.

* The utilization rate is significant at 95 percent level of reliability.

Regarding increases in numbers of midwives and skilled birth attendance rates the picture was most favorable in rural areas in 2006 (Table 2-14). At the same time, however, the national level data show a negative correlation between the number of midwives per 100,000 population and the rate of skilled birth attendance in 2006. In 1996 the correlation is positive. The negative trend in 2006 is seen in both urban and rural areas. Dividing the sample into Java/Bali and outside Java/Bali, there are opposite trends. In Java/Bali, in 1996, the midwife ratio negatively correlates with the skilled birth attendance rate but is positive in 2006. In contrast, the correlation outside Java/Bali is positive in 1996 but negative in 2006.

The negative correlation between number of midwives per 100,000 population and skilled birth attendance is surprising and requires further examination. The numbers in Table 2-15 can probably provide a partial explanation of why the increase in the number of midwives per 100,000 population has a negative correlation with the utilization rate of skilled birth attendance. It indicates a weakening but positive association between the number of doctors per 100,000 population and the skilled birth attendance rate across periods and regions. This might imply that the increase in the utilization of skilled birth attendance is helped more by the presence of more doctors than by more midwives.

Table 2-14: Simple Correlation of Ratio of Midwives per 100,000 Population to Skilled Birth Attendance (by Region)

Region	Skilled Birth Attendance					
	1996			2006		
	Total	Urban	Rural	Total	Urban	Rural
National						
Number of midwives per 100,000 pop.	0.070*	0.070*	0.130*	-0.118*	-0.048*	-0.061*
Java/Bali						
Number of midwives per 100,000 pop.	-0.045*	-0.100*	0.212*	0.013*	-0.007	0.209*
Outside Java/Bali						
Number of midwives per 100,000 pop.	0.202*	0.156*	0.207*	-0.057*	0.023*	-0.028*

Note: Calculated from *Susenas* and PODES. (*) indicates significant at 95 percent confident level.

Table 2-15: Simple Correlation of Ratio of Doctors per 100,000 to Skilled Birth Attendance (by Region)

Region	Skilled Birth Attendance					
	1996			2006		
	Total	Urban	Rural	Total	Urban	Rural
National						
Number of doctors per 100,000 pop.	0.173*	0.110*	0.170*	0.084*	0.067*	0.076*
Java/Bali						
Number of doctors per 100,000 pop.	0.197*	0.117*	0.191*	0.174*	0.125*	0.198*
Outside Java/Bali						
Number of doctors per 100,000 pop.	0.161*	0.106*	0.157*	0.020*	0.008	0.026*

Note: Calculated from *Susenas* and PODES. (*) indicates significant at 95 percent confident level.

These analyses raise important questions and highlight the need not only for better data but also for more in-depth research into the motives and incentives of health workers. To gain a better understanding of how human resources policies are affecting both the utilization and availability of quality health care workers in Indonesia a Health Labor Force Study will be conducted. Panel data from the four rounds of the IFLS and supplements to these data as well as primary analyses with information from other existing data sources will be analyzed in this study. Using the IFLS allows for the matching of information on health service providers to individuals, households and communities. The study focuses on three main areas of research: (i) the effect of dual practice and private sector opportunities on access to care; (ii) substitutability between health workers, particularly doctors and nurse practitioners; and (iii) decentralization effects (see Appendix B for the full proposal).

Production of Health Workers

Chapter 3

The need for a larger cadre of health workers, each with the mix of skills and supported by the incentives required to respond to a changing health scene is well established. One way of responding to future increased needs for health workers, is of course producing more. This section describes current production and trends and highlights those medical education issues related to future demand. With regards to medical education, this section draws, among others, on a recent report on medical education commissioned by Commission X of the Indonesian Parliament (2008) and ongoing work for the preparation of the new health professional's education project. Data on preservice training and production can be obtained from databases maintained by *Pusdiknakes* (Center for Health Workforce Education), MoH, and the Directorate of Higher Education (Dikti), MoNE.

Although there has been a very rapid increase in the number of medical, midwifery and nursing schools since 2000, the regulatory framework for the licensing of new schools remains inadequate. Current production policies reflect the same thinking that shaped deployment policies in the predecentralization era. Decentralization has led to increased requests from district government to open new medical schools in their district to respond to increased demand for doctors. There are two other factors that may have contributed to the rapid increase in the number of medical schools as well as midwifery and nursing schools. These are the deregulation of the process for establishing new hospitals and the introduction of *Jamkesmas*.

3.1 Medical Doctors and Specialists' Production

Although there are currently 52 medical schools in the country producing an average total of 5,500 new medical graduates per year, the quality of graduates is an issue. This total represents an increase of 40 percent since 2001, mainly due to the increasing number of private medical schools, of which there are now some 27. In addition, there are 12 new schools currently waiting to be licensed.[18] Although clinical teaching for medical students occurs in around 70 hospitals, only 37 hospitals have legal status as a teaching hospital. Some of the hospitals may have accreditation from MoH for services provided, but they may not necessarily meet MoNE's academic criteria as a teaching hospital. On the other hand, doctors who provide clinical training in hospitals to medical students are mostly MoH employees whose salary is paid by MoH, while MoNE, which oversees medical education, does not yet have a clear mechanism for compensating MoH doctors for their involvement in medical teaching. Nor is it clear who pays the medical students during their internships. The above examples are some of the challenges currently faced by the Higher Education Directorate of MoNE in ensuring the quality of medical education in the country. These issues have also been raised in the recent report on medical education commissioned by Commission X of the DPR.

These problems have become even more acute with the shift to a competency-based curriculum (CBC) for medical education, following the model of the World Federation of Medical Education (WFME[19]) in order to gain international recognition. The change in curriculum has serious consequences for the cost of medical education and requires changes in teaching and learning methods and tools. With Law No. 29/2004 on Medical Practice, the Indonesian Medical Council (KKI) was created and charged with curriculum development and the registration and certification of graduates. In most medical schools, the CBC was introduced simultaneously with the adoption of Problem-Based Learning (PBL) and the integration of various medical disciplines. Introducing the three reforms at the same time represents a major and daunting reform task for even the best medical schools in the country; in Canada it took at least 30 years to accomplish. As a consequence, although it was mandated by the DGHE, only a few of the best medical schools are ready to adopt the new curriculum while most are at varying stages of implementation. Each school has its own specificity and capacity, and the CBC is implemented in different ways in different schools.

18 AIPKI communication September 2008.

19 The WFME is a global organization concerned with medical education and training of medical doctors as well as undergraduate students.

Only 14 of the 52 medical schools offer a specialist training program; all of these are publicly owned. The current production of specialist doctors is low--at only around 1,200 per year (Affandi 2007)--a highly inadequate output compared with the size and growth in population and the growing need for specialist services.[20] According to 2005 data from MoH-UGM, of 229 Class C hospitals in Indonesia, 29 percent do not meet the requirement of having at least the four basic specialist services (internal medicine, pediatrics, obstetrics-gynecology, and surgery (UGM 2005).

In 2006, MoH set increased access to specialist services as a priority target for the health sector. To meet the target, scholarships for up to 7 thousand specialist candidates are to be provided by 2010. Achieving this target though requires significant changes to increase the capacity for specialist training. A task force consisting of multiple stakeholders is finalizing the development of a competency-based specialist training program. The training is hospital based using modules, and involves provincial/district hospitals as affiliate and satellite hospitals to support the main teaching hospital. The new methodology allows doctors to provide limited specialist services at the district level even before the doctor completes the whole training module. The grand design for the new program is ready and the first batch will start in July 2008. Despite the strong pressure to start the program in 2008, the biggest challenge is in ensuring training quality. MoNE estimates the cost of training a medical specialist at between Rp 85 million and 100 million per student.[21] Money has been allocated in 2007 to pay for the direct training cost of the candidates, but there is much less clarity regarding who should or will pay for the needs of the training institutions/hospitals in terms of both physical infrastructure and manpower.

Data from 2003 shows the number of applications to medical schools was considerably higher than other schools, demonstrating a very high level of interest in the profession of medical doctor. As a result of this level of interest in a medical education and the limited space at public universities, a high number of students attend private universities although the quality of education provided at some private universities is less than that of established public universities. An interesting observation is the high percentage of applications from women for medical school (Table 3-1).

Table 3-1: Overview of Indonesia's Medical Schools (2003 and 2004)

Institution	Capacity to Train	Applications Received	Applicants Accepted	Students Listed	Completed Training
All medical schools combined (2003)	4,706	83,816	8,969	34,402	6,774
Percentage of women	n.a.	53.0	52.0	65.0	76.0
All medical schools combined (2004)	4,457	50,582	6,814	32,917	3,601
Percentage of women	n.a.	66.0	63.0	63.0	-
Public medical schools (2004)	1,767	11,671	3,528	15,969	1,105
Percentage of women	n.a.	56.0	59.0	60.0	-
Private medical schools (2004)	2,690	38,911	3,286	16,948	2,496
Percentage of women	n.a.	69.0	66.0	64.0	63.0

Source: DEPKES 2007.

20 See the *Background Paper on the Indonesian Health System in Support of the Government of Indonesia Health Sector Review* (World Bank, 2008a) and *Investing in Indonesia's Health: Challenges and Opportunities for Future Public Spending* (World Bank, 2008b).

21 This varies by specialization.

3.2 Midwives and Nurses' Production

There are 465 schools offering midwifery education and 682 schools offering nursing education in Indonesia. Of these, 389 midwifery schools (84 percent) and 354 nursing schools (52 percent) are privately managed. While government-managed schools are distributed more or less evenly throughout the country, privately-owned schools are heavily concentrated in Java with 52 percent of all private midwifery schools and 52 percent of all private nursing schools located in Java. After decentralization, more local governments established midwifery and/or nursing schools. There are currently 14 midwifery schools (representing 3 percent of the total number of schools) and 64 nursing schools (9.4 percent of the total) belonging to local governments.

The majority of midwifery and nursing schools offer a D3 education (academy) level. This is consistent with the policy decision taken by MoH in the late 1990s to abolish SPK level education[22] for nurses and D1 level education[23] for midwives. Lately, the Indonesian Nurses Association (PPNI) has been pushing for an even higher qualification for nurses as reflected in the growing number of schools offering a bachelor degree (S1) program in nursing. At the moment, 174 schools or 25.5 percent of all nursing schools offer an S1 education.

The midwifery and nursing schools are producing 10,000 midwives and 34,000 nurses per year. It is unclear what percentage of these numbers is absorbed annually by the public sector and it is likely that many of them work in private facilities or open their own private practice. A large number of publicly and privately-employed midwives and nurses are known to also have their own private practice.

3.3 Regulatory Framework: Certification, Licensing and Accreditation

There are serious quality concerns about the education system itself and the subsequent certification and accreditation of health workers. In addition, as is described in the following overview of the regulatory framework and its functioning, there is a serious gap in capacity. Although some systems have been established, such as those systems that accredit medical and midwifery and nursing schools, this is not done by an independent body and there are few professionals capable of performing the accreditations. In addition, there is a serious deficiency in the standards themselves, making accreditation very difficult to begin with, while those accreditations that have been conducted are not published. The decentralization of government authority in 2001 came with unclear rules regarding responsibilities in regulatory systems and the situation has since worsened because some local governments now issue permits/licenses to schools to operate without obtaining a license from the Higher Education Directorate of MoNE.

3.31 Licensing and Accreditation of Schools

The Law on the National Education System (Law No. 20/2003) and the Law on Medical Practice (Law No. 29/2004) govern medical education. However, there is no legal umbrella that encompasses medical education comprehensively; the roles and responsibilities of faculties of medicine, the Indonesian Medical Council (KKI), MoNE and MoH are unclear. The most acute problem, however, are the agreements regarding standards of accreditation and criteria for the establishment of new university faculties of medicine (see Commission X Medical Education Working Group Report, 2008).

22 SPK (*Sekolah Perawat Kesehatan)*: Junior high school plus 3 years of nursing school.

23 D1 midwife education: SPK plus 1 year of midwifery school. This program was introduced in the early 1990s to support the government's village midwives crash program.

The accreditation of medical faculties is undertaken by BAN-PT (the national accreditation body for higher education). BAN-PT is supposed to accredit the medical faculties according to the medical education standards promulgated by the KKI. However, one of the main problems encountered is the weak status of BAN-PT which impedes it from performing independent and adequate accreditations. It does not have an independent budget line, and reports to the head of the research and development director at MoNE. The Association of Medical Education Institutions (AIPKI) is assisting BAN-PT to develop the required accreditation instruments.

Local governments are increasingly demanding the establishment of their own medical faculties to fulfill the increased demand for new doctors in their districts. The licensing of new medical faculties is the responsibility of MoNE, however MoNE does not currently have sufficient capacity to assess the actual needs of local governments or the capacity to assess the readiness of a local university to open a medical faculty. At present, MoNE collaborates with the Association of Family Physicians to conduct some of these assessments, albeit using neither standardized nor agreed instruments.

There are great variations in the quality and standards of preservice training for nurses throughout the country. The education law stipulates that all education above high school level (D3 level and above) is under the jurisdiction of MoNE. In reality, the MoH Center for Health Workforce Education (*Pusdiknakes*) continues to control the publicly-owned D3 level education of nurses delivered through 33 *Poltekkes*[24] while the accreditation of other midwifery and nursing education institutions, including those that are privately owned, is done by BAN-PT in collaboration with the professional associations, IBI and PPNI. *Pusdiknakes* and BAN-PT do not use the same instruments to accredit the schools; the former uses a more technical instrument allowing a more clinical focus, while BAN-PT places more emphasis on the administrative aspects.

While both *Pusdiknakes* and BAN-PT are working to improve accreditation procedures, there is not yet a common approach and criteria for either public or private schools and it is widely acknowledged that the accreditation processes are not aligned with international standards of independence, credibility and transparency to the public. In addition, after decentralization, many new private schools were established with only a license from the *Bupati* (district head) at the district level, thereby increasing the risk of producing poorly-educated and poor quality graduates. There have been no detailed studies undertaken as to whether the graduates of preservice training that follows the national curriculum actually meet the needs of local health services.

To improve the quality of midwives and nurses, the government is requiring an upgrading of D1 training to D3 level. In order to implement this new policy, there will be a need to provide more D3 training institutions and qualified teachers. Schools are encountering difficulties in attracting personnel with good clinical backgrounds and field experience to train as teachers. Moreover, there seems to be too much emphasis on the academic qualifications of the teachers and insufficient attention given to their pedagogical skills.

3.32 Licensing and Certification of Graduates

The new curriculum (CBC) for medical education introduced in 2005 consists of seven semesters of general and medical sciences to obtain a bachelor of medicine degree, and an additional three semesters of clinical teaching to become a medical doctor. The medical school awards the medical degree after the student passes a national examination. The aim of the new curriculum is to train primary care physicians, and the plan is to complement the curriculum with a one-year internship program in a primary care facility upon graduation from medical school. The internship program will be managed by MoH and the program is expected to be

24 *Poltekkes (Politeknik Kesehatan)*: Polytechnics at provincial level for allied health professional training.

ready for implementation in 2011 when the first batch of graduates under the CBC completes their medical training.

The new standards also require graduates, from both public and private schools, to take competence testing to get a certificate of competence from the College of Indonesian Doctors (KDI). With the certificate, the new doctors can register with the KKI and obtain a license to practice from the local government. Doctors have to renew their registration with the KKI every five years. The certificate of competence is not yet a requirement for doctors already working for registration with the KKI, but will be when they renew their registration. However, it is already a requirement for fresh graduates. These new requirements will improve information about medical doctors and where they practice.

Improving the quality of HRH became a priority of MoH with the introduction of the *Healthy Indonesia 2010* vision in 1999. Currently, MoH working closely with professional associations has completed competency standards for ten health professions including those for midwives and nurses. MoH will soon introduce a policy requiring midwives and nurses to pass a competency test as a prerequisite to obtaining their professional license. MoH has also prepared a draft regulation for the establishment of a provincial health workforce council (MTKP) in each province. It is being piloted in the four Health Workforce and Services Project (HWS) locations that are supported by the World Bank. Yogyakarta and Central Java are early examples of this initiative (see Box 3-1) and have provided inputs into its conception. The MTKP will have the authority to organize the competency testing for health professionals in collaboration with the relevant professional associations.

Students currently receive a graduation certificate from their schools without reference to national competency standards. On the basis of this certificate, the provincial health office issues a license as a midwife or nurse (*Surat Izin Bidan*-SIB and *Surat Izin Perawat*-SIP). Registration with IBI (Indonesian Midwives' Association) or PPNI (Indonesian National Nurses' Association) is not mandatory. However, when a midwife or nurse requests a license to open a private practice from the local government, he or she has to obtain a letter of recommendation from IBI or PPNI. There are currently no standards for assuring continuing education or license renewal once a license has been issued.

Box 3-1: Examples of Provincial Regulatory Frameworks

- **Yogyakarta provides a good example of a province that established a regulatory framework requiring all health providers to produce a certificate of competence to get a license**. An independent province-based quality council has been set up to perform competency testing in collaboration with the relevant professional associations. This arrangement works well for testing midwives, nurses and pharmacists but the council cannot apply the same approach for doctors and dentists. As long as the doctor or dentist shows proof that they are registered with the KKI, by law the district cannot require them to undergo competency testing as a prerequisite to the issue of a license to practice.
- **The Central Java Health Professional Council is another good example of an effective regulatory regime that conducts licensing examinations operating under provincial governor Decree No. 24/2004.** Central Java utilizes international methodology which is applied to all new graduates from training in Semarang. This testing covers doctors, dentists, nurses, midwives and pharmacists with plans to extend it to assistant pharmacists, dental nurses, physiotherapists, radiographers, laboratory technicians and nutritionists.

Health Workforce Policies

Chapter 4

Policies regarding the health workforce in Indonesia have evolved and undergone various changes over the past few decades. Indonesia has been aware of health workforce related issues and problems since the early 1990s as reflected in the National Development plans of 1994-1999 and 1999-2004. The key objectives of Indonesia's health policies for human resources have always been to increase overall access to services, especially in remote areas. To date, however, no comprehensive evaluation or assessment of the effects of the policies on health workforce deployment or density has been carried out. In part this is due to the lack of good data to carry out these analyses. In the following section we present a description of the governing bodies for health workers, employment and deployment policies as well as a review of past policies and their possible impacts. The final section describes professionalism and incentives for the three types of health workers, doctors, midwives and nurses and the impact of decentralization on the health workforce.

4.1 Health Workforce Governing Bodies

The regulatory environment includes the large number of agencies that share responsibility for managing the national and regional civil services. MENPAN, the Ministry of State Apparatus Reform, is responsible for all policies, procedures and instruments related to the management of PNS. These include remuneration policy, performance appraisal and job descriptions as well as procedures, instruments and regulations for the management of PNS. It also approves the *'formasi'* which is an annual update of authorized PNS posts in central agencies and regional governments. Local governments recruit, based on the *'formasi'*, under strict guidelines and supervision from MENPAN. This task is of paramount importance and makes MENPAN a relatively powerful player.

The role of MoHA has become more important since decentralization as it is involved in personnel transfers which influence efficiency decisions at local level. MoHA manages and/or approves, in coordination with BKN (the national civil service agency), certain personnel actions at the regional level--for example transfers of personnel between districts/cities, between provinces or between the regions and central ministries. This influences the opportunities for local governments to 'right-size' their health personnel. The absence of a clear framework for the division of responsibilities remains a problem and, although in 2006 MoHA initiated the 'Grand Design' which redefines the functions of government at various levels, most continue to be unclear.

BKN plays an important role in the incentive structure of the health workforce. BKN issues technical guidelines for personnel management including guidelines on hiring, firing and promotions; regulating the size of the civil service; salary policy, early retirement policy; and transfer policy and management (in coordination with MoHA). BKN also prepares legislation on civil service matters and is in charge of ensuring compliance with regulations. Most BKD's, the regional office of BKN, have weak capacity in terms of planning and are mainly processing institutions.

The National Institute for Public Administration (LAN) is the national training institute that serves all civil servants in Indonesia. LAN has various branches throughout Indonesia that provide training to civil servants in structural positions (leadership training) and preservice PNS training.

The Ministry of Finance role is in allocating the budget for PNS salaries and contract posts. The volume and size of the budget allocations determine the size of the civil service and the entire wage bill. Local governments receive block grants which include the salary of permanent civil servants. The allocation of extra posts, whether permanent (PNS) or temporary (PTT), is provided and paid by MoH, these are not part of the block grant but are negotiated as the need arises and are often of an ad hoc nature. Various pressures from the regulatory agencies, the public, the professional associations and others may account for this ad hoc decision-making process.

Within the Ministry of Health there are 2 players responsible for policies and procedures regarding the health workforce but an overall vision and clarity of roles and responsibilities are still being developed. The BPPSDMK is responsible for HRH policy and planning (PUSRENGUN); preservice preparation and education (PUSDIKNAKES); in-service health education and training (PUSDIKLAT), and promoting the international placement of Indonesian professionals (PUSPRONAKES). The Bureau of Personnel under the Secretary General of MoH is responsible for the policy and procedures of all public health personnel and for managing SIMPEG, the human resources information system.

Although it is the key institution in the management of Indonesia's health workforce, BPPSDMK's lines of responsibility are fragmented and overlap with other institutions. The MoH function of managing the number and quality of health workers is an important part of its responsibilities but it can only be successful if it attempts to create a more comprehensive approach to the challenges of the health workforce and addresses the overlapping functions. For example, both PUSRENGUN and the Bureau of Personnel are working on developing human resources information systems.

As a professional organization, the Indonesian Medical Association (IDI) has the responsibility for ensuring the quality of doctor services through establishing professional and ethical standards, but it also has the task of protecting the interests of the constituency it represents. Even after the Indonesian Medical Council (KKI) was established, the IDI remains an influential player in the field of medical education with all colleges of medical sciences under its wing. At present, the IDI issues letters of recommendation for doctors to obtain a license to practice at a local health office. In the future, it may play a larger role with the KDI (The College of Indonesian Doctors) in certifying the competence of doctors after their completion of an internship program.

The KKI was established in 2005 as an actualization of the Medical Practice Law No. 29 that was promulgated in 2004. The law states that KKI has three functions; (i) to register doctors and dentists, (ii) establish medical education standards for health professionals and (iii) to supervise and improve the quality of medical practices. In 2006, KKI produced, among others, standards of competency and medical education. These two important documents are to be implemented nationwide, however a system to support the implementation has not yet been established because KKI has limited outreach capacity. The Indonesian Midwives' Association (IBI) and the Indonesian National Nurses' Association (PPNI) have also prepared draft laws that will establish separate councils for each, but the draft laws are awaiting ratification by parliament.

4.2 Health Workforce Employment, Recruitment and Deployment Policies

At the United Nations Alma Ata conference in 1978, the objective of bringing primary health care to all was captured in the declaration 'Health for All by the Year 2000'. Through the 1980s this was effected in Indonesia by building thousands of *Puskesmas* throughout the country and staffing them with a team of health workers.[25] The target was to sustain one *Puskesmas* per 30,000 people, staffed with one doctor and a team of paramedical staff. In support of this policy the GoI made it compulsory for fresh medical school graduates to be bonded to government service, mainly at a *Puskesmas*, as a PNS for a minimum of five years in Java or three years outside Java. For very remote postings, the compulsory service was for only 1-2 years. Upon completion of the compulsory service, some doctors took further training to become a specialist, some continued to work in the *Puskesmas* or accepted a management position at a district or provincial health office. Most maintained their PNS status and as a result, the majority of health workers in public health facilities in Indonesia have PNS status.

25 In each *Puskesmas*, a team of health workers led by a general practitioner (doctor) provided curative and a range of health prevention and promotion services including through outreach services.

Dual practice is an important policy element that was introduced in the early 1970s to address and supplement the low salaries paid to civil servant health workers. With dual practice in place, health workers were expected to remain as a PNS in their assigned areas, reducing the risk of shortages. Nevertheless, Chomitz (1998) found that, despite wages being two times higher in remote areas, medical graduates in Indonesia still tended to prefer urban employment because they could make an equal or higher wage through managing a dual practice. Allowing dual practices without proper oversight mechanisms to ensure accountability for public working hours and quality works against the policy it was set out to achieve.

Following the introduction of the zero growth policy for the civil service, the GoI launched the PTT (*Pegawai Tidak Tetap*) program in 1992. Under this program, newly graduated doctors were no longer hired as PNS but, instead, their compulsory assignment was handled through a nonrenewable three year appointment as 'nonpermanent employees'. Upon graduation, doctors were posted for a three year period in a province where a post was available. After completion of their PTT compulsory service, they had three basic choices: (i) continue with their education to become a specialist; (ii) become a PNS by taking the PNS examination[26]; or (iii) go into the private sector.

There is no documentation on how many PTT doctors were converted to PNS status during that period and whether in fact this attracted graduates. The goals of the PTT program were largely geared towards avoiding a drop in the number of health workers and increasing service access. In general, although no official evaluations have been done, the PTT program is seen to have been successful in reducing shortages, especially in the early years, but it did not achieve equity in its deployment objectives. Decentralization could have brought reforms in the health workforce as it changed responsibilities and roles and could have contributed to a more efficient use of the workforce and improved local accountability mechanisms. However, there is little, if any, evidence of this having taken place.

The PTT program was extended to midwives (PTT BDD) in 1994 following the issue of *Keppres* (Presidential Decree) No. 23. The decree stated that midwives selected for the PTT program are not PNS but would be appointed to serve as a midwife for three years with a maximum extension of a further three years. After that they were expected to be appointed by the government as a PNS, employed by a private practice, open their own practice or continue their education. A University of Indonesia economic analysis of the program in 2001 (CfHR-UI, 2001) concluded that the placement of a BDD midwife contributed to reducing IMR and MMR as well as improving the coverage of other primary health programs. In 2000, the Minister of Home Affairs issued an instruction requesting all governors, *bupati*s and mayors to continue to employ PTT BDD midwives and, if possible, to engage them as regional civil servants (PNS).

A number of important policy questions surrounded the medium and long-term viability of the PTT strategy. From the public viewpoint, the policy of offering PNS appointment and specialist training as an incentive was effective in getting doctors to serve in rural areas. However, it is very expensive, with the cost of providing specialist training to one person estimated to be Rp 60 million. Furthermore, it is a potentially ineffective investment since specialist practice and rural public health management require different skills and attitudes and specialists are less likely to remain in these areas. Although many lessons could be learned from this policy, no formal evaluation of the PTT program has been undertaken to date.[27]

26 General practitioners (GPs) in very remote areas reportedly had a 90 percent chance of being appointed to the PNS after completion of their service; GPs in remote areas had a 50 percent chance while those serving in other areas had only a 10 percent chance of appointment as a PNS (Kluyskens & Firdaus 2007).

27 The World Bank commissioned a short consultancy to assess the feasibility of such a study using the administrative data from the PTT and PNS programs however the data set is considered to be too unreliable to use for this purpose.

In 2001, under decentralization, local governments were encouraged to recruit, appoint and pay PTT staff out of local resources, while the central government would continue to recruit PTT doctors for deployment in remote and very remote areas. Local governments could determine and offer local incentives to attract doctors but, in practice, due to fiscal constraints, very few local governments recruited local PTTs to staff *Puskesmas*. There is also a high risk that the flexibility regions have in wage setting, combined with disparities in funding, will further increase inequalities in the allocation of the health workforce. In addition to fiscal constraints, local governments lack the capacity to identify and recruit qualified personnel.

The challenge of placing doctors in *Puskesmas* increased when, soon after introducing the policy, MoH came under strong pressure from the medical community to abolish compulsory service for fresh graduates. Every year, the cohort of graduates leaving medical school was higher than the number of available posts, resulting in long waiting times for PTT doctors before they could start their mandatory service. Moreover, petitioners argued that the compulsory service was unattractive since the income was low and placement locations unattractive. Enforcement of compulsory service was also considered to be an infringement of human rights as doctors should be allowed to practice at their choice of location. Many graduates are women who are less likely to aspire to a remote posting and appeared to prefer an administrative rather than a remote posting. In response to the pressure, the Minister of Health released a decree in 2002 that introduced additional alternatives for fresh graduates to fulfill their compulsory service, for example by serving in clinics belonging to state-owned enterprises, in nonprofit private clinics, or by working as a lecturer in a public or private medical faculty. Fresh graduates who wanted to continue to specialist education were allowed to postpone their compulsory service.

In response to further pressure, the PTT program was formally abolished in April 2007 with the introduction of Minister of Health *Permenkes* No. 512/2007. Under the new regulation, medical school graduates as well as specialists can directly enter the labor market as private providers. As doctors moved outside the government system into the private sector, information about them was lost to the government. Decentralization has further compounded this lack of information as many districts no longer respond to requests for information, including information on staff.

MoH has also introduced several policies to improve access to specialist services, particularly in unattractive and remote areas. These included the provision of larger incentives to specialists for remote postings, reducing the length of service in remote locations, and collaboration with specialist training programs to send senior residents to district hospitals for certain periods of time. A survey of specialist doctors conducted by UGM in eight provinces (mostly in Sumatra) reported that specialist doctors earned an average of around Rp 30-35 million per month, much higher than the Rp 7.5 million currently offered by MoH to specialists for a remote posting (UGM 2005). However, it is not easy to draw conclusions on the impact of these policies on access to specialist care in remote areas because so far no evaluation has been done.

The turning point for specialist production and deployment might be MoH's policy made effective in 2008 to provide scholarships to 7 thousand specialists by 2010. MoH covers most of the training cost while the local government is responsible for selecting the candidates. Candidates will be bonded by an MOU to return to their original districts upon completion of the training. Although the whole module-based training program requires three to five years to complete, the program includes sending the doctors back to their local hospitals upon completion of the modules for general or most common cases. They will manage such cases in the local hospital for a year before going back for training on the remaining modules. This approach is expected to accelerate access to specialist care.

4.3 Professionalism and Incentives

Doctors as general practitioners have an essential, albeit ill-defined, role in the Indonesian health care system. There is no real job description for a doctor in Indonesia, although there is list of competencies that are required of medical practitioners. In addition, there is little clarity about the different job descriptions between a general practitioner, a primary care physician and a family physician. It appears that only doctors who have been recertified by the College of Family Medicine after a period of continuing medical education (250 credit points) are entitled to present themselves as family physicians. The work done by the three types of doctors is, however, the same.

Medical doctors in *Puskesmas* are frequently asked to assume the functions of a team leader although their medical training does not prepare them for such tasks. Even if they are trained to provide medical care, most general practitioners in public health care centers spend about one-half of their time doing administrative work. Any new training and planning of training should include management and supervision skills.

In regard to nurses and midwives, there are a number of different grades of each profession but these are not consistently defined and the role and responsibilities attached to the different grades are variable. This problem is further compounded by the lack of job descriptions attached to the grades. The lack of these regulatory standards, both regarding job descriptions and responsibilities, as well as for education and clinical competence make it difficult for nurses and midwives to match their skills to the work undertaken. As they often end up being the sole providers in rural and remote areas, and often even in a *Puskesmas*, they feel obliged to undertake clinical activities that go beyond what they were trained for (Hennessy et al 2006, paper 1). At the same time, a study to determine the training needs for nurses and midwives by the same researchers demonstrates that having a clear job description made very little difference to how midwives interpret their jobs (Hennessy et al 2006, paper 2).

The absence of job descriptions also impedes the introduction of a performance-based management system. There are few job descriptions in the civil service overall, and those that exist (mostly for structural positions) are poorly done, making it difficult to hold the employee responsible for their duties and tasks. An instrument for performance appraisal does exist (DP3) but indicators are uniform, very subjective and applied to all ranks and levels. Superiors preparing the appraisal see it as a routine and meaningless activity. Advancement therefore remains largely automatic, based on seniority and divorced from performance while disciplinary action that affects position and remuneration is rarely taken. Supervision is done in a hierarchical fashion and serves the purpose of capacity building as well as standard monitoring, but, as it is not standardized, it depends on the individual and the quality of supervision varies widely.

To become a doctor in the Indonesian Civil Service (PNS doctor) is a major incentive within the health human resources system. PNS doctors get fast-track attention for specialist education support, a desire of about 80 percent of medical students and are also allowed to maintain a private practice outside working hours. Studies indicate that about two-thirds of a doctor's income comes from the provision of private services. Another significant attraction for PNS doctors is the pension plan that comes with the status of PNS.[28]

As one of its policies to assist in deployment to remote areas, MoH offered PTT doctors not only an appointment as PNS but also monetary incentives and shortened length of service. The purpose was to make remote and very remote postings more appealing to graduates. The amount of the monetary incentive and length of service were adjusted several times during the fifteen year life of the program. Nevertheless, under the PTT program, the number of general practitioners (GPs) per *Puskesmas* in remote and very remote

28 Recently, however, there have been discussions around the financial sustainability of PT. TASPEN, the SOE responsible for pensions of civil servants in Indonesia.

areas declined by 30 percent between 1994 and 1998 (Barber et al 2006a). This indicates that the policy failed to achieve its objective of deploying doctors evenly across the nation and ensuring that each *Puskesmas* had a staff doctor. Observers have suggested that the incentives, including the 'promise' to become PNS, were not sufficient to attract PTT doctors to remote and very remote areas.

Considering the differences in amenities associated with remote postings, the salary incentives were relatively modest. In their analysis of 'willingness to accept' remote assignments using monetary incentives and preferential admission to specialist education, Chomitz et al (1998[29]) found that, for doctors originally from a remote area, the extra costs to induce acceptance were modest. On the other hand, doctors who were not originally from a remote area demanded a wage that was exorbitantly high and unrealistic to encourage them to take up a posting in a remote area. Preferential admission to specialist education did have some effect. The policy of mandatory placement of PTT doctors has been abolished. The current policy to attract PTT doctors to remote areas is to offer them a base salary of Rp 5 million per month and short-term postings of six months. Critics of this policy, however, argue that six months does not allow the health workers to become sufficiently acquainted with the population to be of any assistance nor gain adequate experience during such a short period.

As described in Chapter 2.2, allowing dual practice as an incentive for physicians, midwives and other health workers may have positive and negative effects on access to care. On the positive side, dual practice and private sector opportunities may lead to an increased supply of health service providers. On the negative side, the poor may have less access to care, or households with less ability to cover the fees of private doctors may have no alternative but to seek care from less qualified health care providers. In order to gain a better understanding of what applies to the Indonesian context, the ongoing health labor force study analyses how dual practice affects access to care and quality of care received.

For specialist doctors the situation is slightly different as there is an advantage in allowing specialists to serve in multiple settings. Since the need for specialists per setting is lower, serving in multiple practices allows them to provide care to a larger number of patients. However, to prevent specialists merely lending their names to institutions and 'spreading themselves too thin', clear regulations need to be in place.

Attracting midwives to rural and remote areas has been more successful. Indonesia has implemented a number of successful strategies such as the *Bidan di Desa* program to encourage midwives to work in underserviced areas. As a result, there are more midwives in rural and remote areas than doctors although this presents both benefits and problems. In practice, nurses and midwives are the main health care providers in most rural and remote areas because there are no doctors. At the *Puskesmas,* nurses often run the outpatient clinic, treating patients and diagnosing medical complaints, tasks they are not legally allowed to perform and for which they have not been trained. Even in less remote or rural areas, nurses and midwives start providing curative care because of the weak regulatory system, giving rise to serious quality concerns and risks for patients.

29 Although this work was done 10 years ago it remains relevant as no specific policy changes have been made over this time.

Box 4-1: Initiatives Addressing Quality of Performance in Indonesia

Several initiatives have started addressing the quality and performance issues by improving the link between job description and performance for nurses and midwives. The Directorate of Nursing Services, together with WHO and Gadjah Mada University (UGM), in 2001 developed a model for performance improvement of nurses and midwives, which later became known as Development of Performance Management (DPM). This model was implemented in five districts in Java and Bali. An evaluation in 2003 showed that there was an increase in performance of nurses and midwives after they joined DPM activities (GTZ, 2006b).

A second example is the Clinical Performance Development and Management System for Nurses and Midwives in Hospitals and Community (CPDMS). The MoH, with funding from WHO, the World Bank and ADB, introduced a system to promote the development of a quality control system for nursing and midwifery services. By 2004, the CPDMS had been tested and implemented in hospitals and health centers in 35 districts in nine provinces in Indonesia. The approach focuses on providing clear standards and the dissemination of those standards to providers; adapting job descriptions to local circumstances; clear performance indicator-based monitoring systems and group discussions. It further contributed to the review of the midwifery diploma curriculum in 2002 (GTZ 2006; Hennessy 2006).

4.4 The Impact of Decentralization on the Health Workforce

Decentralization has disrupted workforce matters in general and especially for health workers. Various levels of government remain unclear about their roles and responsibilities and complex financial and fiscal regulations have added to the confusion. A 2005 case study concluded that there is significant overlap and duplication of tasks and functions across levels of government and resulting inefficiencies in organizing the delivery of services (World Bank 2005). The lack of progress on civil service reform has compounded the incapacity of districts to right-size their workforce.[30]

Implementing health services and management of health personnel became the responsibility of local government with the passing of Law No. 22/1999. The central Ministry of Health relinquished, in-principle, the personnel management function and their main role became the establishment of minimum standards, a task they now share with MoHA. Nevertheless, the law did not define what the specific functions of local governments are within these sectors and some local governments interpreted this to mean that they were responsible for all tasks.

At the same time though, the Ministry remains involved in planning and managing regional staff. The key reasons for this are the lack of skilled workers in many districts to formulate health workforce development policies and to manage personnel. There was also a certain reluctance to give up the Ministry's traditional duties. Until now MoH continues to hire, assign and regulate contracted PTT staff and PNS and to allocate these to regions considered to be in need. To add insult to injury, the ministry mandated that local government finance PTT contract doctors after two years, with the exception of those working in remote areas. In reality, very few local governments comply with this. Sectoral ministries also undermine local government's attempts to be lean by encouraging them to mirror central level organization with the promise of access to deconcentrated funds.

30 Many observers have documented and analyzed the long-standing absence of effective management of the civil service which is rooted in the complexity and ambiguities of the regulatory framework, combined with a flagrant lack of enforcement of the rules and widespread corruption. At the central level, ministries enjoy considerable freedom to recruit their own staff and seek extra remuneration for their employees from projects and other sources. The only constraints are an overall cap on numbers (central approval of the *formasi* and controls over the total wage bill) and the obligation to seek approval from the regulatory agencies for certain personnel actions (The World Bank 2005).

For their part, since decentralization, districts have virtually stopped reporting to MoH, thereby ignoring longstanding or newly stated requirements set by the central government. Reporting is now voluntary rather than mandatory and has led to a serious breakdown in the health workers' information system as discussed in Chapter One of this paper.

The situation has led districts, despite being in charge of health workforce planning and management, to continue with the national system practice despite its flaws. Not only do districts not have sufficient capacity to take over the responsibility without guidance, they also found themselves without a choice regarding accepting the integration of large numbers of staff transferred for administrative purposes. Following the implementation of Law No. 22/1999, over a quarter of a million health staff were transferred from central level administration to local government administration that need to use output and outcome criteria to determine 'right-sizing' rather than norms. District officials do believe, however, that there is a need for right-sizing, but need assistance on how to undertake this. It is clear that new responsibilities require new types of jobs, reprofiling of old ones and the addition or abolition of positions.

There are promising examples of provinces where reforms to local health workforce planning were carried through. Supported by strong local political and administrative leadership, the province of Yogyakarta created a human resource health taskforce under the World Bank supported first Provincial Health Project (PHPI) with the mandate to develop a master plan for a cost-neutral reshaping of the local human resources deployment to better match local circumstances. The task force found the province needed only 480 staff of the 960 they had inherited through the transfer, and a different mix of workforce skills. A downsizing plan included early retirement, introduction of functional positions, redeployment, voluntary resignation and so forth.

Unfortunately there are difficulties for provinces in carrying through their planned reforms due to continuing and sometimes contradictory central regulations. A civil service paper reporting on civil service reforms refers to the Yogyakarta initiative and reports that implementation of the initiative was prevented due to legal impediments; the law forbids the province to downsize. Yogyakarta did not move forward with the reform out of concern that at any time the rules of operation could change and undo reforms that had already been started. Although some progress has been made regarding broader civil service reforms (see Box 4-2), more is needed in order to have a positive impact on the management of health human resources.

Box 4-2: Civil Service Reform

The government has undertaken certain initiatives that may open some promising opportunities for civil service reform, including reform of the remuneration system, in coming years (The World Bank 2008b).

- **A key first step has been the effort to design a new remuneration policy for high-ranking state officials,** the so-called '*pejabat negara'* (for example ministers, legislators, judges and heads of special commissions and agencies). The Minister of Finance has set up an interagency task force to examine the entire compensation package with the goal of creating a more transparent, systematic and coherent framework of pay and allowances linked to a comprehensive review of job classifications and categories. This is intended to lead to an independent remuneration commission to recommend both the level and structure of the compensation package for Indonesia's highest ranking political officials. The work of the commission would be based on the modern techniques of functional analysis, development of job descriptions and pay grading. Such an approach would be followed by a similar comprehensive review of pay issues for the whole civil service.
- **Individual ministries are considering important initiatives that could serve as a model for a more comprehensive civil service reform**. The introduction of Law 14/2005 (Teacher Law) has offered a dramatic increase in the total take-home pay for teachers on the basis of merit and qualifications through special 'professional allowances' for those passing through a certification process. The Ministry of Finance is considering a comprehensive reform of its civil service, integrated with a restructuring of the Ministry's core services in treasury execution, taxes, and customs.
- **The legal framework for the civil service is being reviewed and revised,** including Law No. 43/1999 (Civil Service), Law No. 32/2004 (Government Organization) and Law No. 11/1969 (Pensions). Included in this review are a range of government regulations encompassing decentralization of the civil service, performance appraisal, separations, and civil service discipline.
- **The '*Reformasi* Work Unit' might be a window of opportunity to push much needed civil service reform forward.** The new Presidential Work Unit on Managing the Policy and Reform Program (referred to as the *Reformasi* Work Unit or UKP3KR) has 'implementing reforms of bureaucratic administration' as one of its five working areas (*Reformasi*, 3 November 2006).
- **There are also strong civil service reform initiatives in several regional governments**, including in such areas as performance budgeting, one-stop public services, productivity improvement measures and transparent recruitment for key positions. Promising initiatives have been launched in Yogyakarta, Jembrana (on Bali) and Solok (in West Sumatra)(World Bank 2006). In addition to these initiatives, there is a real, ongoing need to clarify functions between the different tiers of government.

Increasing Needs for Health Workforce

Chapter 5

With clear challenges already looming for the health workforce (inequalities, quality concerns, shortages in remote areas, HR management) new challenges are arising as well. As the population ages, there will be more demand from the elderly for sophisticated health care. As seen in other countries where these demographic transitions have already taken place, it has been calculated that health care costs and demand for more specialists and nurses will require almost a doubling in the size of the workforce. Not all regions in Indonesia are experiencing these transitions at the same time and same speed; communicable diseases remain a very high public health priority in Eastern Indonesia for example. In addition, a number of new policies and programs, such as the *Desa Siaga* and CCT programs will increase the demand for primary health care workers in remote areas.[31]

At the same time as these new challenges present themselves, the planning methodology Indonesia uses to fulfill the need for new health workers is outdated. The private sector growth is important and the opportunities offered to health workers by the private sector continue to influence where they take up work. To date this has not been sufficiently taken into account when establishing health workers policies. The growing demand for sophisticated treatment needed for the prevention and cure of noncommunicable diseases will further influence these choices and make the distribution more inequitable.

5.1 Growing and Changing Demand

In Indonesia, as in many other countries, fertility rates have declined and the population is starting to age. In the future there will be a shift in the public health focus from communicable to noncommunicable diseases (NCDs) as a result of aging and an increased prevalence of risk factors such as obesity and smoking. As a consequence, changes in health care demand can be expected. The demand for curative care and inpatient care will increase, creating important requirements for new health personnel and number of hospital beds. At the same time, the demand for core public health functions will continue or may even increase as well, especially due to the effects of global warming. It is clear that in responding to the curative demands of rising rates of noncommunicable diseases, resources for public health will be even more stressed.

Demographic and epidemiological transitions and the subsequent change in demand for health care were estimated in a recent study by Choi et al which focused on two provinces; East and Central Java. According to the estimates, the relative importance (share) of NCDs in the future disease burden in these two provinces will increase from 39 percent in 2005 to 56 percent in 2020, if the assumption of significant reductions in communicable diseases holds. Even with no change in the incidence of communicable diseases, the share of NCDs would rise to 43 percent. The study also demonstrates that the physician to population ratio would need to be tripled and the current output by medical schools will not suffice in meeting future demand. On the other hand, if the current 4.8 nurse to physician ratio is maintained at the same level, there will be no need to increase the output of nurses.

Outside Java/Bali utilization rates for treatment of communicable diseases such as tuberculosis and malaria are much higher than in Java/Bali. Although much more research is needed on skills mix, and the health labor force study is looking into this in more detail, an initial idea about differences in needs for specific skills can be derived from the results of the tuberculosis survey (Table 5-1).

31 CCT (Conditional Cash Transfer): CCT is based on the principle of mutuality. In return for financial assistance from the government, recipients will be required to comply with a number of basic health standards such as immunization and antenatal care. By providing demand side incentives, demand for services goes up.

Table 5-1: Treatment Seeking Behavior for Tuberculosis (TB)

Region	Prevalence (per 100,000 population)	Treatment Seeking Behavior for TB							
		Public				Private			
		Public Hospital	Health Centers	Lung Clinics	Total	Private Hospital	Private Doctor Practice or Clinic	Private Midwife/ Nurse Practice	Total[32]
Indonesia	104	21.9	24.6	5.5	52.0	10.3	32.3	4.7	47.3
Java/Bali	59	21.3	17.5	6.3	45.1	12.4	38.0	3.7	54.1
Outside Java/Bali	174	23.2	41.9	3.9	69.0	5.4	18.2	6.9	30.5
Sumatra	160	22.1	36.8	5.9	64.8	10.3	17.7	5.9	33.9
Eastern Indonesia	189	23.1	44.8	2.2	70.1	2.2	19.4	8.2	29.8

Source: Indonesia Tuberculosis Prevalence Survey 2004 – NIHRD MoH.

In 2005 MoH introduced *Desa Siaga* with the aim of serving every village with appropriate HRH and putting in place an efficient referral system. The plan is to deploy 70 thousand health professionals, mainly consisting of a nurse or a midwife, a sanitarian, and a nutritionist in each village. The objective is to improve certain aspects of public health, such as the surveillance and promotion of good nutritional practices which were discontinued with decentralization (GTZ 2006).

In 2005 the Government of Indonesia raised the administered price of fuel by more than 150 percent in order to rein in the cost of fuel subsidies. To compensate for the impact on the poorest Indonesians who were most affected, the government established an unconditional cash transfer (UCT) program. A targeted UCT payment was made to more than 70 million people in four quarterly tranches commencing 1 October 2005. A second UCT program was established by the government following a further rise in fuel prices averaging 28.7 percent in May 2008. As UCT payments are less likely to be as effective as conditional transfers (CCT), the GoI proposes to replace them with a CCT program in future. The CCT program will have consequences for the health sector in that it increases demand through the conditionalities; transfers are made on the basis of compliance with a number of conditions including prenatal visits and child health visits to a *Puskesmas*. Currently the design only provides for the recognition of public health sector conditions and does not see visits to private providers as fulfillment of the conditionalities. The health system will, therefore, come under even more stress to provide services, and quality may be constrained further. Evaluations of the impact on demand are ongoing with the CCT pilot in the field.

The community-driven development program (KDP) is set to be scaled up to national level in the near future as the PNPM, following its success in reducing the incidence of poverty. The construction or improvement of community health centers can be found in numerous community-based proposals under this program. For every health center built under a community-driven development program, an agreement is made with the district health office to provide health personnel. However, these facility improvements and even construction of new facilities are not linked to central staff planning and supervision and the provision of supplies. An important question in this regard is also whether there is really a need for more facilities, or whether the needs relate to improving efficiency since a large number of *Puskesmas* are underutilized (World Bank 2008b).

32 The sub-totals for treatment sought at public and private facilities do not add up to exactly 100% because the small number (approximately 1%) who sought treatment elsewhere has not been included in the table.

There are concerns about the acceptability of Indonesian nurses and midwives in the international labor market. The liberalization of goods and services trade in the ASEAN region for the health sector--one of the agreed priority sectors--has materialized with the signing of the Mutual Recognition Arrangement (MRA) on Medical Practitioners in August 2008. The MRA facilitates the free movement of skilled medical practitioners within the ASEAN region. The MRA also regulates their quality through adoption of best practices on standards and qualification by member countries. This means that health professional education and certification in Indonesia needs to meet the agreed standards to be able to compete in the regional health market. In addition, regulations to oversee the practice of foreign medical practitioners need to be strengthened. Collectively, these changes in demand put additional pressure on current health workers, emphasizing the need to look at the health system comprehensively, including private sector provision in future planning.

5.2 Health Workforce Planning Methods

Since the 1980s, MoH has used several approaches to determine staff needs. In the early 1980s MoH developed a projection of health workforce needs to fulfill the goal of 'Health for All by the Year 2000'. The projection was based on community health status, demographic changes and existing health programs. These projections were then interpreted as targets for the *Repelita*s (Five Year Development Plans during the New Order). The earliest approach was to use minimum standards for staff needs, for example one doctor per *Puskesmas*. Provincial and district health offices used the ISN (Indicator of Staff Need) method developed by the Bureau of Planning (MoH) to determine the number of staff required for each health facility (see Table 1-1). ISN was widely considered impractical because it did not reflect actual need. In 1994, WHO introduced long-term projections of staff need, taking into account demographic changes, economic growth and expenditures. But until now, none of these newer methods have actually been used as a basis for determining staff need.

After decentralization in 2001, districts were given the authority to manage *Puskesmas* and public hospitals although they do not have the authority to hire and fire staff. The districts channel demands for new staff, particularly strategic staff such as doctors, midwives, and nurses to MoH through the province. Most districts still refer to national staffing standards rather than actual demand for services when sending their staffing request. MoH allocate staff based on available resources and the *formasi* for a particular district, while available *formasi* do not always match with district need.

The *Daftar Susunan Pegawai* (DSP - Staff List) was a new method developed after decentralization as a tool for district level managers to assist them in redeploying district level health staff according to workload. Although this is an improvement, the method still does not reflect demand (based on needs following disease patterns). In addition, since hiring and firing of staff is beyond the district authority, the outcomes of this process are limited to movement only within the district itself. The Workload Indicator of Staffing Need (WISN)-see next paragraph- follows the same principles and thus suffers the same limitations.

In January 2004, the MoH released Ministerial Decree No. 81 on guidelines for provinces, districts, and hospitals in conducting health workforce planning. The guidelines suggested four methods of workforce planning beside the previous ISN/DSP method: the Health Need Method, the Health Services Demand Method, the Health Services Target Method, and the Ratio Method. Little is known of the actual use of these methods in workforce planning by provinces and districts, except for WISN in NTT. However the question remains as to what can be done with these (successful) pilots as without changes in the regulatory framework they cannot be implemented on a larger scale.

After decentralization, the original manual personnel records system was replaced by a number of different computer-based information systems. The latter were designed to meet the information needs of various sections and departments**.** The first civil service information system, SIMKA, was found to be ineffective and was subsequently replaced by SIMPEG, which is an improved Web-based workforce information system. Among the main advantages is the potential to include in this system private providers as well as locally-recruited and military health workers. SIMPEG is administered by the Bureau of Personnel and currently includes only detailed information about public health sector employees. MoH plans to start including private sector workers in the system.

5.3 Estimating Increasing Needs

Planning to include future needs is becoming increasingly more complicated with demographic, epidemiological and nutritional (including behavior) transitions ongoing. The demand for a different and more flexible health workforce is growing and as a result of the changes, the response is more difficult to plan. The usual norms and ratio-based calculations for staffing needs are no longer adequate.

A study by Choi et al[33] to estimate the future costs of health care, based on changes in demand in East and Central Java estimates that the number of medical doctors needed over the next 20 years will almost triple. The study concentrated on East and Central Java where the epidemiological transition is more advanced than in Eastern Indonesia. The incidence of noncommunicable diseases (NCD) has surpassed that of communicable diseases in East and Central Java and cardiovascular disease, diabetes and malignant neoplasm top the list of main causes of death. In East and Central Java, treatment of NCDs already constitutes the majority of inpatient services. Treating NCDs requires different skills and specialists than communicable diseases and the planning methods for Indonesia's health workforce have not yet been adapted to better reflect future needs.

The same study applies changes in demand for health care to estimate increases in demand for health workers. The *Healthy Indonesia 2010* vision calls for a tripling of the current number of medical doctors. In the two provinces studied, this would require nearly 8 thousand physicians over and above the current medical school output by 2020 (Table 5-2). In order to fill that gap, about Rp 507 billion is required.[34] On the other hand, assuming the current nurse-doctor ratio (4.8) will be sufficient enough in 2020, the existing nursing school capacity will produce about 3 thousand nurses more than the expected demand by 2020, implying no shortfall in the training capacity for those personnel.

33 The study in East and Central Java estimates changes in prevalence over time following age-sex specific trends of Years Lived with a Disability (YLD). YLD in Other Asia and Island regions (OAI, not including India, Japan and China) from the 1990 Global Burden of Diseases (Murray 1996) are used. Treatment rates were estimated using the 2004 *Susenas* household data. Friedman and Kosen (2006) apply two scenarios, one where they assume no change in prevalence rates in CDs and NCDs and they assume only demographic and economic changes will drive an increase in demand for health care. In the second scenario they assume the change in prevalence will follow the YLD trends. Summary statistics on service utilization of 2005 show 160 million outpatient visits of which half were for NCDs. The authors estimate 1.6 million inpatient visits of which 62 percent were related to NCDs; NCDs clearly dominate the disease pattern in East and Central Java. The majority of health spending goes to NCDs: 62 percent of total outpatient spending and 73 percent of total inpatient spending (Choi et al, forthcoming).

34 Estimated unit cost is Rp 65 million/physician. This amount is based on phone interviews with the office of the deans from two medical schools in East and Central Java: University of Diponegoro in Semarang and University of Airlangga, Surabaya.

Table 5-2: Current Capacity and Future Demand in Hospital Beds, Physicians and Nurses and Midwives

Service	Current Capacity (2005)	Demand in 2020	Attrition From Current Stock	Addition (New Graduates)	Gap	Investment Cost (billion Rp.)
Hospital beds	37,647					
With prevalence rate change		52,586			14,939	12,211
Without prevalence rate change		64,100			26,453	21,622
Physicians	7,697	27,191	1,155	12,810	7,839	507
Nurses	37,011	130,274	5,552	102,000	-3,185	

Note: * Assumption One: 90% bed occupancy rate for hospital beds and a ratio of 33.75 physicians per 100,000 people, triple the current ratio of 11.25; and nurse-doctor ratio of 4.79, the same as in 2005.
** Assumption Two: 15% of current personnel will leave due to retirement or move out of the provinces.
*** Assumption Three: 70% of newly trained personnel will remain in the province.

The study is interesting in that it shows a substantial increase in the need for health workers in total but also a need for different skills. There are limitations to the study as well. For example, the model used in the study does not include the move towards universal health insurance coverage following implementation of Law No. 40/2004. It is also limited to two provinces which are further along the path towards demographic transition than other provinces and, finally, the study focuses on costs and less on health workforce numbers which is the focus of this paper.

Challenges And Alternative Futures

Chapter 6

6.1 Shortage and Inequitable Distribution of Medical Doctors and Medical Specialists

Indonesia's health workforce has increased over time and the ratios of health workers to population have improved. In 1996 there were 17.3 doctors per 100,000 population while in 2006 there are 18.4 doctors per 100,000 population (PODES). The most recent medical doctor registration data from KKI shows a ratio of 23 doctors per 100,000. While these ratios remain low in international comparisons, there has been improvement over time. The ratio for specialists is extremely low and has not changed much over time. The ratio for midwives has improved significantly over time, from 42 midwives per 100,000 in 1996 to 49 midwives per 100,000 in 2006, an increase of 17 percent. The data on nurses is unreliable. PODES shows a significant decrease over time, while combined school output is about 34,000 new nurses per year.

On the supply-side, Indonesia's doctor numbers are unequally distributed geographically while midwives are equally distributed. While in urban areas in Java/Bali there is one doctor for every 3 thousand people, in rural areas in Java/Bali there is only one doctor for every 22 thousand people. Outside Java/Bali there are more doctors per population, but still only one doctor for every 12 thousand people in rural areas, one for every 15 thousand people in remote areas while there is one doctor for every 2,430 people in urban areas. The distribution of midwives is more favorable in rural and remote areas. In Java/Bali there is a midwife for every 4 thousand people in urban areas and one for every 3,700 people in rural areas. Outside Java/Bali, there is a midwife for every 2,200 people in urban areas, one for every 1,800 people in rural areas and one for every 1,700 people in remote areas. Changes over time have been mainly positive for rural and remote areas.

The majority of health workers are employed as civil servants and work part-time in a private practice. With the exception of medical doctors in Java/Bali, more than 70 percent of doctors, nurses and midwives are civil servants. An estimated 65 percent of publicly employed staff have second jobs (GDS-2 data, Health PER 2008).

6.2 Low Quality of Health Professional Education and Weak System of Accreditation of Schools and Certification of Graduates

The capacity to train health workers has improved in terms of quantity, but there are major quality concerns. There are 52 medical schools in Indonesia, but only a few are considered to produce high quality graduates. Clinical teaching occurs in about 70 hospitals, of which only 37 have the legal status of teaching hospital. There are too few doctors who provide clinical medical training. A recent report on medical education commissioned by Commission X of the DPR identifies a lack of medical training facilities despite very high interest in medical studies, a lack of lecturers and interest in innovation in the medical schools and the very low levels of investment in medical education as key problems underlying the low quality of medical education in Indonesia. It is generally acknowledged that the current education system for health professionals in Indonesia does not support the production of good quality graduates and, as a result, does not always provide quality services.

Nursing and midwifery education needs attention, especially with a view to improving maternal health which is a major challenge in Indonesia. There is a significant involvement by the private sector in this area and a large number of new nursing and midwifery schools have been established during the last decade. Most of these are privately funded, but after decentralization in 2001 more districts also started establishing their own nursing, midwifery and medical schools. Despite the large number of schools, the accreditation system of these schools is weak and there is no competency-based system in place to certify graduates. This means thousands of nurses and midwives of questionable quality are entering the market each year.

It is unclear whether the quality of the workforce has improved over time. Other than improved ratios of skilled personnel per head of population, there have been few changes. Only 22 percent of all medical doctors are specialists. As an indicator of the quality of the health workforce, in 1992 graduating specialists represented some 23 percent of all graduating doctors. Today this ratio is slightly lower at 22 percent with 5,500 new medical doctors (1,200 of whom are specialists) graduating each year. This is due to a lack of space, rather than lack of interest from medical students. In 2003 all medical schools combined received a total of 83,816 applications of which only 8,969 were accepted.

Midwives and nurses obtain their graduate certificates from the schools themselves rather than through independent standardized competence testing. Doctors until recently fell under the same system, but as of 2007, all new graduates need to pass a standardized competency test applied by the KDI.

There is evidence that health workers are providing poor quality services and upcoming work will provide more recent evidence on this topic. The 1997 IFLS analysis of the quality of health workers shows very low levels of quality, especially among private nurses and health workers outside Java/Bali. IFLS does not include Eastern Indonesia where quality may be even lower. The ongoing labor health force study will provide more up to date analysis on quality.

6.3 Inadequate Health Workforce Policies and Planning

The methodology currently being used to plan and budget for health workers is based on the fulfillment of nationally set norms and standards or workload calculation at public facilities. These methods do not adequately reflect demand, nor do they take into account the contribution of private providers who are not included in the system.

Almost half of all people who are ill and seek treatment do so at a private facility or with a private provider. Despite this significant contribution to providing care from the private sector, little is known about where they are and what quality of service they provide and neither factor is taken into account when planning for workforce deployment.

Districts, despite having been given the authority by law to manage the health workforce, are not able to do so. This is due to the salaries of health workers being linked to the block grants (DAU) as well as the lack of civil service reform.

The PTT program and the incentives put in place to entice doctors, nurses and midwives to remote areas have not paid off as expected. Absenteeism among doctors during public working hours remains very high and is linked to the allowance of dual practice. Decentralized management has not increased the number of health workers in underserviced areas.

6.4 Growing and Changing Demand for Health Care

As the population ages more demand for sophisticated health care will come from the elderly. As seen in other countries where these transitions have already taken place, it is estimated that health care costs and demand for more specialists and more nurses will require a doubling in the size of the workforce.

Having more doctors and midwives available does increase overall utilization of health services but public money can be spent more efficiently by emphasizing deployment of publicly-funded doctors and midwives to rural areas. The analysis shows that adding more medical doctors in urban areas benefits primarily the

private sector as they see an increase in utilization of services while the public sector experiences a decline. However, it is well-known that the government continues to recruit and deploy PNS and PTT doctors to already well-serviced areas.

The variations in the number and quality of skilled health workers may explain the variation in health outcomes in Indonesia. The recent Indonesia Demographic Health Survey (IDHS) results show large differences in infant mortality, immunization coverage, fertility rates, and skilled birth attendance and institutional deliveries, all important intermediate outcome indicators, between provinces in Indonesia. Changes over time in these provinces in health outcomes such as infant and child mortality show an equally varied picture, with some provinces improving but others where mortality rates are increasing.[35] More analytical work on determinants is needed to obtain an in-depth understanding of where policy options should be applied.

6.5 Nine Suggested Ways of Taking On These Challenges

- **Provide better information about the dynamics of the health workforce at the national and subnational levels**. A total of 5,500 medical doctors, 34,000 nurses and 10,000 midwives graduate each year. At the same time, the data on the stock of health workers reports small increases per year. It is clear that the current information does not track accurately where the health workers take up jobs; whether this is in the private or public sector, rural or urban areas; who they serve and whether they maintain their skills after graduation. In addition, better information is needed regarding allied and administrative health workers and this need should be given high priority in the future research agenda and Human Resource Information System development. Finally, there is very little information on the salaries and income of health workers; information that is needed for a better understanding of incentive structures.
- **Modernize the planning methods for health workforce production and deployment to reflect real demand**. At the same time as new challenges to the health workforce present themselves, Indonesia applies health workforce planning methods that are not transparent or responsive to actual need.
- **Include the private sector in health workers recruitment and deployment**. Estimating the demand for future health workers needs to integrate an analysis of the demand for services and utilization patterns, from both the public and private sectors. There are large numbers of public facilities, especially in urban areas in Java/Bali, that are overstaffed and where utilization rates declined with increased ratios of doctors. On the other hand, private facilities often resort to the public sector to fulfill their need for doctors. Worker shortages can be improved with better planning which includes the private sector.
- **Limit the recruitment of publicly funded medical doctors in urban areas.** Given the fact that more medical doctors settle in urban areas because of private practice opportunities, it appears logical for the public sector to emphasize the placement of medical doctors in rural underserviced areas to increase the efficient use of public money.
- **Limit the recruitment of public servants to those who have been certified according to national standards.** In order to ensure the efficient use of public resources as well as to motivate health workers to obtain accreditation and certification, the public sector should apply clear criteria of nationally agreed upon accreditation and certification standards in their recruitment policies.
- **Limit the reimbursement of services for patients with health insurance to those services that have been provided by certified health personnel in both the public and private sector**. To ensure the quality of service provision, only those services rendered by qualified, that is certified, health personnel should be reimbursed under any insurance scheme.
- **Modernize health workforce policies based on an evidence-based evaluation of past policies**.

35 For more detailed analysis see the preliminary IDHS report.

Allowing dual practice, the impact of decentralization, the PTT doctor scheme, the practice of contracting doctors on higher remuneration packages in remote areas and so forth are policies that may not have provided the impact foreseen for a variety of reasons. It is worthwhile trying different incentive initiatives to motivate health workers to work in remote areas. Other countries use point systems (Bangladesh) to allocate credits towards a future posting to an appealing location. In the United States, where medical education is very expensive, subsidized medical education is provided on condition of service in remote areas. Of course, getting the provider to the remote area, even with a good salary, does not entice them to provide a quality service (unless altruism is sufficiently strong). Introducing competition was suggested by Hammer and Jack (2001) however, this can be introduced only if the market allows it, which is a question for doctors assigned to rural areas.

- **Modernize and improve the quality assurance–certification, accreditation and licensing–of health workers and health professional education**. The regulatory and oversight system is weak in all aspects. In addition, the growth of private sector involvement in medical and paramedical education warrants strong public sector oversight to ensure quality of service provision.
- **Strengthen not only the clinical competence of nurses and midwives, but also privilege them for providing clinical service in remote areas**. The importance of nurses and midwives for basic care at the community level in rural areas is evident. Studies clearly show that, in those areas, nurses and midwives are taking on many responsibilities beyond their skill level and without legal support. Improving the skills and legalizing the practice will improve the provision of health services in remote and rural areas.

APPENDIX A: Additional Detailed Tables

Attachment 1: Number and Ratio of Doctors (by Province)

Province	Number		Per 100,000 of Population	
	1996	2006	1996	2006
Nanggroe Aceh Darussalam	564	820	14.7	19.8
North Sumatra	2,042	2,761	19.0	24.3
West Sumatra	903	1,013	20.8	22.0
Riau	558	903	14.2	19.3
Jambi	345	537	12.4	19.8
South Sumatra	1,093	1,002	12.4	14.4
Bengkulu	217	311	13.7	19.2
Lampung	486	710	7.5	9.8
Bangka Belitung	-	187	-	18.2
Kepulauan Riau	-	287	-	22.8
DKI Jakarta	3,591	2,893	41.6	38.7
West Java	5,090	5,531	13.5	14.7
Central Java	4,181	5,356	12.5	16.3
D.I. Yogyakarta	1,006	1,307	31.0	38.4
East Java	4,763	6,410	13.5	17.8
Banten	-	1,069	-	12.1
Bali	1,004	1,378	34.8	42.1
West Nusa Tenggara	248	502	9.8	10.5
East Nusa Tenggara	249	494	7.0	11.7
West Kalimantan	350	445	12.4	12.2
Central Kalimantan	219	317	13.6	16.5
South Kalimantan	418	520	14.8	16.1
East Kalimantan	511	711	24.4	24.2
North Sulawesi	770	937	28.8	42.9
Central Sulawesi	325	360	12.0	15.2
South Sulawesi	1,374	1,659	18.0	19.6
Southeast Sulawesi	191	306	12.4	15.3
Gorontalo	-	173	-	19.0
Maluku	269	176	12.9	13.0
North Maluku	-	146	-	16.3
Papua	324	463	10.9	18.8

Source: PODES, authors' calculation.
Note: Figures in this table were obtained from a question in PODES that asked the head of the village about the number of doctors living within the boundaries of the village. Some provinces such as Bangka Belitung, Kepulauan Riau, Banten, Gorontalo and North Maluku have no figures in 1996 as they were established after 2000. Two other new provinces not included in either PODES 1996 or PODES 2006 are West Sulawesi (which was formerly part of South Sulawesi) and West Irian Jaya (Papua). Papua province in 1996 was known as Irian Jaya. The figures in PODES 2006 for Papua do not include West Irian Jaya. Similarly, the figures for Maluku in PODES 1996 included North Maluku, but in PODES 2006, North Maluku had become a new province and its data is listed separately. Figures in PODES 1996 for East Timor have been excluded as it achieved independence in 1999.

Attachment 2: Number and Ratio of Midwives (by Province)

Province	Level		Per 100,000 of Population	
	1996	2006	1996	2006
Nanggroe Aceh Darussalam	1,648	4,475	43.0	108.1
North Sumatra	3,841	7,142	35.8	62.9
West Sumatra	1,520	2,723	35.1	59.1
Riau	471	1,616	12.0	34.6
Jambi	601	1,270	21.7	46.8
South Sumatra	1,669	3,048	19.0	43.9
Bengkulu	516	1,287	32.5	79.4
Lampung	920	2,302	14.2	31.9
Bangka Belitung	-	346	-	33.7
Kepulauan Riau	-	436	-	34.7
DKI Jakarta	188	907	2.2	12.1
West Java	4,846	8,615	12.9	23.0
Central Java	4,999	9,973	14.9	30.4
D.I. Yogyakarta	119	792	3.7	23.2
East Java	5,156	10,294	14.6	28.7
Banten	-	2,018	-	22.8
Bali	427	1,156	14.8	35.3
West Nusa Tenggara	419	1,096	11.7	25.9
East Nusa Tenggara	751	3,077	21.2	71.6
West Kalimantan	452	1,367	12.4	33.6
Central Kalimantan	268	1,125	16.7	58.4
South Kalimantan	812	1,778	28.7	54.9
East Kalimantan	328	1,152	15.7	39.3
North Sulawesi	662	1,273	24.7	58.3
Central Sulawesi	486	1,541	17.9	65.0
South Sulawesi	1,100	3,242	14.4	38.3
Southeast Sulawesi	375	1,431	24.3	71.8
Gorontalo	-	374	-	41.0
Maluku	486	1,009	23.2	74.7
North Maluku	-	712	-	79.6
Papua	347	2,084	11.7	84.5

Source: PODES, authors' calculation.
Note: Figures in this table were obtained from a question in PODES that asked the head of the village about the number of midwives living within the boundaries of the village. Some provinces such as Bangka Belitung, Kepulauan Riau, Banten, Gorontalo and North Maluku have no figures in 1996 as they were established after 2000. Two other new provinces not included in either PODES 1996 or 2006 are West Sulawesi (which was formerly part of South Sulawesi) and West Irian Jaya (Papua). The figures in PODES 1996 for Papua do not include West Irian Jaya. Similarly, the figures for Maluku in PODES 1996 included North Maluku, but in PODES 2006, North Maluku had become a new province and its data is listed separately. Figures in PODES 1996 for East Timor have been excluded as it achieved independence in 1999.

Attachment 3: Number and Ratio of Private Health Workers (2006)

Province	Doctors		Midwives		Nurses	
	Level	Per 100,000 of Pop.	Level	Per 100,000 of Pop.	Level	Per 100,000 of Pop.
Nanggroe Aceh Darussalam	451	19	3,743	159	2,400	102
North Sumatra	4,130	324	8,201	644	3,660	287
West Sumatra	481	21	2,260	100	2,144	95
Riau	818	59	1,518	109	3,109	224
Jambi	520	54	1,451	150	1,801	186
South Sumatra	239	17	2,120	147	4,190	290
Bengkulu	221	32	1,686	247	1,074	157
Lampung	592	31	1,964	103	1,657	87
Bangka Belitung	304	341	412	462	-	-
Kepulauan Riau	105	73	291	203	960	669
West Java	3,164	29	5,540	50	6,177	56
Central Java	8,426	71	10,870	91	15,230	128
D.I. Yogyakarta	407	22	707	38	805	43
East Java	2,751	16	8,850	50	11,035	63
Banten	361	14	803	32	874	35
Bali	181	17	620	57	1,049	97
West Kalimantan	265	14	928	49	1,595	85
West Nusa Tenggara	327	13	1,940	78	2,207	89
East Nusa Tenggara	308	25	1,158	94	1,341	109
Central Kalimantan	365	45	1,335	166	1,362	169
South Kalimantan	740	90	1,790	219	1,568	192
East Kalimantan	1,255	91	1,737	126	2,252	163
North Sulawesi	199	19	750	71	1,203	114
Central Sulawesi	234	21	1,326	117	1,670	148
South Sulawesi	3,428	133	2,215	86	4,373	170
Gorontalo	193	171	365	324	910	807
Maluku	237	23	929	89	1,930	185
North Maluku	117	27	458	107	829	193
Papua	422	107	1,007	256	1,652	419

Source: GDS-2, Head of *Kabupaten* health *dinas* book, secondary documents, authors' calculation.
Note: Figures in this table were obtained using secondary documents from the district health *dinas*. GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 4: Average Daily Number of Patients Visiting Private Health Providers (2006)

Province	Doctors	Midwives	Nurses
Nanggroe Aceh Darussalam	24.2	15.6	26.9
North Sumatra	6.8	5.2	7.9
West Sumatra	7.8	10.3	7.9
Riau	11.8	8.7	6.1
Jambi	7.4	6.6	5.0
South Sumatra	12.1	6.5	4.7
Bengkulu	13.1	6.0	3.8
Lampung	14.7	8.3	5.9
Bangka Belitung	9.3	11.7	5.3
Kepulauan Riau	8.3	18.0	7.5
West Java	22.6	11.8	13.0
Central Java	23.4	10.3	8.8
D.I. Yogyakarta	26.9	14.4	4.5
East Java	16.6	11.1	10.7
Banten	26.8	18.2	7.9
Bali	18.4	9.5	6.6
West Kalimantan	13.0	7.7	11.0
West Nusa Tenggara	11.3	6.0	7.6
East Nusa Tenggara	9.4	5.6	6.5
Central Kalimantan	4.6	5.0	3.5
South Kalimantan	8.2	4.6	7.0
East Kalimantan	17.0	8.5	5.6
North Sulawesi	13.6	5.9	6.7
Central Sulawesi	12.7	2.8	4.4
South Sulawesi	10.7	5.0	5.2
Gorontalo	21.3	4.2	4.7
Maluku	15.8	6.0	5.7
North Maluku	6.1	3.3	3.4
Papua	16.0	10.5	9.7

Source: Authors' calculation from GDS-2, Private health providers' questionnaire.

Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 5: Qualifications of Head of *Puskesmas*

Province	Proportion With Higher Education	Years in The Health Sector	Years in Their Current Position
Nanggroe Aceh Darussalam	74	11.4	3.3
North Sumatra	71	14.9	2.3
West Sumatra	83	12.7	2.7
Riau	88	12.2	2.1
Jambi	79	10.9	4.4
South Sumatra	92	14.7	3.0
Bengkulu	83	12.6	2.6
Lampung	78	9.8	2.2
Bangka Belitung	100	9.0	4.0
Kepulauan Riau	100	10.2	1.2
West Java	77	16.5	2.7
Central Java	97	14.6	5.1
D.I. Yogyakarta	100	15.6	2.1
East Java	91	16.5	5.8
Banten	75	19.5	4.1
Bali	100	13.3	5.0
West Kalimantan	96	17.4	3.0
West Nusa Tenggara	59	11.3	2.5
East Nusa Tenggara	36	13.3	3.5
Central Kalimantan	73	14.0	5.3
South Kalimantan	83	8.7	4.0
East Kalimantan	63	18.7	4.5
North Sulawesi	89	13.1	4.4
Central Sulawesi	83	11.4	4.8
South Sulawesi	85	15.0	4.8
Gorontalo	83	9.5	2.5
Maluku	57	17.0	4.8
North Maluku	89	10.1	1.6
Papua	80	12.2	3.0

Source: Authors' calculation from GDS-2, *Puskesmas* questionnaire.
Note: Higher education means holding a Diploma III/undergraduate degree (or higher). GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 6: Average *Puskesmas* General Coverage (by Province)

Province	Density (Population per Square Km)	Area (Square Km)	Number of Households	Number of Villages
Nanggroe Aceh Darussalam	442	1,464	5,391	31
North Sumatra	408	590	8,449	18
West Sumatra	1,455	752	4,933	7
Riau	1,216	618	6,138	10
Jambi	224	1,099	5,929	12
South Sumatra	2,241	1,793	6,339	5
Bengkulu	508	755	3,372	10
Lampung	730	672	6,875	10
Bangka Belitung	118	256	4,864	6
Kepulauan Riau	467	115	8,392	5
West Java	601	1,938	12,359	6
Central Java	1,222	1,567	10,604	10
D.I. Yogyakarta	2,813	1,719	6,497	3
East Java	1,449	1,358	13,590	10
Banten	8,261	814	9,186	6
Bali	1,277	2,569	10,385	7
West Kalimantan	27	2,129	4,592	9
West Nusa Tenggara	961	1,551	9,293	7
East Nusa Tenggara	357	1,279	5,352	12
Central Kalimantan	79	977	3,276	9
South Kalimantan	237	759	3,910	13
East Kalimantan	126	774	4,536	7
North Sulawesi	416	1,840	5,970	9
Central Sulawesi	112	890	6,773	10
South Sulawesi	354	1,518	5,012	8
Gorontalo	26	3,128	3,993	10
Maluku	603	1,781	3,916	8
North Maluku	148	1,036	2,999	17
Papua	288	1,347	3,965	15

Source: Authors' calculation from GDS-2, *Puskesmas* secondary document questionnaire.
Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 7: Average *Askeskin* Coverage per *Puskesmas* (by Province)

Province	Households with *Askeskin*	
	Number	Proportion to Total Households (%)
Nanggroe Aceh Darussalam	2,143	43
North Sumatra	2,420	31
West Sumatra	773	15
Riau	2,206	31
Jambi	1,590	17
South Sumatra	2,784	41
Bengkulu	2,444	58
Lampung	4,739	60
Bangka Belitung	1,866	34
Kepulauan Riau	3,811	47
West Java	3,449	38
Central Java	5,780	55
D.I. Yogyakarta	2,398	38
East Java	4,387	40
Banten	1,531	23
Bali	1,296	18
West Nusa Tenggara	4,122	38
East Nusa Tenggara	3,907	40
West Kalimantan	2,337	42
Central Kalimantan	1,135	36
South Kalimantan	653	22
East Kalimantan	533	18
North Sulawesi	1,106	14
Central Sulawesi	1,728	38
South Sulawesi	1,636	34
Gorontalo	-	-
Maluku	1,972	60
North Maluku	313	20
Papua	2,598	81

Source: Authors' calculation from GDS-2, *Puskesmas* secondary document questionnaire.
Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 8: Average Number of Villages Served by an Associated Health Facility/Worker Coordinated by *Puskesmas*

Province	Sub-*Puskesmas* (*Pustu*)	Village Midwife (*Bides*)	Mobile *Puskesmas*	*Posyandu*[36]
Nanggroe Aceh Darussalam	11.3	2.1	29.8	1.3
North Sumatra	4.1	4.3	13.6	0.5
West Sumatra	1.9	1.7	7.7	0.4
Riau	2.6	2.4	8.5	0.3
Jambi	2.2	2	10.1	0.4
South Sumatra	2.4	0.8	5	0.3
Bengkulu	2.8	1.6	9.5	0.7
Lampung	2.7	2.4	7.9	0.3
Bangka Belitung	1.8	0.8	5.7	0.2
Kepulauan Riau	2.2	1.7	4.3	0.1
West Java	4.2	1.4	5.3	0.1
Central Java	4.7	1.3	7	0.1
D.I. Yogyakarta	1.9	2	2.3	0.1
East Java	4.4	1.7	9	0.2
Banten	5.9	1.5	3.9	0.1
Bali	3.6	2.7	6	0.1
West Kalimantan	2.2	2.8	6.3	0.4
West Nusa Tenggara	1.8	1.9	7.3	0.2
East Nusa Tenggara	3.9	2.4	11.1	0.4
Central Kalimantan	2.1	2.1	6.5	0.6
South Kalimantan	4.1	1.7	11.1	0.7
East Kalimantan	2	1.8	7.9	0.4
North Sulawesi	3	1.3	6.8	0.6
Central Sulawesi	3.2	1.3	9.3	1
South Sulawesi	2.5	2.1	8.6	0.3
Gorontalo	3.3	2.6	10.2	0.6
Maluku	2.4	2.5	7	0.5
North Maluku	5.5	3	17.2	0.7
Papua	4.1	2.1	7.3	1.2

Source: Authors' calculation from GDS-2, *Puskesmas* secondary document questionnaire.
Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

36 *Posyandu (Pos Pelayanan Terpadu)*: Integrated Community Health Care Centers. Health services provided by *posyandu* include nutrition, immunization services, health services for mothers and children, and family planning services.

Attachment 9: Average Number of Health Cases in *Puskesmas* Area of Coverage[37]

Province	Tuberculosis		Malaria		Malnutrition	
	No. of Cases	Per 100k of Pop	No. of Cases	Per 100k of Pop.	No. of Cases	Per 100k of Pop
Nanggroe Aceh Darussalam	3,224	23.63	3,991	29.25	65	0.48
North Sumatra	3,848	28.13	18,252	133.44	13	0.10
West Sumatra	2,990	27.34	286	2.62	0	0.00
Riau	1,469	13.43	5,122	46.84	0	0.00
Jambi	2,314	28.43	8,489	104.30	455	5.59
South Sumatra	429	8.49	130	2.57	0	0.00
Bengkulu	663	14.26	4,290	92.27	169	3.63
Lampung	1,001	11.34	793	8.98	0	0.00
Bangka Belitung	91	7.82	1,131	97.13	0	0.00
Kepulauan Riau	1,118	75.89	286	19.41	0	0.00
West Java	5,200	22.59	39	0.17	0	0.00
Central Java	5,109	13.83	468	1.27	104	0.28
D.I. Yogyakarta	884	17.79	4,680	94.20	0	0.00
East Java	11,908	23.70	2,691	5.36	1,365	2.72
Banten	1,417	19.99	0	0.00	0	0.00
Bali	806	9.40	0	0.00	0	0.00
West Kalimantan	1,560	16.60	15,197	161.69	910	9.68
West Nusa Tenggara	13,897	89.73	156,130	1,008.05	14,560	94.01
East Nusa Tenggara	2,184	39.42	5,213	94.10	1,274	23.00
Central Kalimantan	1,209	19.14	8,320	131.71	325	5.14
South Kalimantan	1,443	32.12	91	2.03	13	0.29
East Kalimantan	1,872	39.90	2,249	47.93	0	0.00
North Sulawesi	2,613	48.12	5,057	93.12	0	0.00
Central Sulawesi	1,014	20.04	6,266	123.83	65	1.28
South Sulawesi	2,652	19.89	5,382	40.37	13	0.10
Gorontalo	78	7.26	923	85.85	0	0.00
Maluku	3,926	68.10	15,782	273.75	351	6.09
North Maluku	975	25.74	6,734	177.79	13	0.34
Papua	936	36.60	27,859	1,089.30	247	9.66

Source: GDS-2

Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

37 The data in this table was obtained from secondary data provided by *Puskesmas*. A zero value means that no cases were noted in the *Puskesmas* documents. In other instances few cases of tuberculosis, malaria and malnutrition are recorded, suggesting widespread underreporting of the incidence of the conditions presented.

Attachment 10: Proportion of Services Where Particular Health Services Required Were Unavailable at *Puskesmas* Level

Province	Birth Delivery	Outpatient Tuberculosis	Inpatient Tuberculosis
Nanggroe Aceh Darussalam	35	4	89
North Sumatra	21	8	92
West Sumatra	31	0	92
Riau	8	0	75
Jambi	13	4	71
South Sumatra	67	17	100
Bengkulu	13	8	100
Lampung	39	6	89
Bangka Belitung	20	0	80
Kepulauan Riau	50	0	100
West Java	29	0	92
Central Java	26	0	90
D.I. Yogyakarta	28	6	94
East Java	24	0	63
Banten	50	0	100
Bali	33	17	100
West Kalimantan	9	0	70
West Nusa Tenggara	4	4	71
East Nusa Tenggara	2	16	84
Central Kalimantan	17	13	93
South Kalimantan	4	4	92
East Kalimantan	13	0	88
North Sulawesi	11	0	89
Central Sulawesi	9	9	78
South Sulawesi	6	4	81
Gorontalo	0	0	83
Maluku	13	6	77
North Maluku	16	11	68
Papua	40	20	80

Source: GDS-2, *Puskesmas* secondary documents questionnaire.

Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 11: Perception of Health *Dinas* on Sufficiency of Health Workforce in Their *Kabupaten/Kota*

Province	Number is Sufficient (%)		
	Doctors	Midwives	Nurses
Nanggroe Aceh Darussalam	78	33	44
North Sumatra	75	50	25
West Sumatra	50	33	67
Riau	25	50	50
Jambi	50	0	25
South Sumatra	50	50	50
Bengkulu	50	100	50
Lampung	67	0	33
Bangka Belitung	100	100	100
Kepulauan Riau	100	100	100
West Java	50	50	25
Central Java	50	50	58
D.I. Yogyakarta	67	100	100
East Java	40	47	40
Banten	50	50	0
Bali	50	0	100
West Kalimantan	25	50	75
West Nusa Tenggara	22	11	11
East Nusa Tenggara	50	0	50
Central Kalimantan	80	40	40
South Kalimantan	50	0	50
East Kalimantan	50	0	50
North Sulawesi	67	33	100
Central Sulawesi	40	20	40
South Sulawesi	13	0	0
Gorontalo	0	0	0
Maluku	20	40	40
North Maluku	0	0	0
Papua	0	0	0

Source: Calculated by authors from GDS-2 health *dinas* questionnaire.

Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 12: Private Health Providers Also Operating Public Health Practices (%)

Province	Doctors	Midwives	Nurses
Nanggroe Aceh Darussalam	61	81	60
North Sumatra	75	50	25
West Sumatra	81	83	67
Riau	58	74	68
Jambi	71	50	67
South Sumatra	33	83	67
Bengkulu	75	79	79
Lampung	78	78	100
Bangka Belitung	83	50	67
Kepulauan Riau	83	33	50
West Java	44	60	54
Central Java	47	64	59
D.I. Yogyakarta	56	78	88
East Java	46	61	68
Banten	33	33	58
Bali	17	58	50
West Kalimantan	58	75	75
West Nusa Tenggara	66	50	61
East Nusa Tenggara	77	61	71
Central Kalimantan	71	66	76
South Kalimantan	74	74	88
East Kalimantan	65	71	68
North Sulawesi	50	89	72
Central Sulawesi	82	92	90
South Sulawesi	73	77	79
Gorontalo	67	83	67
Maluku	72	78	69
North Maluku	69	67	78
Papua	100	75	67

Source: Calculated by authors from GDS-2 private health providers' questionnaire.
Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 13: Proportion of Hours Spent by Doctors On, and Income Generated From, Operating in Public Health Facilities

Province	Staff with Dual Practice (%)	Hours in Public Practice (%)	Income from Public Practice (%)
Nanggroe Aceh Darussalam	52	86	54
North Sumatra	33	88	64
West Sumatra	69	76	61
Riau	83	70	54
Jambi	100	74	46
South Sumatra	58	79	65
Bengkulu	63	83	61
Lampung	89	67	46
Bangka Belitung	80	64	27
Kepulauan Riau	100	72	28
West Java	67	79	60
Central Java	79	75	51
D.I. Yogyakarta	61	74	62
East Java	74	78	56
Banten	58	80	57
Bali	83	79	55
West Kalimantan	75	74	54
West Nusa Tenggara	29	89	74
East Nusa Tenggara	64	77	55
Central Kalimantan	90	73	52
South Kalimantan	75	79	64
East Kalimantan	42	86	72
North Sulawesi	67	78	53
Central Sulawesi	39	93	44
South Sulawesi	50	86	68
Gorontalo	100	69	40
Maluku	57	85	70
North Maluku	42	86	70
Papua	33	95	88

Source: Calculated by authors from GDS-2 Head of *Puskesmas* questionnaire.
Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

Attachment 14: Number of Midwives per 1,000 Births (1996 and 2006)

Province	1996	2006	% Change
DI Aceh/Nanggroe Aceh Darussalam	26	41	60
North Sumatra	25	23	-9
West Sumatra	30	24	-20
Riau	11	13	20
Jambi	17	19	9
South Sumatra	19	18	-8
Bengkulu	23	30	26
Lampung	8	13	56
Bangka Belitung Islands	-	12	-
Riau Islands	-	11	-
DKI Jakarta	6	5	-18
West Java	9	9	5
Central Java	12	15	28
DI Yogyakarta	12	16	43
East Java	15	16	5
Banten	-	8	-
Bali	20	18	-11
West Nusa Tenggara	9	10	13
East Nusa Tenggara	16	27	73
West Kalimantan	9	13	46
Central Kalimantan	12	21	72
South Kalimantan	18	23	30
East Kalimantan	14	15	6
North Sulawesi	25	28	12
Central Sulawesi	18	26	46
South Sulawesi	15	19	24
Southeast Sulawesi	23	27	18
Gorontalo	-	16	-
Maluku	17	30	83
North Maluku	15	31	109
Papua	-	40	-

Source: *Indonesia Health Profile* (1996 and 2006), PODES (1996 and 2006), calculated by authors.
Note: GDS-2 sample does not include four provinces: DKI Jakarta, Southeast Sulawesi, West Papua, and West Sulawesi.

APPENDIX B: Health Labor Force Study Outline

HRH Issues and the Indonesian Health System
Outline of Policy Research with the IFLS

John Giles (DECRG)[38]
April 20, 2008

In order to understand how human resources policies are affecting both the utilization and availability of quality health care services in Indonesia, we plan to exploit panel data from the four rounds of the Indonesia Family Life Survey (IFLS), and supplement these data and our primary analyses with information from other existing data sources. Using the IFLS allows us to match information on health service providers to individuals, households and communities, and this facilitates an analysis of how the emerging private sector for health care provision affects access to care and quality of care received. Furthermore, the third round of the IFLS anticipated Indonesia's decentralization process, and thus asked baseline questions in 2000 related to decision-making authority which were also asked again in IFLS4 during the 2007/8 survey. These questions can be employed to study how decentralization has affected important dimensions of both health facility staffing and the quality of health care.

Below we first provide summaries of proposed policy research work that we will complete in draft form by December 31, 2008 and in a final report by June 30, 2009. These summaries are followed by policy-relevant questions to be answered together with the methodological approaches and specific hypotheses. After summarizing the work that will be completed, we also include a section discussing the history of the IFLS, the management and organization of the survey, and where AusAID funding fits into the larger IFLS effort.

1 Dual Practice, the Private Sector and Access to Care

1.1 Summary

Dual practice and private sector opportunities for physicians, midwives and other health workers create opportunities that may have positive or negative effects on access to care. On the positive side, dual practice and private sector opportunities may lead to an increased supply of health service providers. On the negative side, the poor may have less access to care, or households with less ability to cover the fees of private doctors may have no alternative but to seek care from less qualified health care providers.

1.2 Key Policy Questions

The effects of dual practice and private practice opportunities will be assessed by using available data sources to come up with analytical answers to the following policy questions:

- Utilization Patterns: How does the existence of the private sector for health care provision affect the probability that an individual will visit a medical facility or health worker when ill? How does existence of the private sector affect the likelihood that a patient will visit a *Puskesmas*, and how does this likelihood vary with both wealth and access to an *Askeskin* insurance card?
- Quality of Care: Does the increase in private sector health care provision affect the quality of care or type of provider that a patient visiting a *Puskesmas* will receive?
- Health Worker Labor Supply: Do *Puskesmas* health workers spend less time in their public jobs or see fewer patients in public facilities when there are more opportunities to earn income from private provision of services?

38 DERG: Development Economics Research Group of The World Bank.

1.3 Hypotheses and Methodological Approaches

1.31 Utilization Patterns

Consider first both the decision to seek medical care when ill and the choice between the public and private sectors. The decisions about whether to seek care ($Care_i = 1$) or not ($Care_i = 0$)and whether to use a public sector health facility ($Pub_i = 1$) or not ($Pub_i = 0$) can be modeled as binary decisions, as in (a) and (b) below, that are a function of the supply and characteristics of private and public health workers, $\mathbf{med}_{priv}$ and $\mathbf{med}_{pub}$, respectively, and characteristics of the village or local community, $\mathbf{vill}$.

(a) $$f(Care_i = 1?) = f(\mathbf{med}_{priv}, \mathbf{med}_{pub}, \mathbf{vill}, inc^h, \mathbf{X}^h, x_i, illtype_i, h_i, ask_i, u_i)$$

and

(b) $$f(Pub_i = 1?) = f(\mathbf{med}_{priv}, \mathbf{med}_{pub}, \mathbf{vill}, inc^h, \mathbf{X}^h, x_i, illtype_i, ask_i, u_i)$$

In addition, these choices are likely to be affected by household income, inc^h, a vector of household characteristics, $\mathbf{X}^h$, that proxy for household wealth and other controls, such as household size and demographic structure, as well as a vector of individual characteristics, x_i, that control for individual specific characteristics affecting demand for care. The type or seriousness of the illness, $illtype_i$, individual health status, h_i, and whether the household has an *Askeskin* card, ask_i, or other insurance card may also affect whether, and from whom, an individual seeks care.

Examination of the coefficients on these two models and some straightforward extensions allow us to test the following specific hypotheses:

- *How is demand for care and choice of a public sector facility affected by growth of private sector opportunities*? The sign and magnitude of the coefficients on the supply of private sector health workers, $\mathbf{med}_{priv}$, provide an indication of how private sector practices affect health care utilization, in (a), and use of public facilities in (b). One may also examine coefficients on $\Delta\mathbf{med}_{priv}$ and $\Delta\mathbf{med}_{pub}$ to understand how recent changes in the scale of private and public practice within communities have affected utilization.[39] Since it is of particular interest to know how growth of the private sector affects the poor and non-poor, it would be of interest to characterize household income in ways that facilitate looking at this question. Instead of the income measure, one might use a dummy variable indicating whether a household is poor or not, and then interact this dummy variable with supply of private sector health workers. If the coefficient on $poor_i * \mathbf{med}_{priv}$ is negative in the utilization equations, then this would indicate a negative effect of the expansion of private sector provision on the utilization of all health services by the poor. Alternatively, a negative coefficient on the $poor_i * \mathbf{med}_{priv}$ interaction in the choice equation would indicate that the poor are also less likely to use public health facilities with expansion of the private sector, whereas a positive coefficient would suggest that the poor are more likely to use public sector facilities as the scale of the private sector increases.

39 This may be accomplished by merging information from the PODES (village survey) into IFLS enumeration areas (which use the same codes as PODES and *Susenas*). The effect of recent changes may be examined in cross-sectional analyses, while panel data models implemented in first-differences can be employed to examine the effects of change over a longer period of time.

- *How is demand for care and the choice of a public sector facility affected by access to Askeskin insurance?* We expect access to *Askeskin* insurance ($ask_i = 1$) to be associated with increased utilization of health services, and greater use of public services if private providers accredited to take patients with *Askeskin* coverage choose not to because of difficulty obtaining reimbursement. We may understand how policy supporting coverage of the poor, through the *Askeskin* program, affects utilization and provider choice by examining coefficients on the interaction terms $ask_i * \mathbf{med}_{priv}$ and $poor_i * \mathbf{med}_{pub}$. The existence of the private sector may have positive effects on health care utilization as *Askeskin* insurance is introduced even if the card holders are using public providers. This might occur if private practices are leading to increases in the overall supply of medical care providers and if insurance facilitates sorting between sectors. We may observe a positive coefficient on $ask_i * \mathbf{med}_{priv}$ if *Askeskin* card holders are unable to make use of private providers but the growing private market absorbs more of the affluent health care consumers. If the poor are sorting into the public sector, we may also be concerned that they are sorting into poorer quality service as well.

1.32 Selection Issues in the Identification of *Askeskin Effects*

In the analysis we outline above, we must still worry about selective take up of *Askeskin* insurance. Knowledge of one's health status, or other dimensions of ability that are correlated with use of health care should lead us to be concerned that our model outlined above suffers from selection bias. Exploiting features of the rules by which one obtains *Askeskin* coverage, information on the roll out of access to insurance, and community level measures of coverage, will help us to reduce these sources of bias. The IFLS data are particularly useful for this purpose because there are explicit questions asked at the community level about the availability and roll out of the *Askeskin* insurance program.

1.33 Quality and Characteristics of Care Provision

Apart from the choice between private and public health providers, we will also examine how growth of the market for private care influences the type of provider used by the poor and nonpoor, and the quality of the service provided. If public salaried doctors are spending significant amounts of time outside the *Puskesmas*, for example, one might expect that individuals using public health facilities are more likely to be treated by nurses or midwives. As with the public-private outcome above, one might analyze the decision across types of health providers as:

(c3) $$f(HWType_i ?) = f(\mathbf{med}_{priv}, \mathbf{med}_{pub}, \mathbf{vill}, inc^h, \mathbf{X}^h, x_i, h_i, illtype_i, ask_i, u_i)$$

Or across quality of providers:

(d) $$f(QI_i) = f(\mathbf{med}_{priv}, \mathbf{med}_{pub}, \mathbf{vill}, inc^h, \mathbf{X}^h, x_i, h_i, illtype_i, ask_i, u_i)$$

In this specification, $HWType_i$ refers to the type of health worker an individual visits when ill, and may be analyzed using multinomial logit models, in which doctors, nurses and midwives are treated as distinct categories. Again, by examining coefficients on variables picking up the scale of private sector provision, $\mathbf{med}_{priv}$, and the effect of changes in private sector provision, $\Delta\mathbf{med}_{priv}$, we may determine the impact of private sector expansion within the local community on the probability that the respondent visits a doctor, nurse or midwife. We will also examine how household income or poverty status affects the type of health worker visited, with attention to interactions between household poverty and private sector growth to

document the way that this dimension of quality differs between poor and nonpoor households as private sector health provision expands.

Apart from using health worker type as a proxy for quality of care, health worker vignettes from the IFLS can be used to construct indices of care provider quality, QI_i, that are distinct from formal status as doctor, nurse or midwife. These direct quality measures may be employed as outcome variables, as in (d) above, to examine how dual practice affects the quality of care received, and to distinguish differences between the poor and nonpoor and how the *Askeskin* program affects access to quality care.

While the distinct benefit of using the IFLS data lies in our ability to exploit the panel nature of the data to improve statistical identification when examining effects of policy changes, we will complement IFLS-based analyses with analyses using the Governance and Decentralization Survey (GDS-2). The GDS-2 survey allows us to examine other features of service delivery. For example, side payments and other forms of corruption to guarantee access to care may also be affected by emergence of the private sector. Growth of the private sector could plausibly have positive or negative effects on use of side payments to gain access to care at public health facilities.

1.34 Health Worker Labor Supply

We will also analyze the impact of private sector opportunities on provision of care through use of performance measures recorded at the *Puskesmas*. We will focus attention on particular outcomes, such as hours worked and number of patient consultations at the *Puskesmas* by doctors, midwives and nurses. For these outcomes, we analyze, $outcome_{ij}$, for health provider *i* in *Puskesmas j* as in (e) below.

(e) $$outcome_{ij} = \beta \mathbf{med}_j^{priv} + \mathbf{Z}_j\alpha' + \mathbf{X}_i\gamma' + \varepsilon_j$$

Outcomes related to labor supply might be actual labor hours supplied during the reference week, share of working hours present during the week, or number of patient consultations during the week. We will allow these outcomes to be a function of the scale and growth of the private sector in the area of the *Puskesmas*, characteristics of the village or neighborhood served by the *Puskesmas*, and characteristics of the health provider. One may estimate models separately for doctors, nurses and midwives and then examine whether there are differences across health workers in the coefficient, β, on a measure of private sector scale, $\mathbf{med}_j^{priv}$. If doctors are spending more time in their private sector practices, for example, β will be negative in the model estimated for doctors, but will be positive for nurses and midwives if they are substituting for doctors at the *Puskesmas*. These models will be estimated using both the IFLS data, which allows for comparisons over time, and the GDS data in a purely cross-sectional analysis.

2 Health Workforce Quality: The Effects of Geography and Decentralization of Governance

2.1 Summary

In common with many developing countries, Indonesia faces difficulty finding health workers to staff facilities in remote areas. As a result, consultations for medical problems are often handled by nurses and midwives, rather than doctors. In order to understand how well nurses and midwives substitute for doctors, particularly in more remote regions, the IFLS includes a battery of vignettes which aim to assess the practical knowledge of front-line care providers. Apart from geography which determines remoteness, institutional changes may have affected the ability of communities to staff health centers. Decentralization of decision-making power within Indonesia's health system has potentially given more autonomy to localities in setting priorities for

staffing and in raising resources to provide relocation and performance incentives. For this reason, we will also examine the effects of decentralization on the characteristics of the health workforce.

2.2 Key Policy Questions

2.21 Substitutability of Doctors, Nurses and Midwives

In order to understand how well medical professionals with different levels of training substitute for one another as front-line care providers, it is necessary to obtain unbiased measures of their knowledge. Das and Hammer (2005) provide a useful discussion of how one may combine vignettes and item response theory to develop an index of health care provider quality. Armed with such a measure, we would address the following questions:

- What is the average quality of doctors, nurses and midwives in remote and nonremote areas? How does quality differ between doctors, nurses and midwives in remote regions relative to nonremote regions and across public and private practices within regions? What changes in quantity and relative quality do we observe since the IFLS last implemented vignettes in 1997?
- What observable factors contribute to quality and how do they differ across health worker types? What are the contributions of experience, credentials, and additional training for doctors, nurses and midwives respectively?

Das, Hammer and Leonard (2008) raise an additional concern that is worth considering. Vignettes measure knowledge, but they may not pick up effort. A more qualified and knowledgable doctor may not actually exert much effort in actual consultations, and thus Das et al recommend combining vignettes with observations of health workers to examine effort as well as knowledge. One may address the following additional questions:

- What is the relationship between skill and effort of health workers?
- Does additional experience within a community contribute to more or less effort? And does this vary with health worker background, training and credential?

2.22 Decentralization of Governance and the Distribution of Health Sector Workers.

Earlier research in Indonesia and elsewhere has demonstrated that the salary premium which must be paid to doctors to work in remote areas can be prohibitively high. While it is likely that access to health care in remote areas continues to be a problem, we can exploit rounds 3 and 4 of the IFLS to examine how the decentralization process affected staffing of both public and private health facilities, and its affect on the quality of care. Specifically, module DM of IFLS3 and IFLS4 ask questions of the *Puskesmas* director about the locus of control for specific decisions made by the *Puskesmas*. Questions are asked about whether decisions over services, staffing and fees (among others) are made by the central health ministry, district health ministry, district planning office, or the *Puskesmas* itself.

3 The IFLS and Other Data Sources

3.1 Data Sources

The primary data source that we will use for analyses will be the IFLS. For some questions we will merge information from the PODES survey. Moreover, we will supplement analyses using nationally representative surveys (the *Susenas* and GDS-2) to examine trends over time (*Susenas*) and additional correlates with decentralization in the GDS-2 cross-section for 2006.

- The *IFLS* collected in 1993, 1997, 2000, and 2007/8, includes facility surveys with information on staff

in both public and private facilities. Moreover, provider data is matched to individual patients (and potential patients) within enumeration areas. Since the survey follows the same households and villages over time, however, it can provide a useful opportunity to examine changes that have occurred with the growth of dual practice and the private sector. While the *Susenas* is a household survey with some questions about illness and health care utilization, the types of self reports utilized suffer from notorious sources of bias. The IFLS 2007 data include vignettes that can be used to construct measures of the quality of the practical treatment-oriented knowledge possessed by health care providers. Quality measures constructed from vignettes are independent of their formal titles. Additional information on the IFLS, its history and funding sources for IFLS4 is available in Section 5 below.

- *Susenas*, contains a special health module every four years which includes health status questions and information on health utilization, as well as information on access to *Askeskin* insurance. The *Susenas* survey rounds can be merged with the village infrastructure survey, PODES, which contains questions about health providers in the village. From PODES, one can determine the number of public and private health providers (doctors, nurses and midwives) living in the village, and these can be used to construct a proxy variable for size of the local private sector.[40]
- The World Bank's *Governance and Decentralization Survey (GDS)* includes matched datasets for the *Puskesmas*, private physicians, districts and households. Moreover, included villages can also be matched to the PODES data source. These GDS data provide an alternative data source for estimation of models (a) and (c) with one notable weakness: households are asked questions about health facility utilization but not health status. In order to avoid omitted variable bias, one may exploit the GDS-2 by focusing on recent health care utilization of women and infants in households with infants aged 0 to 1. Recent maternity and birth are health conditions which warrant visits to a health care professional, and one might reasonably argue that estimating utilization does not require separate controls for health status.

For labor supply questions, the GDS data have information about labor supply of doctors, nurses and midwives in the *Puskesmas*. In addition, questions regarding use of side payments and other forms of corruption in the household GDS-2 data can be useful for examining this dimension of care provision.

4 Additional Background on the IFLS

The IFLS is a public-use data set that is managed by the RAND Corporation, which is a nonprofit research institute based in Santa Monica, California. Detailed information on the IFLS, and instructions for access to survey instruments and data can be found at the IFLS Web site (http://rand.org/labor/FLS/IFLS/). Rounds three and four of the survey, conducted in 2000 and 2007/8, respectively, have been conducted in collaboration with Survey Meter and the University of Gadjah Mada in Yogyakarta. The US-based principal investigator for the 2000 and 2008 rounds is John Strauss, who is a Professor of Economics at the University of Southern California (http://college.usc.edu/faculty/faculty1003738.html). Below we first provide summary information on the overall IFLS (locations and sample size) based on information from the IFLS Web site, and then we provide summary information on the health facilities and health provider data that are matched to household and individual data. A third section then details survey protocols used for collection of the data.

- **Introduction to IFLS (Web site - http://rand.org/labor/FLS/IFLS/study.html)**

By the middle of the 1990s, Indonesia had enjoyed over three decades of remarkable social, economic, and demographic change and was on the cusp of joining the middle-income group of countries. Per capita income had risen more than fifteenfold since the early 1960s, from around US$ 50 to more than US$ 800.

40 It should be cautioned that measures of self-reported health status, such as those found in the *Susenas*, are problematic as indicators for behavioral studies because they are typically confounded with unobserved socioeconomic characteristics and unobserved prior health care utilization.

Increases in educational attainment and decreases in fertility and infant mortality over the same period reflected impressive investments in infrastructure.

In the late 1990s the economic outlook began to change as Indonesia was gripped by the economic crisis that affected much of Asia. In 1998 the rupiah collapsed, the economy went into a tailspin, and gross domestic product contracted by an estimated 12 to 15 percent–a decline rivaling the magnitude of the Great Depression.

The general trend of several decades of economic progress followed by a few years of economic downturn masks considerable variation across the archipelago in the degree both of economic development and of economic setbacks related to the crisis. In part this heterogeneity reflects the great cultural and ethnic diversity of Indonesia, which in turn makes it a rich laboratory for research on a number of individual and household-level behaviors and outcomes that interest social scientists.

The IFLS is designed to provide data for studying these behaviors and outcomes. The survey contains a wealth of information collected at the individual and household levels, including multiple indicators of economic well-being (consumption, income, and assets); education, migration, and labor market outcomes; marriage, fertility, and contraceptive use; health status, use of health care, and health insurance; relationships among coresident and non-coresident family members; processes underlying household decision making; transfers among family members and inter-generational mobility; and participation in community activities.

In addition to individual and household-level information, the IFLS provides detailed information from the communities in which IFLS households are located and from the facilities that serve residents of those communities. These data cover aspects of the physical and social environment, infrastructure, employment opportunities, food prices, access to health and educational facilities, and the quality and prices of services available at those facilities.

By linking data from IFLS households to data from their communities, the analyst can address many important questions regarding the impact of policies on the lives of the respondents, as well as document the effects of social, economic, and environmental change on the population.

The IFLS is an on-going longitudinal survey in Indonesia. The sample is representative of about 83 percent of the Indonesian population and contains over 30 thousand individuals living in 13 of the 33 provinces in the country. A map identifying the 13 IFLS provinces is available on this Web site.

The first wave of the IFLS (IFLS1) was conducted in 1993/94 by RAND in collaboration with Lembaga Demografi, University of Indonesia. IFLS2 and IFLS2+ were conducted in 1997 and 1998, respectively, by RAND in collaboration with UCLA and Lembaga Demografi, University of Indonesia. IFLS2+ covered a 25 percent subsample of the IFLS households. IFLS3, which was fielded in 2000 and covered the full sample, was conducted by RAND in collaboration with the Center for Population and Policy Studies (CPPS), University of Gadjah Mada.

- **Contributions of the IFLS.**

The IFLS complements and extends the existing survey data available for Indonesia, and for developing countries in general, in a number of ways.

First, relatively few large-scale longitudinal surveys are available for developing countries. The IFLS is the only large-scale longitudinal survey publicly available for Indonesia. Because data are available for the same individuals from multiple points in time, the IFLS affords an opportunity to understand the dynamics of the world we are living in today.

In IFLS1 7,224 households were interviewed, and detailed individual level data were collected from over 22 thousand individuals. In IFLS2, 94 percent of IFLS1 households and 91 percent of IFLS1 target individuals were reinterviewed. These recontact rates are as high as, or higher than, most longitudinal surveys in the

United States and Europe. High reinterview rates were obtained in part because we were committed to tracking and interviewing individuals who had moved or split off from the original IFLS1 households. High reinterview rates contribute significantly to data quality in a longitudinal survey because they lessen the risk of bias due to nonrandom attrition in studies using the data.

Second, the multipurpose nature of the IFLS instruments means that the data support analyses of interrelated issues not possible with single-purpose surveys. For example, the availability of data on household decision making, along with information about the labor force participation of husbands and wives and their contraceptive choices and fertility outcomes, supports analysis of the implications of decision-making patterns for a variety of behaviors and outcomes.

Third, the IFLS collected both current and retrospective information on most topics. With data from multiple points of time on current status and an extensive array of retrospective information about the lives of respondents, analysts can relate dynamics to events that occurred in the past. For example, changes in labor outcomes in recent years can be explored as a function of earlier decisions about schooling, migration, and work.

Fourth, the IFLS collected extensive measures of health status, including self-reported measures of general health status, morbidity experience, and physical assessments conducted by a nurse (height, weight, blood pressure, pulse, hemoglobin level, lung capacity, and time required to repeatedly rise from a sitting position). These data provide a much richer picture of health status than is typically available. For example, the data can be used to explore relationships between socioeconomic status and an array of health outcomes.

Fifth, in both waves of the survey, detailed data were collected about respondents' communities and public and private facilities available for their health care and schooling. The community-facility data can be combined with household and individual data to examine the relationship between, for example, access to health services (or changes in access) and various aspects of health care use and health status.

In sum, the breadth and depth of the longitudinal information on individuals, households, communities, and facilities make the IFLS data a unique resource for scholars and policymakers interested in the processes of economic development. To date, 143 academic research papers have been completed using IFLS data by scholars from academia, international organizations and independent research institutes spanning Indonesia, Australia, Europe and North America.

- **Community and Facility Data Available in the IFLS**

The IFLS survey data are collected from 321 enumeration areas. In each enumeration area, data are collected from three government health centers and subcenters, five private clinics and practitioners, two community health posts, and two community health posts for the elderly. For each of these clinics and health centers, the survey enumerates information on all staff (including qualifications, age, education, and duration in current position and in community). For a random sample of providers serving individuals in the community, vignettes are administered to construct measures of care provider quality. The table below summarizes available information.

Facility Survey Sample	
Government-run Health Centers and Subcenters	963
Private Clinics and Practitioners	1,605
Community Health Posts	642
Community Health Posts for the Elderly	642
Health Provider Vignettes	2,826

6.4 Survey Protocol for IFLS4

6.41 Field Staff for the IFLS4 Surveys

The IFLS4 interviews are conducted by household and community-facility survey teams under the coordination of a field coordinator. Thirteen field coordinators were assigned to head the teams in each of the provinces enumerated. They were senior staff who had been involved in the previous waves of IFLS. There were a total of 23 teams in the 13 provinces. The composition of the household and community-facility teams is as follows:

- HH teams: 1 supervisor, 1 CAFE supervisor, 2 CAFE editors, 6-8 interviewers, 2 health workers.[41]
- CF teams: 1 supervisor, 1 CAFE editor, 2 interviewers.

The interviewers and CAFE editors were recruited from within the provinces in which we interviewed by senior staff from the Center for Population and Policy Studies (CPPS) at Gadjah Mada University, who traveled to the provinces. The CPPS staff interviewed potential interviewers while there and collected resumes on all applicants. Interviewers were selected to obtain an appropriate mix of language abilities. For example, the team that was sent to the island of Madura contained some Maduranese speaking interviewers. Language ability was less of an issue for the community-facility teams, since most community-facility survey respondents were in a position of authority and thus likely to speak Bahasa Indonesia.

Team supervisors were selected among the prospective candidates at the end of the interviewers' training. They were selected based on criteria such as previous experience, knowledge of the local area, knowledge of the questionnaires and leadership qualities.

CAFE supervisors were recruited from those who had previously held this role, plus some new persons who had shown promise during training. Each pair of household and community-facility teams was supervised by either a Field Coordinator or an Assistant Field Coordinator (with backup from a Field Coordinator). Field and Assistant Field Coordinators were recruited as much as possible from those with supervisory experience in IFLS2, 2+, and 3.

Supervisory training was held for all senior personnel: potential household and community-facility survey and CAFE supervisors together with Field and Assistant Field Coordinators in Salatiga in August 2007. Most of these personnel had participated during the household or community-facility survey pre-tests. This ‘training of trainers’ included reviewing all parts of the survey: household, community-facility, health, CAFE, tracking and the management information systems. The idea was to make everyone who had senior positions and would be involved in training of enumerators completely familiar with all aspects of the survey.

41 Computer-Assisted Field Editing (CAFÉ) is used to maintain data quality. This process is described under the quality control section below.

6.42 Data entry and verification

CAFE operations were an important ingredient in the success of IFLS. This was an innovation begun in IFLS2. Data cleaning began in the field. Interviewers filled out the paper questionnaires while in the respondents' households, then edited their work at base camp. For both the household and community-facility surveys, interviewers were responsible for turning in legible questionnaires that had been filled out as completely and accurately as possible.

A process of Computer-Assisted Field Editing (CAFE) was used to help maintain data quality. Interviewers handed in their completed paper questionnaires to a CAFE team at base camp. The CAFE team entered and edited the data on laptop computers, using data entry software (CSPro) designed to detect a variety of fielding errors. Range checks identified illogical values, such as a sex value of 2 when sex was supposed to equal 1 or 3.

The CAFE editor was responsible for resolving error messages with the interviewer. Some errors could be resolved fairly easily. For example, the interviewer might not accurately recall the sex of a respondent interviewed earlier in the day and verify that the inconsistency was due to a careless error. Other errors required the interviewer to return to the household and check with the respondent. For example, if in section TK, a person reported income from self-employment, the interviewers checked sections UT and NT to see if there was a corresponding entry there. If not, they would go back to the household to recheck.

The field coordinator and household supervisor monitored progress using a variety of management information system forms, observed interviews that were randomly chosen, randomly visited households to check interviewers' work, and handled financial and logistical issues.

When the CAFE team's work was finished for an EA, the data were sent to the Yogyakarta office and were electronically transmitted (via a secured Web site) to RAND in Santa Monica. A team in Yogyakarta performed basic data quality checks, monitored recontact rates, and provided feedback to the teams in the field.

6.43 'Look Ups'.

For detecting and resolving more complicated errors, we will implement a 'Look Ups' (LU) cleaning process, pioneered during IFLS2 for the household survey. We extended its use to the community-facility survey data in IFLS3. LU involved the use of sophisticated, customized computer programs to run checks, with follow up of suspected errors by specialists with extensive field experience, who consulted the paper questionnaires. In IFLS3 there were around 30 persons working on the household survey lookups and related activities and 21 on the community-facility side.

LU specialists will be drawn from our best interviewers, editors, and field supervisors. We want to capitalize on the expertise they gained in fielding the survey to help resolve more difficult issues before releasing the data for analysis.

REFERENCES

Affandi, B. (2007). Presentation to the *Competency-Based Hospital Management Workshop*, Yogayakarta, June 2007.

Anand, S. & Bärnighausen, T. (2004). Human resources and health outcomes: cross-country econometric study. *The Lancet,* **364,** pp. 1603-1609.

Andrestada et al (2005). *Health Workforce Reforms in DHS Project Areas*. Consultant report, University of Gadjah Mada, Yogyakarta.

Barber, S. L., Gertler, P. J., & Harimurti, P. (2007). The effect of a zero growth policy in civil service recruitment on the quality of care in Indonesia. *Health Affairs.*

Center for Health Research (CFHR), (2001). *Economic Analysis – Bidan Di Desa (BDD) Program*. Consultant report, University of Indonesia, Jakarta.

Chaudhury, Hammer, N.J., Kremer, M., Muralidharan, K. and Rogers, F.H. (2006). Missing in Action: Teacher and Worker Absence in Developing Countries. *Journal of Economic Perspectives.* New York: The American Economic Association.

Choi, Y., Friedman, J., Heywood, P., & Kosen, S. *Forecasting Health Care Demand in a Middle-Income Country: Disease Transitions in East and Central Java, Indonesia.* Forthcoming Research Working Paper, World Bank, Washington DC.

Chomitz, K. M., Setiardi, G., Azwar, A. & Ismail, N. (1998). *What Do Doctors Want? Developing Incentives for Doctors to Serve in Indonesia's Rural and Remote Areas*. The World Bank, Policy Research Working Paper, **1888**.

Countdown to 2015 Core Group (2007). Countdown to 2015 for maternal, newborn, and child survival: the 2008 report on tracking coverage of interventions. *The Lancet,* **371,** pp. 1247-1258.

Cumberford, J. (2003). *Health Human Resources and Service Outcomes*. Consultant Report, World Bank, Jakarta.

Das, J. & Hammer, J. (2005). Which doctor? Combining vignettes and item response to measure clinical competence. *Journal of Development Economics,* 78(2), pp. 348-383.

Davidson, M. (2007). *Internal Background Note on the Structure of Incentives for the Health Workforce – Policies, Procedures and Reforms in Indonesia*. Consultant report, World Bank Jakarta.

Ferrinho, P., Van Lerberghe, W., Fronteira, I., Hipolito, F., & Biscaia, A. (2004). Dual practice in the health sector: review of the evidence. *Human Resources for Health*, **2:14**.

Government of Indonesia, World Bank, AusAID, GTZ, ADB (2008). Background paper on the Indonesian Health System in Support of the Government of Indonesia Health Sector Review (Final Draft).

GTZ (2006). *Situation Analysis of Human Resource Development and Management in the Health Sector* (draft). Consultant report.

Hammer J. and Jack W. (2001). Designing Incentives for rural health care providers in developing countries. *Journal of Development Economics*, October 2002, **69 (1)**, pp. 297-303.

Hennessy, D., Hicks, C., Hilan, A. & Kawonal, Y. (2006). The training and development needs of nurses in Indonesia: paper 3 of 3. *Human Resources for Health*, **4:10.**

Hennessy, D., Hicks, C., Kawonal, Y. & Hilan, A. (2006). A methodology for assessing the professional development needs of nurses and midwives in Indonesia: paper 1 of 3. *Human Resources for Health*, **4:8.**

Hennessy, D., Hicks, C. & Koesno, H. (2006). The training and development needs of midwives in Indonesia: paper 2 of 3. *Human Resources for Health*, **4:9.**

Hine, B. (2003). *First Steps Towards Formulation of a Draft National Strategic Plan for Health Human Resources in Indonesia*. Consultant Report, WHO and BPPSDM.

Jean, P. (2008). *Assessment of Key Issues Related to Medical Education in Indonesia*. Consultant Report.

Kabene, S. M., Orchard, C., Howard, J. M., Soriano, M. A. & Leduc, R. (2006). The importance of human resources management in health care: a global context. *Human Resources for Health,* **4:20.**

Kluyskens, J. & Firdaus, M. (2007). *Assessment of Regulatory Responsibilities and Management of Health Work Force*. Consultant Report, World Bank Jakarta.

Kolehmainen-Aitken, R. L. (2004). Decentralization's impact on the health workforce: Perspectives of managers, workers and national leaders. *Human Resources for Health*, **2:5.**

Leonard, K., Hammer, J. & Das, J. (2008). *The quality of medical advice in low-income countries*. Policy Research Working Paper Series 4501, The World Bank.

Menelaws, R. D. (2000). *TPC Best Management Practices and Proposed Remedial Actions.* Consultant report, World Bank, Jakarta.

Murray, C. J. L. & Lopez, A. D. (eds)(1996). *The Global Burden of Disease*. Harvard University Press, Boston.

Nasution, N. (2007). *Health Workforce Deployment Policies and Data Collection on PTT-PNS Program, Indonesia*. Consultant Report, World Bank Jakarta.

O'Rourke, K. (2006). Analyzing Politics and Policies in Indonesia. *Reformasi Weekly Review*, November 2006.

Parliamentary Commission X, (2008). Report by Medical Education Working Group, Jakarta.

Sciortino, R. & Ridarineni, N. (2008). *Muhammadiyah Health Care Provision: A Case Study*. Consultant report, World Bank, Jakarta.

Thabrany, H. (2006). Human resources in decentralized health systems in Indonesia, Challenges for equity. *Regional Health Forum*, **10:1.**

University of Gadjah Mada (2005). *Survey dan Perhitungan Pendapatan Dokter Setelah Lulus*. UGM, Yogyakarta.

USAID (2006). *Decentralization 2006 - Stock Taking on Indonesia's Recent Decentralization Reforms*. Democratic Reform Support Program (DRSP) for the Donor Working Group on Decentralization, Jakarta.

World Bank (1994). *Indonesia's Health Work Force: Issues and Options.* Report No: 12834-IND, Population and Human Resource Division. Washington, DC.

World Bank (2002). *Indonesia Health Strategy in a Post-Crisis, Decentralizing Indonesia.* Report No: 21318-IND., Washington DC.

World Bank (2004). *Decentralization in Indonesia's Health Sector: The Central Government's Role*. Working Paper No. 7.

World Bank (2005). *Civil Service Reforms at the Regional Level: Opportunities and Constraints*. World Bank, Jakarta.

World Bank (2006). *Making Services Work for the Poor: Nine Case Studies from Indonesia*. World Bank, Jakarta.

World Bank (2008a). *Background Paper on the Indonesian Health System in Support of the Government of Indonesia Health Sector Review*. World Bank, Jakarta.

World Bank (2008b). *Investing in Indonesia's Health: Challenges and Opportunities for Future Public Spending*. Health Public Expenditure Review 2008, World Bank, Jakarta.

World Health Organization (2006). *Working together for health: The World Health Report 2006.* World Health Organization, Geneva.