

Chapter 71

Health Workers: Building and Motivating the Workforce



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Policy on human resources for health should support health policy objectives and be a means for achieving policy goals. The implication of such a focus is that health systems development should start by identifying the tasks that must be carried out and the skills needed to perform them. Meeting policy goals depends on being able to recruit, train, and retain staff with the necessary bundles of skills. Traditionally, skills are defined by membership of a profession, especially medicine, nursing, midwifery, and the allied health professions. Low- and middle-income countries (LMICs), often from necessity, have widened the range of health care workers to meet the service needs, with some people trained in extremely basic skills and others receiving enhanced training, such as nurses trained in emergency obstetrics. What is meant by a doctor or nurse also varies.

Even though structures and institutions vary widely, some problems are common to most LMICs. First, persuading doctors to work in remote rural areas is difficult, and they typically do not remain long in such posts. Second, emigration of doctors and nurses is extensive. Third, it is common for doctors to work in both the public and the private sectors (referred to as *dual practice*), sometimes harming public services. Dual practice may encourage doctors to skimp on their public health efforts, to pilfer supplies, and to induce demand for their private services (Bir and Eggleston 2003).

Many health sector human resource (HR) problems are predictable from a simple labor market perspective, given the combinations of incentives confronting health care workers and the constraints policy makers face. Experience in LMICs shows how problems have arisen and what policies have succeeded.

Economics predicts that employers will employ workers as long as the additional value of their services is at least as great as the cost of employing them, and workers will work if the rewards are of greater value than those accruing to other uses of their time. If key professionals are in short supply, higher salaries will be needed to attract them. Workers will invest in training if they value higher future incomes and more interesting work above the costs of income lost during training and of fees paid for training programs. This chapter focuses on how health systems might build and improve HR capacity.

Appropriate HR capacity is critical for the effective implementation of disease control interventions. Salaries account for 50 to 80 percent of health sectors' recurrent costs (Bach 2000). Table 71.1 shows the number of physicians and nurses per 100,000 population in selected countries. The number of health workers is related to the level of development because of the tight resource constraints facing LMICs and because of supply constraints, often exacerbated by migration of skilled workers (Awases, Gbary, and Chatora 2003) and prevalence of AIDS. In Africa, where the disease burden is high and increasing rapidly, the number of health workers is particularly low. Most African countries export health professionals to high-income countries.

A study in six African countries showed that most health workers intend to migrate for higher salaries. In Ghana, 70 percent of 1995 medical graduates had emigrated by 1999 (Awase, Gbary, and Chatora 2003). Pay differentials provide strong incentives to migrate. For example, a junior doctor in the United Kingdom averages a monthly salary of US\$3,029 and a registered nurse averages US\$1,500, compared with US\$300

Table 71.1 Numbers of Physicians and Nurses, Selected Countries and Country Groups, 1998

Country	Physicians per 100,000 population	Nurses per 100,000 population	Physician-nurse ratio
Angola	5	100	0.05
Bangladesh	19	11	1.7
Bolivia ^a	29	14	2.1
Botswana	20	100	0.2
Brazil	136	44	3.1
Burkina Faso	<3	20	0.15
Central African Republic	<3	<10	0.3
Equatorial Guinea	20	50	0.4
India	106	94	1.1
Nepal	4	5	0.8
Pakistan	57	34	1.7
Papua New Guinea	7	67	0.1
Peru ^b	10	7	1.4
South Africa	20	100	0.2
Sri Lanka	37	103	0.4
Low-income countries	73	132	0.6
Middle-income countries	142	278	0.5
High-income countries	286	750	0.4
Global average	146	334	0.4
Global median	114	233	0.5

Sources: PAHO 2003; Support for Analysis and Research in Africa 2003.
a. 1999 data.
b. 1996 data.

per month for a Ugandan medical officer and US\$180 for a registered nurse.

Scaling up service provision using current provision models would require large increases in resources and could require a change in strategy by development partners toward supporting recurrent costs (Jha and Mills 2002). The labor market model indicates that higher salaries would be needed to attract additional staff members, so funding would have to increase more than in proportion to the number of staff members employed.

Many LMICs pay health workers on civil service scales, which they control to contain overall government spending. This practice further widens the gap between salaries for professionals at home and abroad.

Although improved economic performance and increased development assistance may allow some increases in health spending, in most LMICs it is not plausible that such increases would be sufficient to make the necessary skills available without a range of strategies, including better regulation, stronger incentives, and initiatives to make key skills available at lower cost.

HEALTH CARE PROVISION AND ASSOCIATED HUMAN RESOURCE NEEDS

Studies on developing services to meet the Millennium Development Goals emphasize the importance of making health workers with the appropriate skills available and motivating them (Jha and Mills 2002). The problems include lack of technical skills, low motivation, and poor support networks (Kurowski and others 2003). This chapter, therefore, focuses on HR planning, training and professional development, incentives for workers to accept and stay in posts and to deliver services, and alternatives to conventional professional groups.

Incentives and Motivation

The labor market model outlined earlier provides a framework for analyzing the role of incentives. A health worker will accept a job if the benefits of doing so outweigh the opportunity cost. Improving recruitment and retention requires either offering higher rewards that make alternative employment less attractive or making qualifications less “portable”—that is, less likely to be recognized in other countries. The development of new health professions in many countries is a way of reducing the portability of qualifications, thereby reducing the opportunity cost of jobs at home. Another advantage is that training can be more specific to local health system needs, but ensuring quality and safety are important issues.

Health workers will choose to train and increase their skills if the rewards of doing so exceed the cost. In general, the supply of skilled professionals rises as rewards increase, because more will seek training, more will return to the workforce, and fewer will move to other jobs or other countries. Because health workers value both financial and nonfinancial rewards, they will work for lower salaries if other job characteristics are attractive.

The causes of health HR problems in developing countries are complex, and attempts to address them must reflect this complexity. Table 71.2 suggests a framework for exploring links between factors at individual, organizational, and health system levels. The framework is inspired by a systems approach, which gives prominence to the roles of and relationships between different component parts in influencing the whole.

The individual health worker level serves as a starting point for exploring the determinants of health worker behavior and performance (Kyaddondo and White 2003). *Performance* here means productivity and quality of services. Individuals respond to individual concerns through coping strategies, such as informal and dual practices, with associated consequences. There are multiple links between individual health worker behavior and organizational and systemic factors. Organizational and system arrangements define

Table 71.2 Framework for Diagnosing HR Issues in the Health Sector

Level	Issue
Individual health worker	
Internal capacity	Knowledge, skills, competencies, attitude
Remuneration	Salary and perquisites, payment methods
Work environment	
Immediate environment	See organizational-level issues
Distant environment	See systemic-level issues
Productivity	Outputs or outcomes per given unit of time or per individual or group of individuals
Responses to organizational and systemic constraints	Low motivation, morale, productivity, and quality of services Informal practices, for example, unofficial fees, dual practice, misuse of public resources, and unethical practices Emergence of unskilled informal practitioners
Organizational level	Presence or absence of an appropriate physical and operational context—that is, availability of materials and facilities to deliver services of acceptable quality, workload management, and organizational norms and practices (organizational culture, management and leadership styles) Organizational autonomy across key strategic and functional issues
Systemic level	Level of bureaucracy and decentralization in the health system, and funding and regulatory arrangements Policy context—for example, pro-market policies and diversification of the health care market in the spirit of a public-private mix Socioeconomic and political context Medico-legal policy and enforcement

Source: Authors.

Note: This chapter uses a narrow definition of *health system* that considers socioeconomic and political issues as part of a wider context.

the incentive context for health workers and influence both organizational and individual performance.

Therefore, the configuration of the health system must create incentives for appropriate supply and deployment of health workers. HR development experts tend to focus more on problems encountered in the lower tiers of this framework. Political pressure for short-term solutions partly explains why many countries do not address HR problems comprehensively. The wider context can also be important. Good governance at the national level is necessary to make policy interventions at the health system level or below effective.

Financial Incentives

Most of the comparatively scarce evidence on the relative importance of financial and other incentives for health workers at the individual level comes from developed countries. Two findings emerge from recruitment and turnover studies. First, at extremely low salaries, financial incentives are particularly important (Normand and Thompson 2000). Second, at least half of the variation in turnover can be attributed to financial incentives (Gray and Phillips 1996). These findings leave considerable scope for improving retention using organizational changes, but such changes will be only partially successful if much better financial rewards are available elsewhere.

International migration has increased as restrictions on moves to high-income countries have been eased (Bach 2000). Many developed countries have shortages of health professionals and actively recruit from low-income countries, thereby raising the opportunity cost of remaining at home.

Health Care Systems' Responses to Health Worker Issues

Health sector reforms have been widespread in recent years, often with international support. These reforms tended to focus more on structures and financing and less on resource issues (Martineau and Buchan 2000). Other government reforms aimed mainly at improving efficiency and reducing the cost of government administration have often had large effects on the health workforce (Adams and Hicks 2000; Corkery 2000). Some changes have attempted to introduce better incentives, such as performance-related pay and renewable contracts, and to remove underperformers and ghost workers. Evidence on the effects of these reforms suggests that more emphasis should have been placed on designing incentives to improve performance and retention and on moving further away from workforce quotas and norms. Using the three levels of analysis, the following sections consider policies, management, and incentives and how they can help match skills to needs.

HEALTH CARE STAFF

Workforce planning should be dynamic and should link policy goals to staff members' skills and numbers and to performance-enhancing incentives.

Workforce Planning to Meet Policy Goals

Several factors make workforce planning in health particularly difficult, including changing needs as service models change, long training time for some professions, and lack of direct government control over the number of professionals being trained, for example, because of the growth of private medical

schools, such as in Bangladesh, or because of people going overseas for training (although Singapore has addressed this problem by restricting the colleges that the government recognizes for registering doctors). The greatest difficulty comes from the unpredictable loss of skilled staff members to private health sector jobs, jobs abroad, and jobs outside health. Thus, a close link exists between HR planning and incentives and regulation. In Ghana, nurse training has often been the only available form of tertiary education for women, and many of those who are trained do not practice.

A key to more rational workforce planning is better coordination between health planning and planning for training and education. Powerful interest groups can oppose the expansion of training. Training establishments often oppose change because it may disrupt existing arrangements and threaten current staff members. The development of new professional groups faces particular resistance from existing professional groups, which, quite correctly, perceive the new groups as posing a threat to their interests. For example, some dentists in South Africa expressed concern over training of dental technicians who carry out a wide range of preventive and restorative dentistry at lower fees (Matomela 2004).

Models for HR needs are easy to devise, but determining the appropriate model parameters is difficult. For example, health planners must estimate the length of a nursing career—potentially up to 45 years but often much less, especially if nurses are willing to work outside nursing (Phillips and others 1994). Good data are needed on dropout rates from training. HR sections of health ministries are usually poorly resourced, have low status, and work with poor-quality data, and this situation must be changed if planning is to improve.

Basic Skills Training and Continuing Skill Development

Whereas the quality of basic training of health professionals varies widely in LMICs, the provision of continuing education and development is almost universally inadequate. Hence, skill levels of staff members fall over time. Evidence indicates that good-quality continuing professional development is a positive incentive and helps to retain staff members. Requirements to undertake continuing education can be made a condition of continued professional registration and can thereby provide some guarantee of competence.

Good basic education includes development of both professional skills and learning skills. Basic training and continuing development should be planned together. In many cases, the large investment in basic training is lost because of lack of maintenance, so that shifting some resources to updating and renewing skills is efficient.

A further challenge is to align the content of training to the skills professionals need. Many training programs in LMICs provide skills oriented toward service needs in developed

countries, although there have been attempts to change this balance. For example, more than 25 percent of Malawi's curriculum for medical students focuses on community health. Given that any training program can cover only a portion of relevant knowledge, focusing on locally relevant topics is increasingly important. Educational reforms in many medical schools in Africa and elsewhere are based on the community-based educational model (Jinadu, Olofeitime, and Oribador 2002).

Numbers and Types of Health Professionals

Categories of workers result from combinations of previous and current needs, national traditions, interest group pressures, and historical accidents. Doctors, nurses, and some paramedical professions have wide international recognition but vary in definition. Professional traditions and professional bodies bring some safeguards for quality and safety, and at best, professionals champion the needs of patients. Membership of a recognized profession can bring desirable independence from management. However, internationally recognized qualifications make it easy for professionals to migrate to countries offering higher incomes and better careers.

Most developing countries have new categories of staff that do not match internationally recognized professions (Buchan and Dal Poz 2003). Examples include nurses with extended training and roles and people working at subnurse levels with training of a few weeks to three years. Bangladesh has family welfare visitors, health assistants, and medical assistants who might elsewhere be classified as nurses or auxiliary nurses; in Uganda, clinical officers have three years of training and work as subdoctors; and nursing aids in Uganda have three months of training. Training is for specific roles without the generic training in conventional professions. Typically, such employees are mobile nationally, but they do not transfer easily across countries.

In the labor market model, employers want to employ staff members if their contribution to service provision is of greater value than the cost of their employment. Because those with portable qualifications can work in other countries, salary levels needed to retain workers reflect that possibility. Theory suggests that staff members will develop new skills if such an investment of their time and money produces significantly increased salary or benefits. Many countries cannot fulfill their requirements for health workers, but normally this difficulty reflects salaries that are too low to attract staff. However, raising salaries may make employment of the full complement of staff members unaffordable.

Staffing norms serve little useful role if the salaries needed to fill the posts are unaffordable. Decisions about how many people should be employed and in what capacities should be based on the contributions those employees will make and the costs of employing them. Staffing norms can be useful for

planning, but they require careful analysis of affordability of care, the skills needed, and the way to provide those skills most efficiently. Several countries have of necessity turned to new models of provision using staff skilled in the delivery of key elements of high-priority services, such as immunization and emergency obstetric care.

Safety and Effectiveness of New Health Professions

Research on the new professions is limited, and much of the material is anecdotal (Buchan and Dal Poz 2003). A growing literature from developed countries indicates that nurses can be safe and effective in place of doctors in primary care (Venning and others 2000). The fear is that the absence of a formal profession and the lack of internationally recognized training could damage quality and safety. This issue is important, but even if new professionals are less safe than doctors, they may be much safer than the absence of a service such as emergency obstetric care. In some countries, new professions play a major part in the provision of services. A good example is Malawi, where clinical officers with extensive training (but much less than that of doctors) are a major resource, carrying out surgical procedures and administering anesthetics as well as providing medical care. In some countries, regulations govern such extended roles (McAuliffe and Henry 1995).

Fenton, Whitty, and Reynolds's (2003) study of emergency cesarean sections carried out by clinical officers in Malawi found that the overall maternal death rate was 1.3 percent, which is high, but much lower than if services had not existed. Perinatal deaths were 13.6 percent. None of the anesthetists was medically qualified, but outcomes were better when these practitioners had received anesthetics training (maternal deaths were 0.9 percent compared with 2.4 percent). The researchers found no significant difference in outcome between medically qualified surgeons and those trained as clinical officers. Care should be taken in interpreting the results of one study, but it does suggest that well-trained clinical officers can safely substitute for doctors in providing some important procedures.

Human Resource Policy and New Staff Groups

New staff groups are increasingly providing essential services in LMICs. In Zimbabwe, a new cadre called primary health care nurses, whose qualifications are lower than general nurses, was introduced in 2003 to curb external migration by nurses (Chimbari 2003). At the system level, such a development requires regulation and standard setting; at the service provision level, appropriate supervision and management is needed; and at the individual level, incentives and training need to be considered. Employing fully qualified doctors and nurses might be the safest option, but failing to provide services because of staffing constraints is unlikely to be the next best option.

HEALTH WORKER INCENTIVES

The World Health Report 2000 defines *incentives for health workers* as “all the rewards and punishments that providers face as a consequence of the organizations in which they work, the institutions under which they operate, and the specific interventions they provide” (WHO 2000, p. 61). Health workers face a hierarchy of incentives or disincentives generated by the work they do, the way they are paid, and the organizational and system context in which they work. Incentives are generally designed to accomplish the following:

- to encourage providers to furnish specific services
- to encourage cost containment
- to support staff recruitment and retention
- to enhance the productivity and quality of services
- to allow for effective management.

Responses of providers to incentives depend on context and on the stage of their career. Incentives that induce productivity vary with experience, stage in a career path, and changes in providers' social responsibilities. Ideally, incentive structures should recognize the evolutionary nature of work expectations.

Typically, incentives vary by type of employer: nongovernmental organization, public, or private. Public sector incentives tend to be the weakest because resource constraints and bureaucratic rules on civil servant employment constrain the use of both financial and nonfinancial incentives.

Typology of Incentives

Extrinsic incentives can be individual and organizational, monetary and nonmonetary (table 71.3). Discussions of provider behavior in LMICs have focused mainly on financial incentives, partly because of their low income levels compared with industrial countries. The challenge is to establish an optimal mix of financial and nonfinancial incentives that generate the desired behavior of health workers.

Experience from vertical programs for priority diseases or services—for example, poliomyelitis, malaria, family planning, and sexually transmitted diseases—provide evidence about different incentives. Programs often offered staff members better pay and incentive packages than those other public health workers received (Beith and others 2001). The exact effects of stronger incentives are unknown, but these programs generally succeeded, as evidenced by the eradication of leprosy, the near eradication of poliomyelitis in many countries, and the large drop in average fertility in developing countries in the 1990s.

Successful vertical programs used combinations of incentives, including better salaries, field and transportation allowances, streamlined management, specialized training, better facilities and material resources, and results-oriented

Table 71.3 Typology of Incentives

Individual incentives	Organizational incentives	Environmental incentives
<i>Financial</i>	<i>Internal</i>	Amenities
Salary	Autonomy	Transportation
Pensions	Accountability	Job for spouse
Illness, health, accident, and life insurance	Market exposure	School for children
Travel and transport allowances	Financial responsibility	
Child care allowance	<i>External</i>	
Rural location allowance	Governance	
Heat allowance	Public finance policy	
Retention and professional allowances	Regulatory mechanisms	
Subsidized meals, clothing, and accommodation		
<i>Nonfinancial</i>		
Vacation days		
Flexible working hours		
Access to training and education		
Sabbatical and study leave		
Planned career breaks		
Occupational health		
Functional and professional autonomy		
Technical support and feedback systems		
Transparent reward systems		
Valued by the organization		

Source: Adapted from Zurn 2003.

Note: These are mostly extrinsic incentives.

management to support improved health worker productivity and program performance. Goals were clearly specified, were understood and shared by the staff, and were often linked to incentives. The choice of vertical structures also reflects the perceived difficulties of using existing health systems, with their excessive bureaucracy, underfunding, and lack of capacity to implement integrated disease control.

Vertical programs must eventually be reintegrated into the system. The HIV/AIDS pandemic is a good example of a disease that might require targeted interventions until the capacity of health systems in LMICs improves to a level that allows the disease to be managed like other diseases. The success in integrating vertical programs depends on the parallel development

of health system capacity, which depends in part on the alignment of health workers' objectives with policy and with system goals.

Aligning health worker and system objectives is difficult. The aim is to have satisfied health workers who are motivated to work harder (Hicks and Adams 2001). Evidence is limited, but financial and nonfinancial incentives are mutually reinforcing, and changing the culture of the health system to make goals more readily understood and shared can make financial incentives more powerful. Such change in the organization of health care can be politically sensitive because it can give health sector workers advantages over other public employees.

Incentives may have conflicting effects. For example, decentralization might create the autonomy needed for effective management, but without transparent management and career structures and job security, providers might view such a change as a threat (Kyaddondo and White 2003). Getting the balance right requires understanding the socioeconomic and political circumstances and may be helped by using participatory approaches to policy making and implementation.

Context

Context is defined here from an individual or an organizational provider's perspective. It constitutes what Adams and Hicks (2000) refer to as *external incentives*—that is, methods used by health systems to control the activities of health organizations or funders.

The power of incentives depends on context. Health systems in developing countries have varying cultural and economic histories that shape providers' expectations and responses to incentives. Financial incentives are strong when health workers' incomes are low, as in most developing countries. Nevertheless, examples of strong nonfinancial incentives exist in countries such as Thailand, where family ties and kinship affect health workers' decisions on where to work. Such nonfinancial incentives affect the size of the financial incentives needed to change where people choose to work.

History and experience determine a country's working culture and norms. In developing countries, most health systems are large bureaucracies whose management is driven centrally by guidelines, standards, and reporting systems. Incentives in such systems work against innovation, risk taking, and improved efficiency. A possible approach is to introduce changes that are based on the ideas of so-called new public management. New public management replaces line management with contracts or agreements between funders and policy makers on the one hand and providers on the other. Providers are given more managerial autonomy and are controlled by means of contracts and regulation. This approach can more easily embody new financial incentives, and autonomous providers can develop cultures that are more innovating. Such

a radical change in managerial context can, in principle, make other incentives easier to use.

Other dimensions of context are the regulatory framework and its enforcement. Most developing countries have regulations governing the activities of the health sector. These regulations tend to be outdated or poorly enforced (Bloom, Han, and Li 2001). The main reason for regulatory ineffectiveness is low institutional capacity and widespread corruption. The symptoms of regulatory failure are widespread informal activities, dual practice, malpractice and medical negligence, and the presence of unqualified drug sellers (for example, in Bangladesh and Tanzania) and practitioners (as in India) (Bhat 1996; Killingsworth and others 1999; McPake and others 1999). Where the regulatory system is dysfunctional, providers tend to pursue their individual interests, often in private practice, to the detriment of organizational and system performance. Effective incentive systems that are based on performance require regulation and governance structures that minimize the common problems of patronage and corruption (Rasheed 1995).

Health system organization factors include governance and the degree of decentralization. Links exist between working culture and norms and the structural aspects of health system organization. The locus of control and decision making play an important part in health worker behavior. In theory, designing incentive schemes that are responsive to health workers' needs is much easier in a decentralized system. This theory is based on the belief that subnational units are better placed to make effective decisions on funding, regulating, and organizing frontline activities than are centralized units. However, experience in developing countries shows that lack of capacity at subnational levels has constrained decentralization, sometimes leading to unintended effects such as wrong priorities (Bloom, Han, and Li 2001). Any move toward decentralization requires investment in new management skills and capacities.

Incentives in Practice

Many countries have attempted to reform their economies and health sectors to improve general economic and health system performance. For example, Cambodia, the Arab Republic of Egypt, Uganda, and Zambia have attempted civil service reforms (Corkery 2000). These reforms include attempts to reduce the size of the civil service to lower costs and to improve productivity using incentives such as formal employment contracts and performance-based pay and promotion. Such reforms have been largely unsuccessful in developing countries because of the political difficulties in reducing the size of the civil service. Structural and organizational changes are typically unpopular with labor unions, especially if union members perceive them as threatening their well-being. Experience also underscores the difficulties of aligning system and organizational objectives with individual providers' objectives (Martineau and Buchan 2000).

The effect of incentives can be assessed in terms of their objectives (Adams and Hicks 2000). Table 71.4 summarizes incentive packages used in selected countries. The results shown should be interpreted with caution, because of problems of attribution and poor data. Adams and Hicks (2000) argue that economic incentives in payment mechanisms for physicians conform to economic logic, but little is known about the response of other categories of health workers to such incentives.

Experience in Thailand illustrates the labor market model outlined earlier. In general, public doctors prefer to practice in urban areas, where conditions are usually more attractive and opportunities for private practice are better. Thailand pays public doctors who work in rural and remote areas significantly more than those working in urban areas, and this incentive has persuaded some to move (Wibulpolprasert and Pengpaiboon 2003). The government also added nonfinancial incentives, such as changing physicians' employment status from civil servants to contracted public employees, providing housing, and introducing a system of peer review and recognition. These initiatives were coupled with significant environmental changes, including sustained rural development. In most developing countries, providers in rural areas are paid less than those in cities, and it is hard to recruit and retain health workers in rural areas.

China provides another example of how changes in the environment—for example, the introduction of pro-market policies—can change provider behavior, in this case from relying on government salaries alone to the use of “red packages” (Bloom, Han, and Li 2001). These red packages were gifts that were traditionally exchanged as an expression of mutual appreciation, but they have now evolved into informal cash payments from patients to health workers.

Health systems have a spectrum of workers with different skills and expectations, and incentives for one group can have negative effects on others (Adams and Hicks 2000). Policy makers must strike a balance between competing interests of professional groups and system goals. The unionization of labor and the growth of professional associations or councils can give health workers considerable bargaining power.

Solving one problem can create others. This situation often occurs when governments respond to the grievances of the most vocal professional groups, usually doctors, and neglect other groups. This piecemeal approach has caused HR crises, such as strikes and go-slows. Although health workers are normally somewhat motivated to pursue health policy goals, their own interests can conflict with those goals. Providing higher salaries to health workers, by increasing costs, can reduce access to services by some social groups (Bloom, Han, and Li 2001).

Compensation

Provider payment systems transfer resources from payers (governments, insurers, and patients) to providers (Maceira 1998)

Table 71.4 Incentive Packages for Health Workers, Selected Countries

Objectives	Incentives	Complementary measures	Constraints	Results
Recruiting and retaining staff in the country	Pay competitive salaries Include seniority awards in pay scales	Fiscal policies that increase the after-tax marginal value of salaries	Budget limitations Low public service salaries Policies to reduce salaries as a share of operating costs	Helped retain physicians in Bahrain
	Allow after-hours private practice in public institutions	Service standards and controls to prevent reduced work effort in the public system	Work effort that may be concentrated in private practice, leading to a deterioration of quality in public practice	Considered successful in Bahrain In some countries, resulted in deterioration of public systems where providers also engage in independent private practice (McPake and others 1999)
	Tolerate informal payments	Not applicable	Informal charges that limit access and may impede reforms that involve formal user fees and exemptions	Resulted in widespread use of informal payments in Eastern and Central Europe, Sub-Saharan Africa, and some East Asian and Pacific countries (Balabanova and McKee 2003; Chakraborty and others 2002; Thompson and Witter 2000)
Recruiting and retaining staff in rural areas	Provide higher salaries or location allowances (Wibulpolprasert and Pengpaiboon 2003) Base remuneration on workload	Decentralized administration Freedom to allocate institutional revenues or savings from operational efficiency to fund incentives Improved infrastructure and staff competence	Overall staff shortages Budget limitations Professional and lifestyle disadvantages Smaller potential for earnings from private practice than in urban areas Conflicting financial incentives (for example, loss of housing allowance in Bangladesh) Risks posed by internal conflicts and civil wars (for example, Colombia and Uganda)	Premium payments for working in rural areas found successful in Thailand (Wibulpolprasert and Pengpaiboon 2003)
	Require service in defined areas as condition of licensing or specialty training Provide opportunities for government-sponsored further education	Consistent application of policies on transfers and tenure	Loss of confidence if health workers perceive the selection process as arbitrary Providers' concerns that a temporary posting may become indefinite	Aided retention of professionals in Ghana and Zimbabwe (Chimbari 2003)
	Provide housing and good-quality educational opportunities for health workers' families	Adequate salary	Budget limitations	Found successful for nurses but not doctors in Nepal
	Recruit trainees from rural areas	Emphasis on public health and family practice in training curricula	Traditionally, overrepresentation of urban area students in student populations	Found successful in Thailand

Table 71.4 Continued

Objectives	Incentives	Complementary measures	Constraints	Results
Enhancing the quality and availability of primary care	Provide training and promotion opportunities for nurses and medical auxiliaries Train multifunctional health workers Mobilize women volunteers from communities, traditional birth assistants, and local leaders	Clear job descriptions and criteria for promotion	Opposition by professional associations to expanded roles for multifunction health workers in Nepal Limited training capacity in Uganda	Resulted in successful retraining of health assistants and other health workers in rural areas in Nepal to make them eligible for promotion Resulted in regrading of state-certified nurses to state-registered nurses in Zimbabwe (Chimbari 2003; Pannarunothai, Boonpadung, and Kittidilokkul 2001)
Encouraging teaching and research and reducing the internal brain drain	Pay health workers more if they do not practice privately	None	Allowances perhaps uncompetitive with private practice earnings	In Nepal, found successful in basic medical sciences but resulted in massive resignations in clinical departments Uncommon incentive, although a few countries (for example, Thailand) do pay professional allowances or nonpractice allowances
Improving the quality of care	Specify clinical guidelines in provider contracts License institutions and professionals based on defined standards Pass laws requiring the registration of drugs and other potentially dangerous substances	Leadership role by professional organizations Inclusion in the curricula of medical schools Tradition of professional self-regulation Acceptance of civil and legal authority	Vested interests of professional associations Weak peer review systems Low consumerism and weak advocacy Regulatory capture and a culture of self-protection Low capacity to enforce laws and regulations	Uncommon in developing countries Some success recorded in Cambodia's contracting experiment Reduced number of hospitals and unqualified doctors in Estonia Resulted in limited success according to evidence from most developing countries (Bhat 1996)

Source: Adapted from Adams and Hicks 2000.

and can be structured to provide financial incentives. Most studies focus on payment mechanisms for doctors and their effect on productivity, costs, and quality of services (Bitran and Yip 1998). Table 71.5 summarizes common payment mechanisms and the desired incentives. The evidence shows that the operation of payment mechanisms is sensitive to the payment structure and how it is implemented (Berman and others 1997; Bitran and Yip 1998; Chomitz and others 1998).

Payment systems are more successful when built on existing traditions and culture (that is, when they take into account gift systems or, indeed, levels of corruption). It is normally best to use a combination of payment methods. For instance, if there is a shortage of public providers, they might be paid a basic salary for normal working hours and fees for service for after-

hours work. This method creates incentives for providers to do extra work and increase throughput, but providers may divert patients to after-hours services, and the method's feasibility depends in part on monitoring and governance standards. The challenge is to find payment combinations that motivate providers to provide desired volume and quality of services while containing costs.

Empirical Evidence on Payment Methods

Evidence of provider payment systems that have successfully aligned system and provider incentives is still limited (Bitran and Yip 1998). Interesting findings come from small-scale experiments such as Cambodia's New Deal (box 71.1). Health

Table 71.5 Major Payment Mechanisms

Payment mechanism	Key incentives for providers
Fees for service	Increase the number of cases seen Increase service intensity Provide more expensive services
Case payment (for example, diagnosis-related groups)	Increase the number of cases seen Decrease service intensity Provide less expensive services
Daily charge	Increase the number of bed days through longer stays or more cases
Flat rate (bonus payment)	Provide specific bonus services and neglect other services
Capitation	Attract more patients to register while minimizing the number of contacts with each and minimizing service intensity
Salary	Reduce the number of patients and the number of services provided
Global budget	Reduce the number of patients and the number of services provided

Source: Bennett, McPake, and Mills 1997.

workers' salaries were considered by many to be below the minimum required for a decent life, and workload is increasing because of HIV/AIDS.

The Cambodian experiment attempted to align individual health workers' and system goals through performance-based bonus payments and a set of internal regulations. Regulations can alter the working and organizational culture in a way that allows individual-based incentives to work. There were problems in enforcing penalties for violating regulations. Failure to enforce regulations may lead providers to lose confidence in the system. Countries with limited administrative and institutional capacity should use simple payment mechanisms that are enforceable within their capacity constraints (Barnum, Kutzin, and Saxexian 1995). A lesson from the experiment is that the context matters, and any strategy for offering incentives to workers must be embedded in traditions and cultural practices.

In a competitive environment, contracts are a useful tool for aligning health workers' behavior with organizational and system objectives. In the Cambodian example, contracts between the purchaser and district-level facilities—and between district-level facilities and management committees—were an attempt to establish accountability structures that specify targeted activities. More interesting was the attempt to transfer some management risk and responsibilities to individual health workers using subcontracts that permitted management committees to monitor their activities and pay them accordingly, though whether the contracts were well specified is not clear, and the administrative and transaction costs are unknown. The use of contracts requires management and monitoring capacity.

Introducing financial incentives for health workers is costly. Policy makers in governments and development partners need to ensure that adequate funding is available and sustainable. Resources are also needed to improve working environments and system capacities. Both financial incentives and other incentives are important, but services are likely to improve only if financial incentives are strengthened.

Group Incentives

Health workers typically work in teams. This system weakens financial incentives because the efforts of individuals may have little influence on overall performance. Indeed, individual incentives can worsen team cooperation. For example, if promotion is competitive and depends on measures of individual productivity, this approach can be a disadvantage for those who work for system goals in cooperative ways.

Designing effective group incentives is difficult. Paying group bonuses for achieving a given level of output can work only if individual team members feel adequately rewarded for their efforts and if there is no perceived free-rider problem. Most of the limited evidence on group incentives is for developed countries and shows that much depends on the production process and the organization of the teams (Ratto, Propper, and Burgess 2002). Group financial incentives tend to be weak, and using other approaches such as team building, better sharing of information, and improved working conditions is probably better.

Influence of System Capacities and Sustainability Issues on Incentives

The theoretical merits and demerits of different incentives are well understood, but system capacities and financial constraints may limit their applicability. Few developing countries have health systems that are capable of effectively implementing and operating some of the payment systems shown in table 71.5. The overall funding for the health sector may be too low to pay providers more. Also, the skills and expertise needed to design and implement contract- and case-based payment methods may be inadequate, and the country may lack the information technology needed to capture relevant data to support such contract- or case-based payment methods. Most health workers in developing countries are civil servants, and the particular needs of health workers may be lost in a general public service. Some countries are considering delinking health workers from public service commissions and setting up independent health commissions to run the health sector. In Zambia, however, delinking failed because of a lack of capacity at both the national and the local levels to implement the necessary HR changes (Martineau and Buchan 2000). Evidence from Trinidad and Tobago suggests that insufficient government commitment impeded the transfer of staff members

Box 71.1

Cambodia's New Deal Experiment: The First Year

The New Deal experiment in Sotnikum district, Siem Reap province, was launched in 2000 by the Ministry of Health, Médecins Sans Frontières, and the United Nations Children's Fund. It is an example of a concerted attempt to break the vicious circle of underpayment of health staff members and underuse of public health services by tackling the problem of low official income. The New Deal was developed following wide consultations and consensus building, and locally credible management structures were established to monitor and enforce the new framework.

Staff motivation was a major problem among health workers, as manifested by high levels of absenteeism from work, low time input at work (an average of one to two hours a day), and poor quality of services. Informal charges, drug thefts, and dual practice by public health workers were common, largely because of their low public salaries: government staff received US\$10 to US\$12 per month, compared with a minimum of US\$100 required for a basic standard of living. At the same time, because of informal charges and extensive use of unregulated private services, households spent more than US\$30 per inhabitant per year on health services, equivalent to 11 percent of total household expenditure.

The New Deal was seen as a vehicle for improving services by enhancing personal income, and its overall objectives were (a) to improve access to quality health care, (b) to build up the health system, and (c) to act as a catalyst for changes in national health policy. The principle underlying the improvements in the personal income of public health workers was that they would better comply with internal regulations governing (a) job descriptions and working hours; (b) payment of informal fees; (c) misappropriation of drugs, materials, and funds; and (d) diversion of patients to private practice.

Source: Soeters and Griffiths 2003.

The district (referral) hospital, health centers, and operational office were each managed by an elected management committee, and individual contracts were signed between staff members and management committees. The contracts stipulated that a bonus would be paid in exchange for strict adherence to internal regulations. The benchmark bonus level was set at an average of US\$60 to US\$90 per person per month. The management committee was responsible for enforcing the new framework of accountability. Official fees were also introduced on the assumption that the population would agree to pay for better public service.

The district got its funding from government appropriations, user fees, and external subsidies from various sources; however, given the overall lack of funding available for the scheme, Médecins Sans Frontières and the United Nations Children's Fund had to provide an initial injection of funds to support the bonus system.

At the hospital level, individuals signed contracts with the management committees, and compliance with internal regulations improved. The staff was generally present, fees were transparent, emergencies were attended at night, patients received drugs, and informal payments were not demanded. Use of health services increased significantly after the arrangement had been introduced. The number of documented violations was limited, though problems were encountered in sanctioning penalties. Staff members started receiving bonuses that gradually grew beyond the negotiated maximum, creating a hospital debt crisis by midyear, compounded by understaffing and underemployment problems, which meant that most staff members worked overtime. Nevertheless, the quality of services improved significantly, and per capita family expenditures on health fell 40 percent.

from the public service, leading to disillusionment among workers and effective opposition from unions (England 2000).

In countries with thriving private sectors, devising strong incentives for public sector workers is difficult. For instance, in Uganda, the private not-for-profit sector used to have better working conditions and pay than the public sector and consequently had better staffing levels. The government had to increase public sector salaries significantly in the 1990s to attract health workers back. The use of fees for service in the private sector when public health workers are paid a salary is

likely to encourage private practice among public workers. Thus, the effects of methods and levels of payments are influenced by what is happening in the private sector.

Optimal Combination of Health Worker Compensation and Incentives

Although the optimal mix of provider compensation depends on context and policy objectives, some general policy guidelines on the design of payment methods to achieve organizational

and system goals are available. Linking compensation to performance makes intuitive sense, but care is needed in working out the details. Health workers respond to both financial and nonfinancial incentives, but the extent of the effect varies, and the two can interact.

For new payment systems to work well, health workers must be governed by effective managerial authority. Because new payment systems aim to encourage particular behaviors and hold providers accountable, clear responsibility must be delineated within provider organizations. This delineation may be easier to achieve if the management of providers has some autonomy. Evidence from developing countries that have attempted to introduce managerial autonomy and corporatization of health service institutions, such as public hospitals and medical stores, indicates that delinking health workers from government control is politically sensitive. Nevertheless, such organizational or system changes are desirable if new payment methods are to create the right incentives and achieve the desired changes.

Part of the context for incentive systems is what type of disease control activities are best provided through markets or hierarchies. Traditionally, the public sector has been dominant. The economic arguments for government involvement are well understood, but delivery of services within the framework of government policy objectives can be by private (both for-profit and not-for-profit) providers. Thus, the private sector is increasingly involved in the social marketing of condoms and bednets, franchising, and contracting (Bennett, McPake, and Mills 1997).

From an economic viewpoint the only issues are the cost, quality, and sustainability of such arrangements. Emerging evidence on private sector involvement in health services suggests that the private sector is willing to participate in non-clinical disease control activities if the incentive structure is right. Private not-for-profit providers, such as hospitals and clinics associated with churches, have traditionally complemented government health care activities, especially in poor and peripheral populations (Gilson and others 1997). In recent years, Bangladesh has experimented with contracting nongovernmental organizations to provide primary care services in urban areas. Lessons from this experience are still emerging and indicate that, despite many early mistakes, this form of provision can be innovative and can help make a break from bureaucratic traditions. Such contracting depends on having contracting skills in both parties to the contract. A good understanding of context and incentives is also crucial.

In summary, incentive or payment packages should attempt to link payment with individual or group performance and should be assisted by supportive organizational and system changes if the desired provider behavior is to be achieved. No single best combination of payment methods exists.

ADVICE FOR GOVERNMENTS

Governments in developing countries face huge challenges in strengthening their health systems, especially their HR capacity, if cost-effective disease control interventions are to achieve their desired results. Strengthening their systems will entail developing self-sustaining systems for the supply, use, and retention of health workers. The following considerations are important in relation to putting effective policies and incentive structures in place:

- Countries should explicitly link the planned number of each category of staff members to health policy goals and set priorities, taking overall resources into account when planning HR needs.
- Countries should recognize that the salaries necessary to recruit and retain staff members will depend on the opportunities such workers have for other employment within the country and abroad, and planned numbers in each category should be based on this reality.
- Countries should understand both that qualifications that are recognized internationally are likely to attract higher salaries and that such qualifications may only be partially suited to the needs of essential health services in LMICs. They should focus on developing the most important skills by training new types of health workers, taking into account evidence that use of such health workers can be safe when properly trained. Many countries will be unable to prevent the loss of professionals with portable qualifications, because salaries offered will be far below those available elsewhere.
- Countries' training policies should take into account the decline in skills over time and the need to allocate scarce resources between basic training and continuing staff development.
- Countries should adapt and not imitate compensation and incentive structures, given the evidence that effective incentive structures depend on local conditions and traditions as well as on universal principles.
- Policy makers should remember that the availability and cost of suitably qualified human resources will affect feasibility and cost-effectiveness of disease control interventions.
- When developing vertical disease control programs, program managers must avoid introducing powerful incentives that damage existing services by drawing away key personnel.
- Policy makers should identify potentially harmful, unintended consequences when designing regulation and incentive systems. For example, if doctors are allowed to practice in both public and private services, the effects of private practice on incentives in public practice tend to be negative unless carefully monitored.
- Countries should recognize that the use of incentives to improve performance normally requires good regulatory frameworks and skilled managerial resources.

RESEARCH AND DEVELOPMENT AGENDA

New staff categories are emerging in many LMICs, and these workers are an important part of the workforce. Such staff categories are likely to increase, given migration and the high cost of employing people with portable qualifications, but little research is available on the appropriateness and safety of the new sets of skills, and little is known about the range of new professions, the content of and approach to training, the extent of professional supervision, and the outcomes of treatment. Sharing experience of such staff categories would be valuable. Priorities, therefore, include a study to map the different new staff groups in health systems in LMICs and to classify their tasks, roles, and training, and studies to compare the outcomes of conventional and new staff groups.

In addition to gaining a better understanding of the patterns, roles, and performance of new staff groups, data are needed on the length of time such workers remain in their posts, the extent to which their new qualifications are portable, and their migration patterns. Information is also lacking on how best to provide professional supervision for these new staff groups and how to encourage such employees to be professional in their work.

Limited evidence is available on the relationship of different health care compensation methods to individual and organizational behavior in developing countries. The following are possible research areas (and some practical steps) that might help fill information gaps and further understanding of the role of health worker compensation and incentives in disease control in developing countries:

- *Databases.* A useful step would be to set up HR databases for developing countries as the Pan American Health Organization has done for its region.
- *Literature review.* A review of unpublished materials on countries' experiences with using different payment and compensation mechanisms at national or subnational levels would also be useful. Failed experiments are seldom published, but they provide useful lessons.
- *HR supply.* Traditional HR planning models are no longer effective in handling health system dynamics in developing countries. More research is required to develop HR models in health that include the effects of HIV/AIDS, migration, scaling-up of existing interventions, new technology, and reforms. The underlying question should be how HR supply mechanisms can meet health systems' needs in terms of numbers, knowledge, skills mix, and competencies.
- *Demand and utilization.* Getting the size of the health workforce right is important in its own right, but that alone is insufficient for improving health workers' motivation and productivity. Research needs to focus on how to improve the motivation and performance of health workers

in resource-constrained environments and on what is needed to retain professionals in such settings. We know little about how health care workers make decisions about a range of incentives and disincentives generated by organizations and the systems in which they work. For example, what does it take to convince doctors and nurses to work in rural and remote parts of a country? To what extent are financial and nonfinancial incentives important in attracting people into training as health workers, deploying them to needy areas, motivating them, and retaining them in the system?

To a significant extent, current problems in improving access to care, in widening the range of effective services that are provided, and in improving the quality of care depend on better matches of skills to needs, better motivation of staff, and clearer understanding of how improved structures and incentives will work. Perhaps as important is that much of the debate focuses on developments within traditional patterns of staffing of services, but new patterns are increasingly emerging, and the extent of evaluative research is inadequate for drawing strong conclusions on how such developments can alleviate the constraints facing health systems. The development of incentive systems should be coupled with the development of organizational and institutional capacity that supports sustainable HR development in general.

REFERENCES

- Adams, O., and V. Hicks. 2000. "Pay and Non-pay Incentives, Performance, and Motivation." Paper prepared for the World Health Organization's December 2000 Global Health Workforce Strategy Group, World Health Organization, Department of Organization of Health Services Delivery, Geneva.
- Awases, M., A. Gbary, and R. Chatora. 2003. *Migration of Health Professionals in Six Countries: A Synthesis Report*. Brazzaville: World Health Organization, Regional Office for Africa.
- Bach, S. 2000. "Human Resources and New Approaches to Public Sector Management: Improving Human Resource Management (HRM) Capacity." Paper prepared for the World Health Organization's December 2000 Global Health Workforce Strategy Group, World Health Organization, Department of Organization of Health Services Delivery, Geneva.
- Balabanova, D., and M. McKee. 2003. "Understanding Informal Payments for Health Care: The Example of Bulgaria." *Health Policy* 62 (3): 243–73.
- Barnum, H., J. Kutzin, and H. Saxexian. 1995. "Incentives and Provider Payment Methods." *International Journal of Health Planning and Management* 10 (1): 23–45.
- Beith, A., R. Eichler, J. Sanderson, and D. Weil. 2001. "Can Incentives and Enablers Improve Performance of Tuberculosis Control Programs? Analytical Framework, Catalogue of Experiences and Literature Review." Unpublished paper, Management Sciences for Health, Rational Pharmaceutical Management Project Plus, and Stop Tuberculosis Partnership, November, 2004.
- Bennett, S., P. McPake, and A. Mills, eds. 1997. *Private Health Providers in Developing Countries: Serving the Public Interest*. London: Zed Books.

- Berman, P. A., A. K. Nandakumar, J. J. Frere, H. Salah, M. El-Edawy, S. El-Saharty, and N. Nassar. 1997. *A Reform Strategy for Primary Care in Egypt*. Technical Report 9. Bethesda, MD: Partnership for Health Research, Abt Associates.
- Bhat, R. 1996. "Regulation of the Private Health Sector in India." *International Journal of Health Planning and Management* 11 (3): 253–74.
- Bir, A., and K. Eggleston. 2003. "Physician Dual Practice: Access Enhancement or Demand Inducement." Working Paper, Tufts University, Department of Economics, Medford, MA.
- Bitran, R., and W. C. Yip. 1998. "A Review of Provider Payment Reform in Selected Countries in Asia and Latin America." Major Applied Research 2, Working Paper 1, Partnership for Health Reform, Abt Associates, Bethesda, MD.
- Bloom, G., L. Han, and X. Li. 2001. "How Health Workers Earn a Living in China." *Human Resources for Development Journal* 5 (1–3): 25–38.
- Buchan, J. M. D., and M. R. Dal Poz. 2003. "Role Definition, Skill Mix, Multi-Skilling, and 'New Workers.'" In *Towards a Global Workforce Strategy: Studies in Health Services Organization and Policy*, vol. 21, ed. P. Ferriho and M. Dal Poz, 275–300. Antwerp, Belgium: ITG Press.
- Chakraborty, S., R. Gatti, J. Klugman, and G. Gray-Molina. 2002. "When Is 'Free' Not So Free? Informal Payments for Basic Health Services in Bolivia." Unpublished paper, World Bank, Washington, DC.
- Chimbari, M. J. 2003. "A Report on Health Care Providers in Zimbabwe." Disease Control Priorities Project Working Paper.
- Corkery, J. 2000. *Public Service Reforms and Their Impact on Health Sector Personnel in Uganda*. Geneva: International Labour Organization and World Health Organization.
- England, R. 2000. "Health Sector Reform Experiences: Lessons for Belize from Trinidad and Tobago?" Issues Note, Institute for Health Sector Development, London.
- Fenton, P. M., C. J. Whitty, and F. Reynolds. 2003. "Caesarean Section in Malawi: Prospective Study of Early Maternal and Perinatal Mortality." *British Medical Journal* 327 (7415): 587.
- Gilson, L., J. Adusei, D. Arhin, C. Hongoro, P. Mujinja, and K. Sagoe. 1997. "Should Governments Contract out Clinical Health Services to Church Hospitals?" In *Private Health Provider in Developing Countries: Serving the Public Interest*, ed. S. Bennett, B. McPake, and A. Mills, 276–302. London: Zed Books.
- Gray, A., and V. L. Phillips. 1996. "Labour Turnover in the British National Health Service: A Local Labour Market Analysis." *Health Policy* 36 (3): 273–89.
- Hicks, C., and O. Adams. 2001. "Pay and Non-pay Incentives, Performance, and Motivation." Paper prepared for the World Health Organization's December 2001 Global Health Workforce Strategy Group, World Health Organization, Geneva.
- Jha, P., and A. Mills. 2002. *Improving Health Outcomes of the Poor: Report on Working Group 5 of the Commission of Macroeconomics and Health*. Geneva: World Health Organization.
- Jinadu, M. K., E. O. Olofeitime, and P. Oribador. 2002. "Evaluation of an Innovative Approach to Community-Based Medical Undergraduate Education in Nigeria." *Education for Health* 15 (2): 139–48.
- Killingsworth, J. R., N. Hossain, Y. Hedrick-Wong, S. D. Thomas, A. Rahman, and T. Begum. 1999. "Unofficial Fees in Bangladesh: Price, Equity, and Organizational Issues." *Health Policy and Planning* 14 (2): 152–63.
- Kurowski, C., K. Wyss, S. Abdulla, N. Yémadji, and A. Mills. 2003. "Human Resources for Health: Requirements and Availability in the Context of Scaling-Up Priority Interventions in Low-Income Countries—Case Studies from Tanzania and Chad." London School of Hygiene and Tropical Medicine, London.
- Kyaddondo, D., and S. R. White. 2003. "Working in a Decentralized System: A Threat to Health Workers' Respect and Survival in Uganda." *International Journal of Health Planning and Management* 18 (4): 329–42.
- Maceira, D. 1998. "Provider Payment Mechanisms in Health Care: Incentives, Outcomes, and Organizational Impact in Developing Countries." Major Applied Research 2, Working Paper 2, Partnership for Health Reform, Abt Associates, Bethesda, MD.
- Martineau, T., and J. Buchan. 2000. *Three Diverse Case Studies on the Importance of Human Resources to Successful Health System Reforms*. Washington, DC: American Public Health Association.
- Matomela, N. 2004. "Department Outlines Amended Dental Act." *BuaNews Pretoria*, October 7.
- McAuliffe, M. S., and B. Henry. 1995. *Nurse Anaesthesia Worldwide: An Analysis of Practice, Education, and Legislation*. Geneva: World Health Organization.
- McPake, B., D. Asimwe, F. Mwesigye, A. Turinde, M. Ofumbi, L. Ortenblad, and P. Streefland. 1999. "Survival Strategies of Public Health Workers in Uganda: Implications for Quality and Accessibility of Care." *Social Science and Medicine* 49 (7): 849–65.
- Normand, C., and C. Thompson. 2000. "Review of the Primary Care Rehabilitation Project in Azerbaijan." Report prepared for the United Nations Children's Fund.
- PAHO (Pan American Health Organization). 2003. *Bangladesh Health Labor Market Study*. Washington, DC: PAHO.
- Pannarunothai, S., D. Boonpadung, and S. Kittidilokkul. 2001. "Paying Health Personnel in the Government Sector by Fee-for-Service: A Challenge to Productivity and Quality, and a Moral Hazard." *Human Resources for Health Development* (electronic journal) 1 (2)
- Phillips, V., A. M. Gray, D. Hermans, and C. Normand. 1994. "Health and Social Service Manpower in the U.K.: A Review of the Research 1986–1992." Public Health and Policy Department Publication 7, London School of Hygiene and Tropical Medicine, London.
- Rasheed, S. 1995. "Ethics and Accountability in the African Civil Service." *DPMN Bulletin* 3 (1): 12–14.
- Ratto, M., C. Propper, and S. Burgess. 2002. "Using Financial Incentives to Promote Teamwork in Health Care." *Journal of Health Services Research Policy* 7 (2): 69–70.
- Soeters, S., and S. Griffiths. 2003. "Improving Government Services through Contract Management: A Case from Cambodia." *Health Policy and Planning* 18 (1): 74–83.
- Support for Analysis and Research in Africa. 2003. "The Health Sector Human Resources Crisis: An Issues Paper." Academy for Educational Development, Washington, DC.
- Thompson, R., and S. Witter. 2000. "Informal Payments in Transitional Economies: Implications for Health Sector Reform." *International Journal of Health Planning and Management* 15 (3): 169–87.
- Venning, P., A. Durie, M. Roland, C. Roberts, and B. Leese. 2000. "Randomised Controlled Trial Comparing Cost-Effectiveness of General Practitioners and Nurse Practitioners in Primary Care." *British Medical Journal* 320 (7241): 1048–53.
- WHO (World Health Organization). 2000. *The World Health Report 2000—Health Systems: Improving Performance*. Geneva: WHO.
- Wibulpolprasert, S., and P. Pengpaiboon. 2003. "Integrated Strategies to Tackle the Inequitable Distribution of Doctors in Thailand: Four Decades of Experience." *Human Resources for Health* 1: 12.
- Zurn, P. 2003. "Incentives for Human Resource Management." Paper presented at the Workshop on Human Resource for Health Development: The Joint Learning Initiative, Veyrier-du-Lac, France, May 8–10.