

REVIEW

Role of the private sector in the provision of immunization services in low- and middle-income countries[†]

Ann Levin^{1*} and Miloud Kaddar²

¹Independent Consultant, Bethesda, MD, USA, ²Health Economist, World Health Organization, Geneva, Switzerland.
E-mail: kaddarm@who.int

*Corresponding author. Independent Consultant, 6414 Hollins Dr., Bethesda, MD, 20817, USA. Tel: +1-301-581 2422.
E-mail: annlevin@verizon.net

[†]The authors alone are responsible for the views expressed in this publication and they don't necessarily represent the decisions, positions, policy or views of the World Health Organization.

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The authors conducted a literature review on the role of the private sector in low- and middle-income countries. The review indicated that relatively few studies have researched the role of the private sector in immunization service delivery in these countries. The studies suggest that the private sector is playing different roles and functions according to economic development levels, the governance structure and the general presence of the private sector in the health sector. In some countries, generally low-income countries, the private for-profit sector is contributing to immunization service delivery and helping to improve access to traditional EPI vaccines. In other countries, particularly middle-income countries, the private for-profit sector often acts to facilitate early adoption of new vaccines and technologies before introduction and generalization by the public sector.

The not-for-profit sector plays an important role in extending access to traditional EPI vaccines, particularly in low-income countries. Not-for-profit facilities are situated in rural as well as urban areas and are more likely to be coordinated with public services than the private for-profit sector. Although numerous studies on non-governmental organizations (NGOs) suggest that the extent of NGO provision of immunization services in low- and middle-income countries is substantial, the contribution of this sector is poorly documented, leading to a lack of recognition of its role at national and global levels.

Studies on quality of immunization service provision at private health facilities suggest that it is sometimes inadequate and needs to be monitored. Although some articles on public–private collaboration exist, little was found on the extent to which governments are effectively interacting with and regulating the private sector.

The review revealed many geographical and thematic gaps in the literature on the role and regulation of the private sector in the delivery of immunization services in low- and middle-income countries.

Keywords Immunization, private sector, health financing

KEY MESSAGES

- Relatively few studies have researched the role of the private sector in immunization service delivery in low- and middle-income countries; many geographical and thematic gaps exist in the literature.
- The literature review indicates that the private sector, in its different variants, is delivering a significant proportion of vaccinations in some countries.
- The private sector plays different roles in immunization delivery according to economic development levels, governance structure and the general presence of the private sector in the health sector.

Introduction

Immunization programmes provide many public health benefits to countries. At relatively low cost, these programmes contribute significantly to preventing communicable diseases. Governments consequently believe that it is their responsibility to support immunization programmes, both in terms of service delivery and funding. Almost all governments have legal regulations and health sector plans that endorse support of immunization programmes. In addition, many have policies stating that immunizations should be provided for free or for a nominal fee to all targeted populations, especially traditional Expanded Programme of Immunization (EPI) vaccines [diphtheria-pertussis-tetanus vaccine (DPT), BCG, polio-virus vaccine (OPV) and measles].

Although many governments would like to provide all preventive health services to their populations, not all are sufficiently well-equipped and financed to provide high quality services that are available and accessible to all. The private sector, which includes both private practitioners and not-for-profit organizations, often provides immunization services in its facilities and increases access to health services. However, it is unclear what percentage of total immunization services is offered through the private sector and how this share varies by country.

While many literature reviews have examined the role of the private sector in the provision of health services (Waters *et al.* 2003; Peters *et al.* 2004), none have focused specifically on immunization service provision. This paper's objective is to fill the gap by summarizing existing literature on the private sector's role in delivering immunization services in low- and

middle-income countries, and to identify potential lacunae and the need for additional research.

The theoretical starting point of the paper is that immunization services are both public and private goods. Immunization services are public goods since these provide positive societal externalities. Externalities of immunization programmes include herd immunity, control of contagious disease and the prevention of epidemics, which benefit society as a whole (Bloom *et al.* 2005). In addition, these services provide private benefits. Individuals place a value on the risk reductions obtained from vaccination differently (Berman 2004; Cook 2009), due to their assessment of risk of infection, history with the disease and level of risk-averseness. As a result of these differences in preferences, some people are willing to pay for immunization services at private health facilities rather than obtain them at public facilities. Furthermore, some groups will pay for vaccines not available in the public sector because of their perceived benefits.

It is assumed that the ability of a government to deliver and monitor immunization services provided in its country is affected by its economic level and its governance or stewardship capacity. Table 1 presents a typology of private sector health providers in low- to middle-income countries developed by the authors. Key terminology in the table are defined as follows:

- (1) Ad hoc: uncoordinated service provision that arises in response to local need;
- (2) Unregulated: services not subject to governmental regulations and/or standards of care;
- (3) Regulated: services subject to rules and regulations that are enforced by governmental or non-governmental entities; and

Table 1 Typology for role of the private sector in immunization service delivery by regulation, type of private sector and 'fragile' status

Type of private sector	'Fragile' countries	Low- to middle-income non-fragile countries
For-profit	<ul style="list-style-type: none"> • Ad hoc unregulated service delivery by private practitioners 	<ul style="list-style-type: none"> • Ad hoc unregulated service delivery by private practitioners • Unregulated provision of immunization services in private clinics/health centres, pharmacies w/private practitioners, and private maternity homes • Regulated private sector provision of immunization services and/or integration with monitoring and surveillance systems
Not-for-profit	<ul style="list-style-type: none"> • Unregulated provision of services by NGOs in clinics, health centres and hospitals • Contracting out of NGOs for immunization and other health services 	<ul style="list-style-type: none"> • Unregulated provision of services by NGOs in clinics, health centres and hospitals, sometimes using supplies from the public sector • NGO provision of and advocacy for immunization services with some level of regulatory policies/national guidelines • Provision of immunization supplies and equipment to NGOs • Public sector contracting out of NGOs for immunization and other health services to expand access

- (4) Contracting out: a contractual arrangement by which the government or other non-governmental entity provides compensation to private providers for a defined set of health services.

Low- to middle-income non-fragile countries often have limited resources to allocate to immunization services. In addition, their ability to monitor private sector provision of services (e.g. the quality of service delivery), or a government’s stewardship over the private sector, is often limited due to insufficient financing and human resources. As a result, it is assumed that the private for-profit sector delivery of immunization services will range from ad hoc and/or unregulated to regulated. The relationship of the government with the not-for-profit sector differs since it is more likely to provide supplies to or contract out for its services.

Countries with limited governance capacity or ‘fragile’¹ states are less able to provide and finance immunization service delivery. In these countries, gaps in service delivery are assumed to be filled by entities such as non-governmental organizations (NGOs) since these organizations enter ‘fragile’ countries to conduct emergency relief operations. In addition, some ad hoc delivery of health services takes place.

Often, governments view the private sector provision of immunization services as a ‘gap filler’ because of the responsibility of the government and externalities of immunization. However, given the need to work with the private sector to increase access to services, governments have specific strategies that they can employ to engage the private sector in service provision (Waters *et al.* 2003) in order to improve health outcomes: (1) regulation; (2) contracting; (3) financing and social marketing; (4) training; and (5) coordinating.

This paper reviews the literature on the role of the private sector in providing immunization services and the extent to which governments are employing strategies to oversee private sector delivery of immunization services. If the extent of the private sector’s role in immunization service provision can be better documented, then it will be easier for the concerned governments to define appropriate incentives and regulations that will facilitate the two sectors’ working together.

Methodology

The authors conducted a literature review using the following search terms: ‘immunization’, ‘health services’, ‘private sector’, ‘non-governmental’, ‘for-profit’ and ‘developing countries’. Any paper that was published in 1990 or later was included in the search.²

First, the authors searched for published articles through PubMed. Secondly, they examined published findings from surveys, such as Demographic and Health Facility and WHO EPI coverage surveys, for findings on the share of services provided through the private sector. Thirdly, grey literature on the subject was also solicited through contacting various networks of people working in immunization service delivery, such as Technet.³

The authors conducted content analysis of the articles and other documentation found. The findings were categorized by

region, type of vaccines offered and whether services were for-profit. The following questions were focused on in the review:

- (1) How important is the private sector’s role in immunization service delivery?
- (2) What functions does the private sector play and how does it affect the demand for and supply of immunization services?
- (3) What are the characteristics of users of immunization services in the private sector?
- (4) How is the government interacting with and regulating the private sector?
- (5) How well integrated is private sector service delivery into the national immunization and health systems?

Results

Articles considered for inclusion in the report were on the following topics: (1) private sector service delivery of immunization, (2) private sector delivery of health services, and (3) contracting of health services. Articles were included in the analysis if they discussed private sector delivery of immunization services specifically or referred to these services as part of a larger health service package. In total, 73 articles were vetted for the analysis and 37 articles were selected for inclusion (Table 2).

Share and importance of vaccinations provided through the private sector

Asia

Relatively more studies were undertaken to examine private for-profit and not-for-profit provision of immunization services in Asian countries than in other regions, perhaps because the private sector plays a larger role in provision of health services. The proportion of vaccinations provided by for-profit providers is available for five countries and ranges from 1–2% in Bangladesh to 17% in India (see Table 3). The proportion by

Table 2 Number of articles vetted and included in final analysis by type

	Private sector immunization services	Private sector health services	Contracting	Total
Articles vetted	22	43	9	73
Articles included in final analysis	22	8	7	37
Articles by region:				
Asia	12	3	1	16
Africa	4	1	1	6
Latin America	2	n.a.	1	3
Europe	1	n.a.	n.a.	1
North Africa/ Middle East	1	n.a.	n.a.	1
No region	2	4	4	10

Table 3 Proportion of total immunization services delivered by the private sector in Asian countries

Country	% private for-profit immunizations	% private not-for-profit immunizations	Source
Bangladesh	1% (2005) 2% (1999) in Dhaka	22% urban, 3% rural (2000); 4% (2005) 62% (NGOs in Dhaka)	Bass 2006 Levin <i>et al.</i> 1999 Khan <i>et al.</i> 2004
Cambodia		30–40%	Bass 2006
India	10% in India 17% children, 36% women using 1995–1996 National Sample Survey 26.9% urban, 15.4% rural Madhya Pradesh 65.5% Hep B vaccines, 44.9% Hib; 100% typhoid/MMR/varicella in Chandigarh		Peters <i>et al.</i> 2002 Howard and Roy 2004 Yoong 2007 Puri <i>et al.</i> 2007
Pakistan	3% of children, 4% of women		MOH Pakistan 2006 (EPI Coverage Evaluation Survey, 2006)
Sri Lanka	15% (33.5% Colombo, 0.7% Monaragala district; 0% in Anuradhapura, Trincomalee and Matale)		Agampodi and Amarasinghe 2007
Thailand	10% (33% in urban areas)		Madrid 1998c

for-profit providers is higher in urban than in rural areas, and in India and Sri Lanka in comparison to other countries.

Information on the share of immunization services provided by not-for-profit providers is only available for two Asian countries, Bangladesh and Cambodia (Bass 2006). In Bangladesh, NGOs' share is estimated to be 22% of immunization services in urban areas (city corporations and municipalities) and 3–4% in rural areas. The estimated share that they provide in rural areas ranges from 6% in the Khulna Division to 1% in the Dhaka and Barisal Divisions. In Cambodia, the share is estimated to be 30–40% of total services (Bass 2006).

In 'fragile' Asian countries such as Afghanistan, the majority of services are delivered through national and international NGOs (Ameli and Newbrander 2008), but the proportion provided by these agencies has not been documented. Private for-profit clinics or pharmacies provide services on an ad hoc basis (Pavignani and Colombo 2002), particularly in urban areas. Although governments are usually unable to monitor the provision of immunization services by the private sector in 'fragile' countries, various multilateral and bilateral organizations often contract with NGOs to deliver services. As part of these contracts, the managing organizations monitor the provision and/or quality of services provided by NGOs (MOHSW Liberia 2008). On the other hand, the private for-profit sector and NGOs without external funding are less likely to be regulated in 'fragile' states and services are often offered on an ad hoc basis (Pavignani and Colombo 2002).

Africa

In African countries, relatively few data are available on the role of the private sector in the provision of immunization services. The little information that is available suggests that for-profit providers play a relatively smaller role in the provision of immunization services than in Asian countries while not-for-profit providers have a more important role (see Table 4).

The studies report that the proportion of services given by for-profit providers ranges from 0.05% in Zimbabwe to 10% in Nouakchott, Mauritania, and is higher in urban and metropolitan areas than in rural areas.

Although anecdotal reports of NGOs' role in service delivery exist, accurate estimates of the proportion of immunization services provided by them are not available. Data on the proportion of total immunization services provided by NGOs are only available for two countries (Kenya and Ghana) from National EPI Reviews and EPI manager country estimates (Bass 2006). It is suggested but undocumented that NGOs are providing a significant share of traditional EPI immunization services under different arrangements in 'fragile states' such as the Democratic Republic of Congo, Sierra Leone, Burundi and Somalia.

Other studies in African countries focus on the type of services offered in for-profit and not-for-profit health facilities and have found that many of these are offering immunization services (Table 3). Data from facility surveys⁴ in five countries indicate that most (75% or more) not-for-profit health centres are offering immunization services, while the percentage of private for-profit facilities providing immunization varies widely, from 25% in Ghana to 81% in Kenya and Uganda.

Latin America

Only a few articles had information on the role of the for-profit health sector in immunization services in Latin America, as shown in Table 5. The services are generally provided by private paediatricians and other physicians in these countries. No studies were found on the proportion of immunization services provided by NGOs in Latin America. This finding could potentially be explained by the fact that vaccine laws exist in most Latin American countries promoting compulsory immunization services in the public sector (PAHO 2006).

Table 4 Proportion of total immunization services delivered by the private sector in African countries

Country	% private for-profit immunizations	% private not-for-profit immunizations	Type of vaccines offered	Source
Ghana		40% (mission hospitals)	Traditional EPI	Bass 2006 (National EPI estimates)
Ethiopia	0.7% (0–3.1% for individual regions)			Government of Ethiopia 2006 (2006 EPI-Cluster Sampling Survey)
Kenya		45–60% in some north and north-eastern districts (2000 estimate)	Traditional EPI	Bass 2006
Mauritania	10%		Traditional EPI, Hepatitis B, Hib	Ouedraogo 2003
Morocco	5%		Hepatitis B, Hib	Madrid 1998b
Zimbabwe	0.05–3%		Hib	Madrid 1998d

Table 5 Proportion of total immunization services delivered by the private sector in Latin American countries

Country	% private for-profit immunizations	% private not-for-profit immunizations	Source
Sao Paulo state, Brazil	1.3%	No information	de Soárez <i>et al.</i> 2008
Honduras	1.6%	No information	EPI Newsletter 1998
Nicaragua	5%	No information	EPI Newsletter 1998
Panama	15%	No information	EPI Newsletter 1998
El Salvador	5–10%	No information	EPI Newsletter 1998
Costa Rica	1–2%	No information	EPI Newsletter 1998

Europe

Very few studies are available on the role of the private sector in provision of immunization services in low- to middle-income European countries. In Turkey, one study in Umranliye Health District reported that 11% of immunization services are offered through the private for-profit sector (Topuzoglu *et al.* 2005).

In countries of the former Soviet Union, the formal private sector is limited due to high entry costs, underdeveloped voluntary health insurance and a lack of trust (Balabanova *et al.* 2008). Thus, not surprisingly, in a study in Uzbekistan, the authors concluded that NGOs are not offering immunization services in the country, although they often assist with social mobilization, vaccination training, and maintenance and repair of cold chain equipment (Bass 2006).

Functions played by the private sector

Increasing access to traditional EPI vaccines

Non-governmental health providers play an important role in filling gaps in public service delivery. A study on the role of not-for profit organizations in immunization service delivery found that NGOs improve access to services by reaching populations in urban slums or remote or difficult regions, and in 'fragile' countries (Bass 2006). Other studies on contracting out of services to NGOs in low-income countries found that access to traditional health services, including immunization services, increased (Loevinsohn and Harding 2005; Ameli and Newbrander 2008; Liu *et al.* 2008).

A few studies have attempted to evaluate whether the private sector's role in immunization service delivery has affected

disparities in access, and have found that contracting out with NGOs can decrease disparities in accessibility to vaccination. Schwartz and Bushan (2004) investigated whether the provision of immunization services by NGOs in nine rural districts of Cambodia affected disparities in access. They found that more children were immunized in districts serviced by NGO contractors than in districts using the traditional government model where management of services remained with the government. Another study evaluated the effects of contracting out services on the equitable distribution of services in Bangladesh and Cambodia, and found a significant improvement in access to services for the targeted poor in both countries (Liu *et al.* 2004).

Various studies also indicate that the private for-profit sector increases access to traditional EPI vaccines for those who can afford to pay (Howard and Roy 2004; Topuzoglu *et al.* 2005; Agampodi and Amarasinghe 2007). For example, one study of private sector users in India found that 17% of respondents' children received their traditional EPI vaccinations at private facilities, while 36% of pregnant women received their vaccinations at private facilities (Howard and Roy 2004). Despite this increased access, the study indicates that users of private for-profit services are less likely to have received all traditional EPI vaccinations. The authors found that children and pregnant women immunized at private facilities due to proximity were slightly less likely to have obtained all of their traditional EPI vaccines than users of public services.

Introducing new vaccines

The for-profit private sector appears to play an active role in introducing new and underutilized vaccines in low- and

Table 6 Type of vaccines offered by the private for profit sector

	Traditional EPI vaccines	Non-traditional vaccines	Source
Asia			
Bangladesh		Non-EPI vaccines	Bass 2006
Cambodia	Tetanus	Hep B, rabies, typhoid, Japanese encephalitis (JE)	Soeung <i>et al.</i> 2008
India	Traditional EPI vaccines	Hep B, Hib, MMR, typhoid, varicella	Puri <i>et al.</i> 2007
Sri Lanka	Traditional EPI vaccines	JE, Hib, MMR, varicella, Hep A	Agampodi and Amarasinghe 2007
Thailand		HBV, Hib, varicella	Madrid 1998c
Africa			
Mauritania		Hep B, Hib	Ouedraogo 2003
Morocco		Hep B, Hib	Madrid 1998b
Europe			
Turkey		MMR, Hib, varicella	Topuzoglu <i>et al.</i> 2005

middle-income countries, as can be seen in Table 6. This role is particularly important in non-GAVI-eligible middle-income countries that cannot get newer vaccines at low or subsidized prices. At times, though, the for-profit private sector is driven by pharmaceutical marketing campaigns to introduce new and costly vaccines, such as rotavirus, pneumococcal, inactivated polio virus and human papillomavirus virus. These campaigns tend to use aggressive marketing and have direct links with prescribers and key opinion leaders.

A survey of Asian policy makers (DeRoeck 2004) indicated that they believed private sector service delivery of vaccines to be important for several reasons: (1) to create public demand for a vaccine before it is introduced into the public sector; (2) to provide a vaccine before the public sector is ready to do so; and (3) to provide vaccines to clients of higher income while the public sector provides vaccines at no cost to low-income clients. The for-profit private sector can target small selected populations that are willing to pay for newer vaccines. In addition, the private for-profit sector may collaborate with the public sector to introduce new vaccines (DeRoeck 2004).

Madrid (1998a,b,c,d) conducted case studies in three countries—Thailand, Morocco and Zimbabwe—on the role of the private sector in the introduction of new vaccines. She found that the role differed for each of the countries. In Thailand, the private market was not a direct driver of new vaccine integration in the public sector but did influence the choice of product and the local manufacturing arrangements (Madrid 1998c). In Morocco, the study concluded that the private sector did influence the public sector's introduction of new vaccines, although it was one of several factors that affected the decision-making (Madrid 1998b). In Zimbabwe, the study concluded that the private sector had no influence on the introduction of Hepatitis B vaccine in the public sector, but was likely to be more influential in the introduction of Hib vaccine since its burden of disease was not known (Madrid 1998d).

Users of private sector services

Consumers of the private for-profit sector are motivated to use their immunization services for different reasons: (1) the

services are more convenient due to closer proximity or better hours of operations; (2) the services are the only ones available; and (3) the perception that services have advantages over other alternatives, such as higher quality (Table 7). In a survey in India, for example, 47% of private sector users preferred to utilize these immunization services due to their closer proximity, while 53% were motivated by perceived higher quality (Howard and Roy 2004). In another survey in Mauritania (Ouedraogo 2003), a third of the immunization users accessed the private sector for reasons of convenience (e.g. shorter wait, service continuity and convenient hours), while two-thirds were motivated by perceived higher quality of care and competence of personnel. In Sri Lanka, reasons for using private sector services were availability of non-EPI vaccines, combined vaccines and efficiency of services (Agampodi and Amarasinghe 2007).

Clients that use private for-profit facilities to obtain immunization services were more likely to have higher educational levels and higher family income than public sector users in Sri Lanka (Agampodi and Amarasinghe 2007), and higher socio-economic status based on asset ownership and occupation than non-users in Turkey (Topuzoglu *et al.* 2005). The clientele of private for-profit services are also more likely to be located in urban than in rural areas. On the other hand, the study by Howard and Roy (2004) also revealed that a small percentage of private for-profit service users in India are of low-income. Surveys of consumers with lower socio-economic status indicated that they preferred to use these health facilities because of proximity, access and/or shorter waiting time.

Consumers of services by non-profit organizations, on the other hand, are more likely to be of lower income than users of for-profit clinics (Schwartz and Bushan 2004). They are likely to use these immunization services because of their greater access, lower cost and/or higher perceived quality.

Regulation of the private sector and impact on system quality

The few studies that examined the quality of immunization services provided by the private for-profit sector concluded that

Table 7 Characteristics of users of private for-profit services

Country	Characteristics of users	Reasons for using private sector	Source
Mauritania		67%: quality of reception, quality of care, competence of personnel; 33%: shorter wait, service continuity and convenient hours	Ouedraogo 2003
India	Chandigarh: uptake of newer vaccines greater with higher mother's education and father's education	Child sample: 35% for proximity, 39% for quality; Pregnant women: 33% for proximity, 38% for quality Availability of vaccines throughout the week and easy access	Puri <i>et al.</i> 2007 Howard and Roy 2004 (NSS study sample from 1995–1996) Government of India 1993 (1988 EPI coverage survey)
Sri Lanka	Users more likely to be of lower birth order, Tamil, Buddhist or Hindu, and have higher monthly family income		Agampodi and Amarasinghe 2007
Turkey	Users more likely to be of higher socio-economic status, age, being born in Istanbul and less likely to be in a peripheral health centre		Topuzoglu <i>et al.</i> 2005

it is sometimes inadequate. In a study in Cambodia, Soeung *et al.* (2008) found that health workers in private facilities lacked knowledge on immunization schedules, waste and vaccine management practices, and did not exchange health information with the public sector. In Mauritania, a study of private sector practices found that health professionals lacked knowledge on immunization provision and did not have the correct cold chain equipment (Ouedraogo 2003). Aljunid and Zwi (1997) in Malaysia found that private providers did not always store their vaccines at the correct temperature. Other research articles on the private sector provision of health services in general also emphasize similar problems with quality of care (Bustreo *et al.* 2003; Waters *et al.* 2003).

Despite problems associated with quality in private sector service provision, the literature on government regulation of private sector health service delivery suggests that it is usually insufficient. Some low-income countries have legal frameworks for regulation but inadequate enforcement, while others have neither (Lagomarsino *et al.* 2009). No articles were found specifically on the effectiveness of the regulation of private for-profit sector provision of immunization services, although studies in Cambodia and Mauritania (discussed above) stated that the governments planned to introduce regulation of immunization services to improve their quality.

Regulation of NGO provision of immunization services to ensure that national guidelines on quality of care are followed is more common, particularly when the government or development partners have contracts with NGOs to deliver services. In Afghanistan, for example, contracts with NGOs specify the quantity and quality of immunization services to be delivered and also focus on inputs or outputs such as immunization rates (Palmer *et al.* 2006). Liu *et al.*'s review of contracting out projects found, however, that these projects are more likely to improve quality of care if it is well defined and indicators are well developed (Liu *et al.* 2008).

Table 8 Government support for private sector vaccination services

Country	MoH provision of vaccines and supplies to private for-profit sector	MoH provision of vaccines and supplies to not-for-profit sector	Source
Sub-Saharan Africa			
Cameroon	Yes	Yes	Waters <i>et al.</i> 2004
Ghana		Yes	Levin <i>et al.</i> 2001
Mauritania	Yes		Ouedraogo 2003
Asia			
Cambodia	Yes	Yes	Schwartz and Bushan 2004; MOH/NIP Cambodia 2006

Integration of private health facilities into national immunization and surveillance programmes

A few studies report on examples of the integration of the public sector's immunization programme with the private sector. In these countries, the public sector is collaborating with private sector institutions so that immunization service delivery and surveillance can be extended to parts of the country without access to services. Often the government provides vaccines, equipment and other supplies to private facilities (see Table 8). As a result, the programme managers can ensure that these adhere to national standards. In addition, it can obtain data on the number of immunizations that are given in private sector health facilities and/or pharmacies. In Cameroon, for example, each health area has a lead health facility, which can either be public or private, and it coordinates the distribution of vaccines and supplies and reports coverage rates of the area (Waters *et al.* 2004).

In Uganda, the government also entered into a public–private partnership with not-for-profit providers. It provides vaccines, equipment and operational grants to these providers. Currently, 29 private not-for-profit facilities (13.5%) in 214 sub-districts are overseeing referrals and management of other health facilities in their sub-district (Balabanova *et al.* 2008). Other examples of integration occur through contracting and are found in Cambodia (Schwartz and Bushan 2004), Rwanda (Soeters *et al.* 2006) and Afghanistan (Ameli and Newbrander 2008).

Discussion of findings and gaps in the literature

Despite the fact that immunization is a public good, has positive externalities and governments have an interest in being the main provider of vaccination, the literature review indicates that the private sector, in its different variants, is active and delivering a significant proportion of vaccinations in some countries.

In low-income countries, private for-profit and NGO health facilities are providing immunization services and helping to improve access to traditional EPI vaccines, particularly in Asian countries. In addition, these facilities are providing services to higher-income clients who are willing to pay for better perceived quality, shorter waiting times and closer proximity. The literature review suggests that NGOs often play a larger role in immunization service delivery than do private for-profit providers in low-income countries, since their facilities are situated in rural as well as urban areas. Further, NGO services are more likely to be coordinated with public services, either through formal contracts or through more loosely-structured mechanisms in low-income countries.

In ‘fragile’ countries, the review suggests that NGOs are playing a particularly important role in delivering immunization services, often under contracting-out arrangements with governments and their partners. Other gaps in provision of vaccination are filled through ad hoc service delivery by for-profit providers and non-profit providers.

In middle-income countries, the private for-profit sector is active and plays a number of roles. It often acts to facilitate early adoption of new vaccines and technologies before introduction and generalization by the public sector. In addition, the review suggests that private practitioners increase access to services by offering traditional EPI vaccines. The extent that governments are regulating these providers is not known.

Many of the strategies for engaging the private sector are being used in low-income countries, including ‘fragile states’, i.e. contracting, training, financing and coordinating; and paradoxically immunization services may be more well regulated in these countries than in middle-income countries. Contracting and financing strategies have been shown to be effective at bringing services to the poor and at least partially ensuring that quality services are provided. However, little is known about the extent to which service provision is effectively regulated when formal contracting arrangements are not in place.

In middle-income countries, the literature suggests that the private for-profit sector’s role in provision of immunization services is more prominent than in low-income countries.

The extent to which these services are regulated and what type of regulation is most effective has not been documented. Given the concerns about the quality of immunization service delivery in private health facilities, more research is needed on regulation of private sector immunization services in middle-income countries.

Potential mechanisms that can be introduced to engage the private sector include: (1) involving the sector in policy and programme setting—for example, private providers can be represented on national immunization technical advisory groups (NITAG) as well as other policy-making organizations; (2) introducing financial and other types of incentives to increase immunization coverage and/or access to services; and (3) regulation of service quality, payment mechanisms and fees.

There are many geographical and thematic gaps in the literature on the role and regulation of the private sector in the delivery of immunization services in low- and middle-income countries. Limited studies exist on: (1) the adequacy of quality of care of immunization service delivery in the private for-profit sector; (2) the impact of private for-profit service delivery on disparities in services delivery; (3) the effectiveness of regulating the private for-profit sector; and (4) the impact of private sector immunization service delivery on demand for traditional EPI, new and underutilized vaccines.

Conflict of interest

None declared.

Endnotes

- ¹ Fragile states have been defined by the UK Department for International Development (DFID) as states that are unwilling and/or incapable of delivering basic services to their populations. These countries have a lack of effective political processes to influence the state to meet social expectations, and weak institutions and governance systems (Alliance for Health Policy and Systems Research, WHO 2008).
- ² Some previous research on the role of the private sector in the 1980s is found in Frelick (1986).
- ³ The Technical Network for Strengthening Immunization Services (Technet) serves as a forum where issues relevant to the delivery of immunization services are discussed.
- ⁴ DHS Service Provision Assessment (SPA): Ghana SPA 2002, Kenya SPA facility inventory 1999, Rwanda SPA 2001, Tanzania SPA 2006, Uganda SPA 2006 (MEASURE Demographic and Health Surveys, online at: <http://www.measuredhs.com/aboutsurveys/spa/start.cfm>).

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