

## Buying results? Contracting for health service delivery in developing countries

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To achieve the health-related Millennium Development Goals, the delivery of health services will need to improve. Contracting with non-state entities, including non-governmental organisations (NGOs), has been proposed as a means for improving health care delivery, and the global experience with such contracts is reviewed here. The ten investigated examples indicate that contracting for the delivery of primary care can be very effective and that improvements can be rapid. These results were achieved in various settings and services. Many of the anticipated difficulties with contracting were either not observed in practice or did not compromise contracting's effectiveness. Seven of the nine cases with sufficient experience (greater than 3 years' elapsed experience) have been sustained and expanded. Provision of a package of basic services by contractors costs between roughly US\$3 and US\$6 per head per year in low-income countries. Contracting for health service delivery should be expanded and future efforts must include rigorous evaluations.

### Background

Substantial improvement in the delivery of health services will be necessary to achieve the health-related Millennium Development Goals (MDGs). For example, 63% of child deaths in developing countries could be prevented through the full implementation of a few effective and low-cost interventions.<sup>1</sup> Hence, discovering better ways of delivering these services is critically important. Although many countries undoubtedly need to allocate more resources to health services, experience suggests that simply throwing money at the problem of service delivery is unlikely to have much of an effect.<sup>2</sup> Another response to the challenge of improving service delivery has been to use public funds to contract with non-state entities, such as non-governmental organisations (NGOs), universities, individual practitioners, or for-profit companies.

Contracting for health service delivery has some potentially attractive features,<sup>3</sup> including the possibility of: (i) ensuring a greater focus on the achievement of measurable results, especially if contracts define objectively verifiable outputs and outcomes; (ii) overcoming the constraints that prevent governments from effectively using the resources made available to them (often referred to as absorptive capacity issues); (iii) using the private sector's greater flexibility

and generally better morale to improve services; (iv) increasing managerial autonomy and decentralising decision-making to managers on the ground; (v) using competition to increase effectiveness and efficiency; and (vi) allowing governments to focus more on other roles that they are uniquely placed to undertake, such as planning, standard setting, financing, regulation, and the various public health functions.

There are potential difficulties with contracting,<sup>4–10</sup> including concerns that: (i) contracts will not be feasible at a sufficiently large scale to make a difference at a country level; (ii) contracts will be more expensive than government provision of the same services, partly indicating greater transaction costs; (iii) contracts might increase inequities in health service delivery; (iv) governments will have limited capacity to manage contracts effectively; and (v) even if successful, contracting will not be sustainable.

This review was undertaken to: (i) examine the effectiveness of contracting taking into account the methodological rigour of the evaluations; (ii) examine the extent to which anticipated difficulties have occurred during implementation; and, (iii) make recommendations about future efforts in contracting. We focused on the effectiveness of contracting in terms of health service delivery outputs or outcomes, costs, and scale. Our review did not examine in detail the political economy issues associated with the decision to implement contracting in developing countries.

### Methodology

There are several different approaches to contracting for health service delivery, so clarifying definitions will facilitate meaningful dialogue (table 1). As an example, under a management contract (entry 3 in table 1) a government will contract with a non-state entity or an individual to manage existing government services in a specified area. Under a service delivery contract (entry 4 in table 1) the government decides which services the contractor will provide and where, whereas the

#### Search strategy and selection criteria

We did a computerised search of the published work using Electronic Collections On-Line (ECO), Periodical Abstracts, EconLit, WorldCat, Public Affairs Information Service (PAIS), and PubMed. The electronic search was supplemented by a manual review of journals that often publish articles related to health systems in developing countries (*Health Policy and Planning* and *Social Science and Medicine*). To find as many examples as possible of contracting, experts from six development institutions were contacted and asked about examples of contracting of which they were aware. Previous reviews of contracting in developing countries<sup>4–9</sup> were also examined. Once cases were identified, structured interviews were conducted with people who had intimate knowledge of the particular experience in nine out of the ten cases included in the review.

|                                | Initiator (defines services and area) | Selector (who chooses provider) | Manager        | Production Infra-structure | Source of Financing                             | Example  |
|--------------------------------|---------------------------------------|---------------------------------|----------------|----------------------------|---|--|
| 1. Government services         | Government                            | Government                      | Government     | Government                 | Government†                                     | Government primary health care centres   |
| 2. Inter-government agreements | Government-1*                         | Government-1                    | Government-2*  | Government-2*              | Government-1†                                   | Transfer of funds from federal to provincial governments   |
| 3. Management contracts        | Government                            | Government                      | Private sector | Government                 | Government†                                     | Government hires a private sector manager to manage existing Government health services                                  |
| 4. Service delivery contracts  | Government                            | Government                      | Private sector | Private sector             | Government†                                     | Government hires NGO to provide services where none currently exist  |
| 5. Grants to private sector    | Private sector                        | Government or donor             | Private sector | Private sector             | Government (+/- NGO or community contribution)  | NGOs submit proposals to Government for needs identified by community or NGO   |
| 6. Vouchers                    | Government                            | Consumer                        | Private sector | Private sector             | Government (and/or donor)                       | Female sex workers are provided vouchers for curative care which they can redeem at practitioners of their choice        |
| 7. Franchising                 | Private sector                        | Consumer                        | Private sector | Private sector             | Consumer (+/- subsidy from Government or donor) | Private practitioners join franchise network providing reproductive health services                                      |
| 8. Private sector services     | Private sector                        | Consumer                        | Private sector | Private sector             | Consumer or NGO/donor                           | 1. NGO establishes health services in slum areas using its own funds<br>2. For-profit providers establish private clinic |

NGO, non-governmental organisations, +/-with or without. \*Government-1=higher level of government, \*Government-2=local level of government. †Can be supplemented by formal or informal user-charges.

**Table 1: Arrangements of service delivery**

contractor will both manage and supply the production infrastructure, such as personnel, equipment, drugs, etc. Table 1 shows the different approaches for contracting, which are not exhaustive—there are clearly hybrids. For example, the line between a management contract and a service delivery contract blurs when the contractor uses government health workers, but pays them substantially more than their civil service salaries. There has been some experience with national governments signing agreements with local governments (entry 2 in table 1) that pertain to achieving specific goals.

Although potentially interesting, this arrangement rarely entails a true contract that the parties enter voluntarily, and the contractor can be fired for poor performance (although other rewards and sanctions might be available). There were few examples that we identified in which instances of this approach have been assessed. Government or donor grants (where governments or donors issue requests for proposals and then make grants to the NGOs), to NGOs (entry 5 in table 1), in which the NGOs define where and what services are delivered, are quite common, particularly in HIV/AIDS prevention and treatment. However, these are generally not true contracts, partly because the government generally has little say in what services are delivered, or where, and how they will be assessed. We review experience with management and service delivery contracts, rather than contracts between different levels of government or grants to NGOs.

The focus of this review is instances in developing countries of governments or their agents contracting with identifiable non-state providers to deliver primary health-care services including nutrition (but excluding hospital care or ancillary services such as drug procurement and distribution) in which some explicit

form of evaluation was undertaken. To be included in the review, the project had to have been explicitly investigated by measures of quality of care, or outputs, such as increase in the amount of services provided. The evaluations also had to, at a minimum, entail before and after or controlled designs. Hence, evaluations that described the process of contracting but did not measure some tangible outputs were excluded. Furthermore, we excluded studies that only provided after evaluations with no before data or without contemporaneous controls. In instances in which there were before and after data for experimental and control groups, the double differences were calculated. The double difference is the difference between the follow-up and baseline results in the experimental group minus the difference between follow-up and baseline results in the control group. Wherever possible, differences are expressed in percentage points. Although we did not plan to exclude experiences of contracting with for-profit providers, the search criteria generated only cases with non-profit providers.

### Experience of contracting

Table 2 summarises ten studies that met the inclusion criteria.<sup>11–21</sup> Of these ten examples, four had before and after controlled designs, three had controlled designs with a single measure in time, and the remaining three were before and after assessments. There was only one randomised trial. Three of the studies relied on routinely obtained data from health information systems of unknown accuracy, whereas the remainder relied on information from household and health facility surveys.

From the studies reviewed, contracting with NGOs to deliver primary health or nutrition services seems to be very effective and impressive improvements can be

| Location & type of services (ref)   | Type of contract & intervention  | Scale & cost  | Evaluation methodology  | Main results   | Subsequent history  |
|---|--|---|---|--|---|
| 1. Cambodia<br>Rural PHC & district hospital services <sup>11-13</sup>        | SDC compared to MC and CC ie, government provision of services   | 1.5 million<br>Cost per head per year<br>SDC=\$4.50 MC=\$2.82<br>CC=\$1.86                    | Randomised controlled study with 12 districts as experimental units. HHS and HFS undertaken B&A 2.5 years of implementation                 | SDC and MC much better than CC. Median double difference on seven indicators for SDC versus CC was 21.3%p for MC versus CC double difference was 9.3%p | Expanded to twice as many districts   |
| 2. Bangladesh<br>Rural community nutrition services <sup>14</sup>             | SDC with NGOs compared to control areas with no organised nutrition services (ie, normal government health services with no nutritional component)   | 15 million<br>Cost per head per year=\$0.96   | Controlled, B&A study with six experimental and two control subdistricts. HHSs conducted by third party                                     | Malnutrition rates declined 18%p in SDC subdistricts compared with 13%p in controls (double difference=5%p). Double difference for vitamin A was 27%p  | Expanded to more than 30 million  |
| 3. Bangladesh<br>Urban PHC <sup>15</sup>                                      | SDC with NGOs compared to government provision of services, ie, CCC  | 4 million<br>Cost per head per year=\$0.65 in both SDC & CCC                                  | Controlled B&A study with 15 contracts compared with a large area implemented by CCC. HHS and HFS survey by third party                     | Median double difference on 10 HHS indicators was 3.4%p after 2 years. Much larger differences in quality of care indicators from HFS                  | Contracts not yet completed. Planning for expansion of contracts far advanced and funding secured |
| 4. Bolivia<br>Urban PHC <sup>16</sup>   | Limited MC in phase II. MC with expanded authority in phase III. Control area had continued public sector management                                 | 250 000<br>Cost data not available  | Controlled, B&A design, but data from routine reporting system, only few indicators examined  | Double difference for deliveries between MC and control was 21%p, 1%p for bed occupancy  | Unknown   |
| 5. Guatemala<br>Rural PHC in mountainous areas <sup>17</sup>                  | MC in selected municipalities & SDC in more remote areas, compared to government provision (control)   | 3.4 million<br>Cost per head per year=\$6.25  | Controlled design based on HHS undertaken by third party 3 years after contracting began  | Median difference between MC and control on five indicators was 11%p (range 5–16%p)  | Started as small pilot but expanded rapidly. Now covers 27% of the country                        |
| 6. Haiti<br>Bonuses for NGOs delivering PHC in rural areas <sup>18</sup>      | NGOs with SDCs offered performance bonuses based on agreed targets   | 534 000<br>Cost data not available  | B&A (7 months later) design based on HHSs done by third party   | Average of follow-up minus baseline ranged from -3%p (prenatal care) to +32%p (vaccination coverage)   | Expanded to cover 3 million people, 33% of the Haitian population                                 |
| 7. India<br>Urban TB control services in Hyderabad <sup>19</sup>              | NGO under SDC delivered TB control services in defined population & worked with private providers. Compared to publicly managed area of similar size | 500 000 population<br>Cost per patient:<br>SDC=\$88 CC=\$98                                   | Controlled design with after only data from recording system verified by national TB programme officials. Cost data obtained by third party | NGO found 21% more TB cases and had 14%p better treatment success rate. Cost per successful treatment \$118 for NGO versus \$138                       | Being scaled up in various parts of India with continuing evaluation                              |
| 8. Madagascar & Senegal<br>Community nutrition services <sup>20</sup>         | Madagascar: SDCs with 50 NGOs<br>Senegal: SDCs with NGOs who worked through small groups of unemployed youth   | 460 000 in Madagascar<br>490 000 in Senegal<br>Cost per beneficiary=\$48 & \$15, respectively | B&A (17 months) HHS of nutrition status in Senegal. Third party survey of participation in project and control areas                        | Severe and moderate malnutrition declined 6%p and 4%p, respectively. Participation was 72% in project & 35% in control areas                           | Continued with NGOs in both countries, albeit in a different format                               |
| 9. Pakistan<br>Rural PHC (data obtained by authors)                           | MC for the 104 basic health units in one district  | 3.3 million<br>Cost per head per year=\$0.44  | Interrupted time series design based on routine recording and reporting system  | Nearly a four-fold increase in the number of outpatient visits   | Only started in May, 2003   |
| 10. India<br>Improving quality of care by private practitioners <sup>21</sup> | SDC for NGO working with private providers to improve MCH services   | 54 000<br>Cost per head per year=\$15   | B&A (6 months later) design based on HHS by community health workers  | Rapid improvement in provider skills ranging from 25%p to 57%p compared with baseline  | Unknown   |

MC=management contract, SDC=service delivery contract, CC=control-comparison, double difference=difference between follow-up and baseline results in the experimental group minus the difference between follow-up and baseline results in the control group, B&A=before and after, HHS=household survey, HFS=health facility survey, TB=tuberculosis, NGO=non-governmental organisations, PHC=primary health care, CCC=Chittagong City Corporation, %p=percentage points, MCH=maternal and child health. All costs are in \$US dollars.

Table 2: Summary of contracting experiences

achieved rapidly. Good results have been achieved in various settings and for many different services ranging from nutrition services in Africa to primary health care in Guatemala.<sup>17,20</sup> All the studies found that contracting yielded positive results; however, the most rigorously assessed cases tended to show the largest effect. For example, the service delivery contracts in Cambodia increased immunisation coverage by 40 percentage points compared with 19 in the control districts (a double difference of 21 percentage points). In the four studies with controlled before and after designs, the median double differences ranged from 3.4 to 26.0 percentage points (figure 1, table 3). These cases combined examined 31 main indicators, and all but one of the double differences was positive (ie, favoured contracting). Larger double differences were seen for

those factors that are easier to change such as immunisation, vitamin A, and antenatal care coverage. Smaller changes were recorded for factors that require important behavioural changes, such as family planning and institutional delivery.

Six of the ten studies compared contractor performance with government provision of the same services. All six showed that the contractors were more effective than the government, on the basis of several measures related to both quality of care and coverage of services. In the studies reviewed here, the differences between contractor and government performance tended to be large. For example, in India an NGO achieved a treatment completion rate that was 14 percentage points higher than the public services in a nearby area, and at a lower cost.<sup>19</sup>

Several possible difficulties have been raised about contracting, some of which can be addressed by the examples reviewed.

First, contracting is able to provide services on a large scale. Half the examples studied involved populations of millions of beneficiaries, and in one example contracts now cover a third of rural Bangladesh—equating to more than 30 million people.<sup>14</sup> Second, contracting can be more cost effective than directly provided government services. The studies from Pakistan, urban Bangladesh, Hyderabad, India and the management contracts in Cambodia, indicate that non-governmental entities did better even when they had the same or fewer resources than public institutions. Although the services provided under the different contracts are not strictly comparable, a basic package of primary health services in rural areas ranged from US\$2.82 per head per year in Cambodia to US\$6.25 per head per year in Guatemala. These amounts represent less than 1% of the gross national income.

Third, contracting can increase coverage, even in poor, remote areas. With the resources and the explicit responsibility, many contractors were willing and able to work in difficult areas that had previously been under served. However, only the assessment in Cambodia explicitly addressed the issue of whether contracting could improve equity. It found that when contracts explicitly included targets for reaching the poor, contractors were able to greatly improve health services for the most marginalised groups. The results from this study also showed that contractors were considerably better than the government at reducing inequities (figure 2).

Last, contract management is often difficult for governments, but does not seem to prevent improvements in service delivery. Even in rural and urban Bangladesh and Guatemala, where observers felt contract management was not done well, contractors were still successful at implementing large-scale programmes. The fact that in some situations, such as Senegal, contract management was done well, suggests that the problem is tractable. The cases with successful contract management seem to have benefited from either external management support or having only a few contracts.

In view of its apparent success, the sustainability of contracting is a genuine concern. Nine of the examples of contracting reviewed had more than 3 years of elapsed experience to judge whether they were sustained or not. Seven of the nine contracts have been continued and expanded, often substantially. (Information about two examples is not available). In Guatemala, Cambodia, rural Bangladesh, Haiti, Pakistan, and India, the scope of contracting has more than doubled from what it was initially. However, it might still be too early to say whether the approach is sustainable in instances in which the donors introduced the contract.

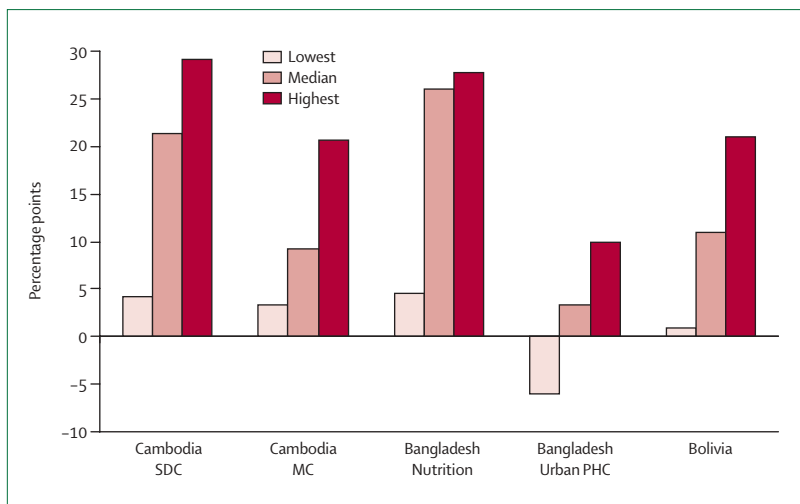


Figure 1: Double differences (in percentage points) in coverage rates from studies with controlled before and after methodology

SDC=service delivery contract, MC=management contract, PHC=primary health care.

## Discussion

Under real world conditions and at a large scale, contracting has achieved impressive and rapid results. The cases we review suggest but do not prove that the most successful approaches to contracting maximise the amount of autonomy given to contractors. This factor is shown clearly in the studies from Bolivia and Cambodia, especially in Cambodia where service delivery contracts did better than management contracts. This finding is consistent with the experience in hospital autonomy in which the ability to manage labour seems to be critically important to improved performance.<sup>23</sup>

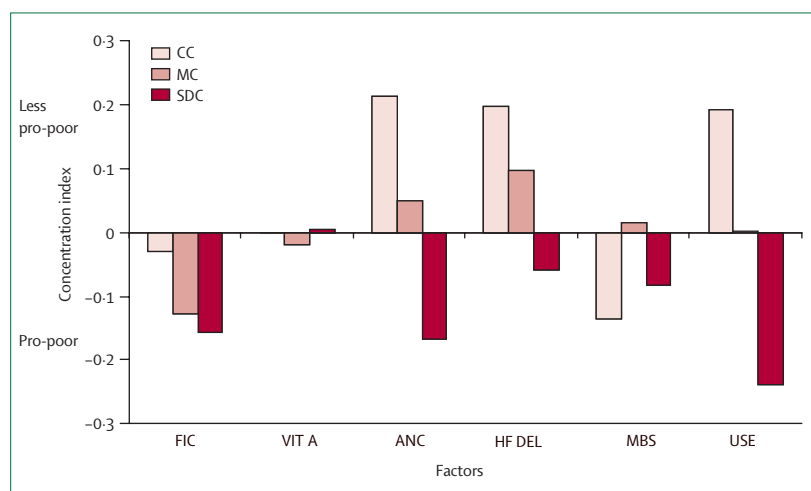
The successful approaches also focus on outputs and outcomes, rather than inputs, a finding that accords with those of other studies.<sup>24</sup> In practice this focus on outcomes requires careful attention to monitoring and assessment. These approaches use contracts of a fairly large size. To obtain economies of scale, reduce the contract management burden on the government, and facilitate monitoring and evaluation, each contract should probably include more than 500 000 beneficiaries.

There are several methodological limitations with this review: (i) half the cases were based on reports in the grey literature, some of which had not been peer

| Type    | Baseline | Follow-up | Difference (follow-up - baseline) | Double difference versus control |
|---------|----------|-----------|-----------------------------------|----------------------------------|
| SDC     | 25.5%    | 65.8%     | 40.3 (a)                          | 21.3 (a-c)                       |
| MC      | 29.9%    | 54.4%     | 24.5 (b)                          | 5.5 (b-c)                        |
| Control | 34.0%    | 53.0%     | 19.0 (c)                          | --                               |

Double difference is follow-up minus baseline in the experimental group minus follow-up minus baseline in the control. The range and median double differences are for the main indicators identified in each study. SDC=service delivery contract, MC=management contract.

Table 3: Full immunisation coverage in Cambodia—calculation of double difference



**Figure 2: Change in equity (concentration index) of services in Cambodia**  
 FIC=fully immunised child coverage in children aged 12–23 months, VIT A=Vitamin A coverage in the past 6 months in children aged 6–59 months, ANC=antenatal care coverage, HF DEL=proportion of mothers delivering in a health facility, MBS=use of modern birth spacing, USE=utilisation of publicly financed health facility by people who were sick in the past month, CC=control/comparison, MC=management contract, SDC=service delivery contract. A concentration index summarises the extent to which services are equitably provided across income groups.<sup>22</sup> Technically, it represents twice the area between the perfect equality line and the actual cumulative distribution in a Lorenz curve and, can range from -1 to +1. By convention a negative concentration index for services represents greater equity—ie, the distribution is pro-poor. A Lorenz curve has the cumulative distribution of some benefit/service on the vertical axis and income percentiles on the horizontal axis. This approach is commonly used in describing the distribution of income, in which the concentration index is referred to as the Gini coefficient.

reviewed; (ii) the methodologies and outcome measures varied substantially between studies; (iii) the experimental designs and different outcomes made it impossible to undertake a formal meta-analysis; (iv) there are likely to be other examples of contracting that we were unable to identify and these may have had less positive results (although this type of positive results bias is usually more profound when only published work is used); and (v) there could have been a pilot-test bias in the examples considered. Because contracting is new and different, it could have benefited from greater attention from managers, donors, and the NGOs, thereby limiting the external validity of the studies. There is some reason to believe that this problem is not very serious because many of the

#### Panel: Contractor versus government performance in middle-income countries

There are only a few examples of initiating contracting for primary health-care services in developed countries. Most countries that contract have always done so. Nevertheless, a few opportunities have arisen to assess the effect of initiating contracting. Several central European countries have initiated contracting for packages of primary health-care services. Where contracted services have been compared with those that continued to be provided by salaried doctors—results have generally been favourable. In Croatia, evidence of higher productivity was noted in contracted practices, including indicators of patient accessibility.<sup>27</sup> In Estonia, where salaried doctors converted to a contracted status, a before and after analysis showed allocated efficiency indicators improved; technical efficiency indicators, such as annual number of visits per doctor and number of visits per inhabitant, improved; and, immunisation rates rose from 74% to 88%.<sup>28</sup>

contracting examples were done on a very large scale and provided services to many millions of beneficiaries. The history in the USA and Australia of contracting for social service delivery suggests that the initial experiences were problematic and that results improved as governments and contractors ironed out the difficulties they encountered.<sup>25,26</sup>

We should also keep in mind that all the cases discussed here focused on primary care and nutrition services (although two included first level hospital care as well)—services for which outputs are fairly easy to measure. Other health services, especially specialist inpatient care, present larger measurement challenges. Furthermore, the providers in these cases were non-profit organisations. Although contracting with for-profit entities, especially self-employed doctors, is common in developed and middle-income health systems (panel)—there is little experience in low-income countries with for-profit providers being given contracts for primary health care.

With the methodological concerns about the cases studied, there is still a need for future contracting efforts to include rigorous evaluations. However, the current weight of evidence suggests that contracting with non-governmental entities will provide better results than government provision of the same services. Contracting should no longer be considered an untested intervention or a so-called leap of faith.

We realise that our findings will be controversial. Contracting with non-state providers is often seen as arising out of an ideological desire to privatise publicly financed health services and ultimately to limit or end governments' involvement in health care.<sup>29,30</sup> However, the discussions held during the preparation of this review indicated that the impetus for all the contracting initiatives studied was the inadequate quality and coverage of government services, especially for poor people. For example, the case from Pakistan arose because a district governor and his advisers became frustrated with the poor quality of existing government provision of primary health care. Their approach involved no reduction in health care expenditures.

Far from limiting government involvement in health care, contracting may be one way of keeping publicly financed health care relevant. Governments in developing countries are currently responsible for only a modest role in providing curative services, even for the poor. For example, in south Asia, 80% of children in the lowest income quintile who are brought to care for acute respiratory tract infections use a private provider.<sup>2</sup>

Although some argue that long-term government provision of services is essential, contracted provision is a well established model for delivering primary health-care services. In most of continental Europe, for example, social health insurance funds contract with independent providers. In Canada, UK, and New Zealand, tax-based funding bodies similarly contract



with independent providers (or groups) for provision of virtually all primary health-care services. Even in Scandinavia, where the government role in service provision is the greatest among Organisation for Economic Co-operation and Development (OECD) countries, private providers deliver a substantial amount of primary care. In Norway in 2001, 66% of primary care services were provided by private, contracted doctors, whereas 19% were delivered by salaried doctors.<sup>31</sup>

### Recommendations

On the basis of the success thus far, contracting frequently merits consideration in developing countries that are seeking to rapidly improve service delivery and achieve the MDGs. There is enough evidence supporting contracting to have it, at least, tried on a larger scale. Future efforts at contracting should continue to include rigorous evaluations to better determine its effectiveness, obtain robust estimates of the effect size, and test it under various conditions. Such operational research should also address remaining issues such as the effects of contracting on equity, the usefulness of performance-based bonuses, its cost-effectiveness compared with grants to NGOs, and different approaches to establishing the price of contracts. Ultimately, any debate about the effectiveness of contracting must be settled by systematically obtained evidence.

#### Contributors

B Loevinsohn conceived the idea of the paper, did much of the research, and helped write the article. A Harding co-authored the report.

#### Conflict of interest statement

B Loevinsohn was instrumental in setting up and funding the Cambodia and Bangladesh Urban PHC contracting initiatives. A Harding declares no conflict of interest. No external financing was received for this study.

#### References

- Jones G, Steketee RW, Black RE, et al. How many child deaths can we prevent this year? *Lancet* 2003; **362**: 65–71.
- World Bank. World development report: making services work for poor people. Washington DC: International Bank for Reconstruction and Development, 2004.
- Loevinsohn B. Contracting for the delivery of primary health care in Cambodia: design and initial experience of a large pilot-test. World Bank Institute Flagship Program On-line Journal, December 2000. [http://info.worldbank.org/etools/docs/library/48616/oj\\_cambodia.pdf](http://info.worldbank.org/etools/docs/library/48616/oj_cambodia.pdf) (accessed April 13, 2005).
- Mills A. To contract or not to contract? Issues for low and middle income countries. *Health Policy Plan* 1998; **13**: 32–40.
- Palmer N. The use of private sector contracts for primary health care: theory, evidence, and lessons for low-income and middle-income countries. *Bull World Health Organ* 2000; **78**: 821–29.
- Slack K, Savedoff WD. Public purchaser—private provider contracting for health services: examples from Latin America and the Caribbean (Publication no SOC-111). Washington DC: Inter-American Development Bank, 2001.
- Abramson W. Partnerships between the public sector and non-governmental organizations: contracting for primary health care services. Washington DC: Abt Associates, 1999.
- Soderlund N, Mendoza-Arana P, Goudge J, eds. The new public/private mix in health: exploring the changing landscape. Geneva: Global Forum for Health Research, 2003.
- Frick-Cardelle AJ. Health care reform in Central America: NGO-government collaboration in Guatemala and El Salvador. University of Miami: North-South Center Press, 2003.
- England R. Contracting and performance management in the health sector. London: DFID Health Systems Resource Centre, 2000. [http://www.hlsinstitute.org/projects/detail.jsp?mode=type&id=13864&\\_rySearchWords=contracting](http://www.hlsinstitute.org/projects/detail.jsp?mode=type&id=13864&_rySearchWords=contracting) (accessed March 22, 2005).
- Bhushan I, Keller S, Schwartz B. Achieving the twin objectives of efficiency and equity: contracting health services in Cambodia. ERD Policy Brief Series Number 6. Manila: Economic and Research Department, Asian Development Bank, March, 2002.
- Schwartz JB, Bhushan I. Reducing inequity in the provision of primary health care services: contracting in Cambodia. <http://wbln0018.worldbank.org/HDNet/hddocs.nsf/vtlw/BE2F3B5B9E4D164385256E00006863DC?OpenDocument>. (accessed April 13, 2005).
- Schwartz JB, Bhushan I. Improving equity in immunization through a public-private partnership in Cambodia. *Bull World Health Organ* 2004; **82**: 661–67.
- Karim R, Lamstein SA, Akhtaruzzaman M, Rahman KM, Alam N. The Bangladesh integrated nutrition project community-based nutrition component endline evaluation. Institute of Nutrition and Food Sciences, University of Dhaka, Bangladesh and International Food and Nutrition Center, Tufts University, USA, 2003.
- Mahmud H, Ullah Khan A, Ahmed S. Mid-term health facility survey—urban primary health care project. Dhaka: Mitra and Associates, 2002.
- Lavadenz F, Schwab N, Straatman H. Redes publicas, descentralizadas y comunitarias de salud en Bolivia. *Pan-Am J Public Health* 2001; **9**: 182–89.
- La Forgia G, Mintz P, Cerezo C. Contracting for basic health services: A case study of the Guatemalan experience. Washington DC: World Bank, 2004.
- Eichler R, Auxila P, Pollock J. Promoting preventive health care: paying for performance in Haiti. In: Brooke PJ, Smith SM, eds. Contracting for public services: output based aid and its application. <http://rru.worldbank.org/Features/OBABook.aspx> (accessed April 13, 2005).
- Murthy KJR, Frieden TR, Yazdani A, Hreshikesh P. Public private partnership in tuberculosis control: experience in Hyderabad, India. *Int J Tuberc Lung Dis* 2001; **5**: 354–59.
- Marek T, Diallo I, Ndiaye B, Rakotosalama J. Successful contracting of prevention services: fighting malnutrition in Senegal and Madagascar. *Health Policy Plan* 1999; **14**: 382–89.
- Chakraborty S, D'Souza SA, Northrup RS. Improving private practitioner care of sick children: testing new approaches in rural Bihar. *Health Policy Plan* 2000; **15**: 400–407.
- Nakwani N, Wagstaff A, van Doorslaer E. Socioeconomic inequalities in health: measurement, computation, and statistical inference. *J Econom* 1997; **77**: 87–103.
- Harding A, Preker A. Innovations in health services delivery: corporatization of public hospitals. Washington DC: World Bank, 2003.
- Taylor R. Chapter 3: Contracting for health services. In: Harding A, Preker A, eds. Private participation for health services. Washington DC: World Bank, 2003.
- Savas E. Privatization and public private partnerships. Washington DC: CQ Press, 2000.
- Domberger S. The contracting organization: a strategic guide to outsourcing. New York: Oxford University Press, 1999.
- Hebrang AN, Henigsberg N, Erdeljac V, Foro S, Turek S, Zlatar M. Privatization of the Croatian health care system: effect on indicators of health care accessibility in general medicine. *Lijec Vjesn* 2002; **124**: 239–43. In Croatian.
- Koppel AK, Meiesaar K, Valtonen H, Metsa A, Lember M. Evaluation of primary health care reform in Estonia. *Soc Sci Med* 2003; **56**: 2461–6.
- Turshen M. Privatizing health services in Africa. Piscataway, NJ: Rutgers University Press, 1999.
- Pfeiffer J. International NGOs and primary health care in Mozambique: the need for a new model of collaboration. *Soc Sci Med* 2003; **56**: 725–38.
- Sorensen R Grytten J. Service production and contract choice of primary physician. *Health Policy* 2002; **66**: 73–93.