



Evidence and experience of procurement in health sector decentralisation

*Kerry A. Millington and Minakshi Bhardwaj
Liverpool School of Tropical Medicine
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Question

Review and summary of evidence and experience of other countries' health procurement (vaccines, drugs, medical supplies and medical equipment) in health sector decentralisation. What were the different approaches/models? What were the key lessons, outcomes and impact of the approach used? What worked? What did not?

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1. Overview

Improving the efficiency, effectiveness, equity and responsiveness of supply chains and procurement processes for pharmaceuticals, vaccines and other health products, which make up a large share of total health expenditure in low and middle-income countries (LMICs), has important implications for health system performance and population health. Decentralised governance of health services provides greater autonomy in planning, management and decision making from national to sub-national level and has occurred in many LMICs largely as a response to the primary healthcare approach promoted by international agencies. Evidence suggests that procurement is more efficient when centralised because of economies of scale and improved purchasing power whilst other health system functions such as financing and planning/budgeting benefit more from local context-specific implementation. Nepal is embarking on a process of decentralisation after adopting a federal approach to local governance. This helpdesk report looks at other countries to summarise key findings and lessons learnt from decentralised procurement.

Key findings are as follows:

- Health system decentralisation can be implemented in different forms and to different extents depending on the existing political and public administrative structure of the country and the organisation of the health system itself. Most effective programmes that improve supply chain and procurement processes address the root causes of inefficiencies in the system and provide context-specific interventions.
- Centralised procurement/tendering can achieve cost savings across multiple contexts by creating economies of scale and improved purchasing power.
- A mixed procurement model can benefit health system performance with some functions decentralised, e.g. financing and planning/budgeting (as it is likely that these functions requires greater flexibility to respond to local information and can therefore benefit from greater local choice), and other functions centralised or at a higher level, e.g. inventory control, storage, logistics management information systems, transportation to transfer medicines (as these functions can benefit from oversight, storage capacity, etc.).
- A mixed procurement model can also serve national and subnational programmes with the central level playing an essential role in the procurement, warehousing and distribution of select public health commodities e.g. contraceptives and vaccines.
- The central level can also provide a useful vehicle to serve as the first in-bound warehouse for storing and breaking bulk orders from donors into smaller orders for downstream distribution to facilities.
- Decentralisation can lead to a loss of drug quality oversight and regulation in procurement and across the supply chain. Petty collusions and corruption at the local purchasing level can also be an issue.
- E-procurement can achieve savings and help overcome management concerns and corruptions issues when enabled by political support, pressures from citizens and groups for greater transparency and efficiency, and acceptance by suppliers. However, technological factors and legislative delays can be a challenge.

- The health workforce must be recognized as an important and adaptive factor contributing to the success or failure of health system reforms.

2. Introduction

Key policy questions on decentralisation in health relate to whether and in which ways health sector decentralisation can improve health outcomes. A large proportion of health spending in LMICs is on pharmaceutical, vaccines and other health products. Addressing costs, supply shortages (and treatment interruptions) in complex settings can be critical for strengthening health systems (Seidman & Atun, 2017). Changes to the procurement and supply chain processes include centralising or decentralising purchasing, improving data systems to monitor and inform purchasing (e.g. early-warning systems), improving infrastructure or processes along the supply chain to reduce wastage, and altering the methods for financing purchases.

In 1998, Bossert proposed an analytical framework that can be used to design and evaluate the decentralisation of health systems (Thomas Bossert, 1998). This framework assumes that decentralisation is not an end in itself but rather should be designed and evaluated for its ability to achieve broader objectives of health reform: equity, efficiency, quality and financial soundness. This article presents a ‘decision space’ approach which defines decentralisation as a range of choices over a series of different functions allowed to officials at lower administrative levels. This approach evaluates the incentives that central government can offer to local decision-makers to encourage them to achieve health objectives; local government characteristics that influence decision-making and implementation at the local level (and whether local officials innovate by making choices that are different from those directed by central authorities); and whether the local choices have improved the performance of the local health system in achieving the broader health objectives.

Two studies in Pakistan that used the decision space approach explored the relationships between three dimensions of decentralisation: the degree of local decision-making choice (“decision space”), individual and institutional capacities and local accountability (T. J. Bossert & Mitchell, 2011; T.J. Bossert, Mitchell, & Janjua, 2015). These studies found that targeted capacity building activities at the district level may contribute to improved decision-making and consequently improvements in health coverage and in better administration of the health system. Decentralisation was a varied experience between districts with some district-level officials making greater use of decision space than others, and those who did so also tended to have more capacity to make decisions and were held more accountable to elected local officials for such choices (T. J. Bossert & Mitchell, 2011). The authors suggest that Pakistan’s decentralisation policy should work towards achieving more uniform institutional capacity and encourage greater accountability to local elected officials.

Five systematic reviews examining decentralisation on the health system that have been or are currently being written were found. Seidman and Atun conducted a systematic review investigating whether changes to supply chains and procurement processes can achieve cost savings and/or improve the availability of drugs in LMICs (Seidman & Atun, 2017). Improvements in the procurement and supply of health products were context-specific requiring different types of intervention in different countries. The authors suggest that policymakers should use a problem-driven approach to understand and address the root causes of problems in their drug procurement and supply systems to determine how to improve them. In contrast, centralised procurement/tendering achieved cost savings in the Middle East, Brazil, the Caribbean, Mexico,

other parts of Latin America and several countries in Asia and Africa. It also achieved cost savings when centralising procurement across countries, within a single country, or across multiple municipalities or health centres. These findings suggest that by creating economies of scale and improved purchasing power, centralised procurement and tendering can reduce health system costs in many contexts. Whilst the evidence suggests that centralised procurement has the potential to improve efficiency across multiple contexts, other efforts require more context-specific implementation.

Sumah, Baatiema and Abimbola conducted a systematic review of the impact of decentralisation on health-related equity (Sumah, Baatiema, & Abimbola, 2016). The review found that depending on context, decentralisation could either lead to equity gains or exacerbate inequities. The impact of decentralisation on inequities in health and healthcare depends on pre-existing socio-economic disparities, organisational context and financial barriers to access. The 2016 review helps us better understand how health systems across the world have strengthened (or weakened) after implementing various forms of decentralisation in the health sector. Cobos Munoz et al. have examined the impacts of decentralisation in LMICs using the “six building blocks of health systems” framework of the World Health Organization; they found both positive and negative effects in the six building blocks and therefore mixed results (Cobos Munoz, Merino Amador, Monzon Llamas, Martinez Hernandez, & Santos Sancho, 2017).

Cochrane Collaboration’s Effective Practice and Organisation of Care Group (EPOC) has published a review protocol that aims to assess the effectiveness of decentralisation in improving access to health care, utilisation of health services, population health and other outcomes of interest (Sreeramareddy & Sathyanarayana, 2013), with the final report yet to be published. Finally, Liwang and Wyss are currently involved in a systematic review that aims to examine the effectiveness of decentralisation in improving health system performance (Liwang & Wyss, 2017). They caution that there must be a balance between minimising the risk of bias with what studies are realistic when assessing either the impact or effectiveness of decentralisation, which is often implemented as part of a public sector reform process in a country (Liwang & Wyss, 2017). Although study designs such as cross-sectional studies (and also qualitative studies) carry a risk of bias, such studies provide useful information to help explain why decentralisation succeeds or fails in achieving what it was intended for (effectiveness), or why outcomes are positive in some settings and negative in others (impacts) (Liwang & Wyss, 2017).

Decentralisation represents many complex and interconnected set of processes, typically context-specific, and should therefore be implemented and evaluated as a complex intervention (Sumah et al., 2016). No one form of decentralisation will be applicable for all settings, but rather it is important to understand what makes decentralisation positively impactful or effective for the health sector in some contexts and not in others. Sumah’s review is limited to only six countries (Spain, Canada, China, Switzerland, Chile and Columbia), suggesting that there is a lack of good studies on decentralisation in many other countries in the peer-reviewed literature.

3. India

Health care system

Health is a state subject under the Indian Constitution. Each state therefore has its own healthcare delivery system in which both public and private (for profit as well as non-profit) actors operate. While states are responsible for the functioning of their respective healthcare systems,

certain responsibilities also fall on the federal (central) government, namely aspects of policy-making, planning, guiding, assisting, evaluating and coordinating the work of various provincial health authorities and providing funding to implement national programmes.

At the local level, Panchayati Raj institutions (PRIs)—a decentralized system of local governance and their elected representatives participate in the functioning of district and sub-district institutions through various committees. Public actors in the Indian health care system include the Ministry of Health and Family Welfare (MoHFW), state governments, and municipal and local level bodies. The ministry consists of the Department of Health and Family Welfare and Department of Health Research (Bhatia, 2014).

The Directorate General of Health Services, an attached office of the Department of Health and Family Welfare, provides technical advice and is involved in the implementation of health schemes. Each state has its own State Directorate of Health Services and State Department of Health and Family Welfare, which is responsible for providing care to its population. District-level health services provide a link between each state and primary care services.

Drug procurement system

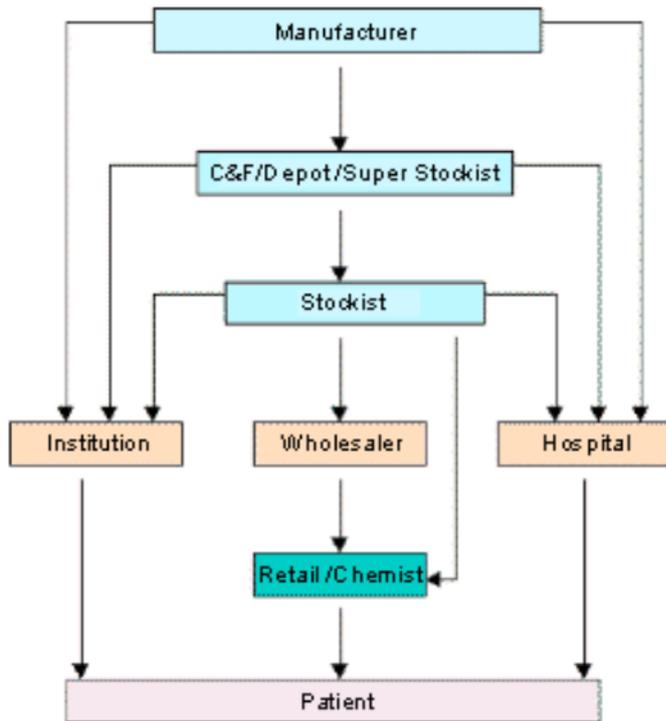
There is no single central government procurement office in India. The Medical Store Organisation (MSO), a subordinate wing of the Directorate General of Health Services under the Ministry of Health and Family Welfare, is responsible for procurement of medicines and ensuring its availability to various health care organisations including central government scheme organisations. At present the Medical Stores Organisation consist of seven Government Medical Store Depots, located at Mumbai, Kolkata, Chennai, Hyderabad, Guwahati, Karnal and New Delhi. The depots at Mumbai, Kolkata, and Chennai have Chemical Testing Laboratories attached to them to ensure the quality of drugs purchased from the firms. MSO acquires drugs directly from pharma through tenders and distributes drugs supplied by international organisations.

The Indian drug distribution system has a small number of layers: the pharmaceutical manufacturers, clearing (or carrying) and forwarding agents (CFAs)/depots, super-stockists, stockists, wholesalers and retailers. The rationale for CFAs depends on the divisions between central and state taxation systems. Large pharmaceuticals have one or more CFA in each state. There is confusion regarding the role of CFAs: whether they work for one production company or can operate for several companies, sometimes over 50. The latter view is more prevalent among analysts. The CFAs are the weakest link in the supply chain as they exist because of the taxation system, and new retail systems are trying to bypass CFAs and deal directly with the producers. The average fee of CFAs may be fixed or may depend on the turnover per year (2-4%). Stockists market products for 6-8 pharmaceutical companies, however, given mergers among several pharma companies, the number of stockists per company has almost doubled, leading to quite tough competition among stockists at this distribution level. There are disagreements over the margins paid to the stockists. The estimated number of stockists in India is over 60,000. The rest of the market is made up of retailers/pharmacies/dispensers who often also work as prescribers. These accounts for approximately 70-80% of the market and the rest are sold directly through hospital pharmacies. Retailers comprise a wide variety, from small shops to retail chains.

In India, the public and private procurement systems run in parallel. It is generally assumed that the private sector and NGO procurement are much smaller than state and federal procurement.

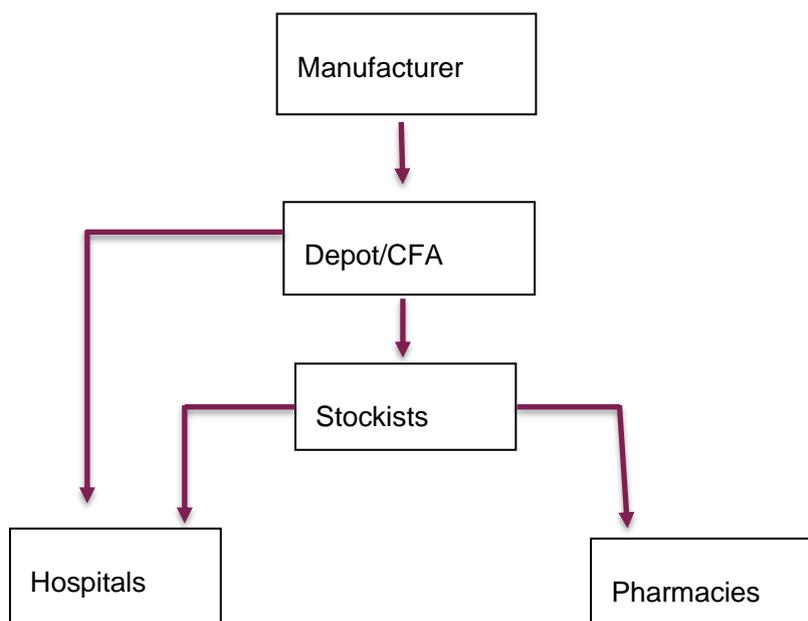
The MSO is responsible for vaccines received from international organisations and for national eradication programs. The majority of the public sector procurement system is carried out by state governments and their practices vary across the country. The armed forces and railways have separate medical depots under the central government that are contracted independently. There is also a Central Government Health Scheme (CGHS) for retired and serving government employees in which MSOs are responsible for procurement.

Diagrammatic representation of channels of drug distribution in India



Source: Jeffery R. et.al Pharmaceuticals distribution systems in India. Working paper 1a. July 2007. (as represented)(Jeffrey, 2007)

Current distribution set up in India



Source: (Jeffrey, 2007) (as represented)

Deficiencies in the existing system

India's pharmaceutical drug regulation system is fractured. Drug monitoring in the country is sparse; it is split between far too many agencies—36 independent state regulators, and one central. The country lacks a cohesive policy governing the procurement and recall of drugs. The reasons behind this fragmented system are many. Firstly, under the 7th Schedule of the Constitution, public health, sanitation, hospitals and dispensaries are listed as matters on which state governments can legislate. This allows them to develop their own regulatory policy and not be held accountable by any central body. Secondly, there are no overarching laws protecting procurement or recalling 'not of standard quality drugs'- those that do not meet the dosage and quality standards. Without any coherent policies, the pharma companies continue to make money at the cost of patients' health through the supply of low standard drugs. In the absence of a central policy, the states have their own individual procurement policies and have failed to build consensus between states. Similarly, the armed forces and railways have their own hospitals with individual policies for buying medicines. This results in malpractice at several levels. The companies on the approved register of armed forces receive requests to submit tenders, including tendering for the supply of medicines from big pharma companies that are registered with the armed forces for supply. The decisions to give tenders are largely based on 'drug price' – a system that leads to accessing the cheapest drugs possible.

The Government of India carried out an audit in 2007, which found that 80% of the drugs were secured by domestic suppliers and, contrary to the specifications of the Health Ministry, local authorities had foregone the practice of drawing samples for testing: most central government hospitals relied on reports submitted by the suppliers. This meant that most patients consumed sub-standard drugs. The audit in 2012 for the Armed Forces Medical Stores found that the share of sub-standard drugs rose from 15% in 2006-2007 to 31% in 2010-2011. A similar audit in 2014 found that out of 20 railways hospitals, six prescribed drugs before receipt of the lab results and certified them as 'standard quality medicine'.

Lessons from different procurement models in different states

The rationale for providing cheaper drugs has been to keep out-of-pocket expenditures for patients as low as possible, given that over 68% of people in India have limited access to essential medicines. Singh et.al (2013) compared five states in India based on the type of procurement models (centralised, decentralised and mixed), and looking for low financial burden, good quality, timely availability, minimal wastage and transparency (Singh, Tatambhotla, Kalvakuntla, & Chokshi, 2013). They found that for centralised pooled procurement models such as in Tamil Nadu, Kerala and Odisha, it is imperative to have an optimum number of warehouses for all public health facilities as well as adequate transportation to transfer medicines.

Establishing IT systems for managing and monitoring the entire system is critical. Maharashtra follows a centralised rate for contracting but decentralised purchasing where suppliers directly deliver the medicines to the facilities. Transportation costs are not borne by the state but are built into the drug price. This system also requires significant investment in storage facilities in each institution. Punjab follows a mixed system of centralised purchasing but gets user charges collected by district hospitals which are then utilised to buy drugs from open market.

To save limited financial resources, centralised systems focus on Essential Drugs List and reduce costs through volume discounts. However, bulk discounts do not necessarily lead to cheaper drug pricing, as seen in Tamil Nadu, Odisha. Other factors such as suppliers' location are impacting on drug pricing. Effective inventory management was highlighted as key to reducing wastage of medicine. In Kerala, the initial order only contains 70-75% of the required quantity, and is followed by a second purchase order to avoid wastage and spacing issues. Manual recording of purchases not only leads to increase in inaccuracies but also wastage of materials and space. In centralised procurement, distribution is managed centrally and it is the responsibility of the procurement agency to ensure availability of drugs at user institutions. However, in decentralised models such as in Punjab and Maharashtra, the supply is sporadic for various reasons such as improper planning, delayed payments, etc.

A procurement organisation has two levers to ensure that only quality drugs enter the system: (1) prequalification criteria to filter out unqualified suppliers, and (2) external quality testing protocols. When these levers are used together, quality is ensured while still keeping the prices low. Tamil Nadu and Kerala have empanelled laboratories for sample quality testing before distribution, but Maharashtra and Odisha rely on suppliers' internal quality certificates. In order to improve efficiency and accountability in procurement, Tamil Nadu and Kerala have autonomous organisations within the public sector and headed by a civil servant with technical expertise. Odisha, Punjab and Maharashtra have procurement cells as part of the Directorate of Health Services of the state government. A clear difference between the efficiencies of the processes of procurement is visible between autonomous and state-run organisations.

4. Ghana

Health care system

Health sector reform took place in Ghana from 1998 to 2002 under the Health Sector Support Project (HSSP) and, supported by the World Bank, it continued under another five-year medium-term health strategy from 2002 to 2006. Multiple health reform initiatives were implemented, most

notably the decentralisation of health management and the integration of supply systems to improve management efficiency and to better respond to local population health needs. The central level still plays an essential role in several vertical treatment programmes that are intrinsic to public health, including vaccines, family planning commodities and bed nets. Otherwise, Ghana's pharmaceutical procurement and supply is mostly decentralized. Budget management centres (BMC) were established to autonomously set and manage budgets. Each BMC is responsible for making procurement decisions, with guidance from the MOH Procurement Procedure Manual (Ministry of Health Ghana, July 2004) on committee formation, bid evaluation, specification and roles and responsibilities. The National Health Insurance Scheme (NHIS) was introduced in 2005 to replace the "cash and carry system" to provide an equitable insurance scheme that ensured that treatment was provided first before payment.

In theory, the BMCs use their revolving funds to purchase essential drugs from the public medical stores – Central Medical Stores, Regional Medical Stores or District Medical Stores (CMS, RMS or DMS). A BMC goes directly to the medical stores to purchase, collect and transport drugs. In some cases, the medical stores may reject the order if it seems inappropriate (too much in volume for the target population of a facility, or non-essential drugs for that facility level, or if the facility does not have personnel skilled in use of that drug) or may not be able to provide the drugs because they do not have them in stock. In the latter case, this is supposed to result in the issuing of a 'non-availability certificate' which authorises the BMC to purchase drugs from the private sector (the procurement committee formed by the Regional Health Authority can shop locally for supplies, comparing prices and quality for consignments worth under \$50,000 or go out to tender for orders larger than \$50,000; with lower level facilities following a similar approach) (Sarley et al., July 2003).

However, results from a survey conducted in 2003 showed that more than 50 percent of medicines came from the private sector because of factors such as lower prices and better quality, availability and packaging (Sarley et al., July 2003). Thus, in practice, the guidelines are not always followed with the BMC often going directly to the private sector, whether they have a non-availability certificate or not (Saleh, 2013). The CMS does provide at least 30 percent of the country's needs, but a strategic approach is lacking on the supply chain: policy requires direct delivery by CMS to regional stores, but in practice most regional stores use their own transportation to get supplies (Saleh, 2013). The CMS also continues to play a critical role in the procurement, warehousing and distribution of select public health commodities (e.g. contraceptives and vaccines) and most donors rely on CMS to serve as the first in-bound warehouse for storing and breaking bulk orders into smaller orders for downstream distribution to facilities (Saleh, 2013).

Decentralised procurement and the introduction of the NHIS have increased access to drugs but drug prices have significantly gone up, creating cost inefficiencies. In 2007, Ghana procured drugs at 150 percent of the international drug reference price, compared with approximately 79 percent in 1993 (Sarley et al., July 2003). High prices were attributed to: (a) decentralised procurement of drugs at the district and sub-district level which did not benefit from economies of scale, (b) NHIS's drug pricing policy which dictates pricing at a median range of the current Ghana market rather than attaching it to MOH's mark-up policies or to international reference pricing, and (c) the difficulty of enforcing price regulations (Saleh, 2013). The MOH policy that enables districts and health facilities to retain internally generated funds (IGFs) and the flexibility to use IGFs for procurement of drugs has improved access to drugs but procurement of smaller quantities at one time has resulted in increased drug prices (Saleh, 2013).

Several studies have shown that the CMS could purchase well below international prices, mainly because of economies of scale in purchasing bulk orders, but reduced capital made it unable to conduct its mandate of procurement and distribution (Saleh, 2013). Pooled procurement at national and regional levels would help control prices and ensure better quality of drugs (Saleh, 2013). Saleh suggests in his 2013 World Bank report that Ghana could reinvent MOH's central procurement unit for drugs, commodities and medical equipment into a Group Purchasing Organisation (GPO) and technical services department. The GPO could negotiate and develop contracts on behalf of Ghana's health facilities, provide quality oversight across the supply chain and provide technical support in helping MOH monitor what medicines are available and affordable to ultimately improve pricing efficiency (Saleh, 2013). The GPO could also reduce the possibility of petty collusions and corruption at the local purchasing level.

About one-half of all NHIS claims payments are for drugs (Saleh, 2013). This increasing share is seen to be a result of: (a) decentralised procurement of drugs and limited benefits from economies of scale, (b) limited monitoring and enforcement of drug pricing mark-ups, (c) limited control over prescriptions, and (d) prescribing behaviour in favour of more expensive drugs. Drug prices could be controlled through better enforcement, monitoring and an NHIS pricing list that strictly adheres to drug pricing policies and mark-ups. Less than half of Ghana's population has insurance (Saleh, 2013). Approximately half are paying for their health care out of pocket (OOP), and they are expected to pay at or above market prices.

Logistic system decentralisation

DELIVER and the Harvard School of Public Health designed a series of studies to be implemented in six countries to assess the impact of decentralisation and integration of decision-making authority to regional and district levels on the logistics management and distribution of essential drugs, contraceptives and vaccines. The second study was in Ghana. Using the decision space model, the study found that greater decision space was related to better performance for financing and planning/budgeting; and worse performance was related to procurement, inventory control, storage, logistics management information systems, training, and client contact (T Bossert, Dowser, Amenyah, & Copeland, 2004). Comparing the findings from this study with those from the first study conducted in Guatemala (T. J. Bossert, Bowser, Amenyah, Copeland, & GETSA, 2003), moderate ranges of choice over financing and planning/budgeting are associated with better performance for those functions, as it is likely that planning and budgeting requires greater flexibility to respond to local information, whilst inventory control, LMIS and storage should remain centralised. No logistics system is fully centralised or decentralised and Bossert et al (2004) tentatively suggest that more local choice should be granted over some functions whilst central control over other functions should be retained.

5. Uganda and Bangladesh

Health care systems

Bangladesh became a parliamentary democracy in 1991 after 20 years under a military regime. A wide programme of reforms was initiated in response to a rigid central government structure and disagreement between the main parties inhibiting the response to local health needs. The main reforms involved unifying the two separate divisions of health services and family planning with the intention of improving their efficiency and responsiveness to the user population.

Uganda implanted a series of reforms after the health service mostly collapsed in the 1970s and 1980s. Decentralisation of service delivery and accompanying reforms in the civil service were both aimed at making the central and local authorities function efficiently and democratically.

Human resource issues

Health reform initiatives have not always considered human resource issues that are relevant to their success and have often failed to include participation or perspectives of health workers in reform planning processes and decision-making. Health sector reform must include the participation or perspectives of the health workforce in reform planning processes and decision-making (Martineau & Buchan, 2000). Ssenkooba et al. explore the mechanisms through which health sector reforms either promote or discourage health worker performance (Ssenkooba et al., 2007). Their paper presents findings from a comparative analysis of two country case studies investigating the impact of health sector reforms on human resources in Bangladesh and Uganda. In both Uganda and Bangladesh reform planners neglected the role of context in their planning of reform objectives and assumed that the workforce would act as a passive element in reform implementation.

In Bangladesh, the separate logistical management systems of the health and family planning services were replaced by an integrated logistical system, including unified arrangements for procurement, storage, distribution and transportation. The aim was to improve service quality, motivate employees to perform better and reduce cost, however, quality and motivation problems persisted and drug shortages continued. Drug shortages and general procurement failures emerged as a source of bad public relations between the health workforce and the communities despite originating in broader systemic problems such as financing and budget constraints that preceded the initiation of reform objectives.

In Uganda, rapid decentralisation failed to provide sufficient competence for human resource management. However, closer ties between health workers and community leaders was positive with a greater understanding by the community, who expected smooth running services and consistent availability of drugs and equipment, of the limitations health workers face because of budget constraints and procurement failures at higher levels of the system. The experience of health sector reform in Bangladesh and Uganda highlights the importance of careful analysis of contextual factors in the design and implementation of reform objectives and the significance of recognising the workforce as an important and adaptive factor contributing to the success or failure of the reforms.

Key points from their paper are as follows (Ssenkooba et al., 2007):

1. By keeping the dynamic responses model in mind, national and international reform planners can design reform objectives that ultimately enhance and improve services as felt by the communities by encouraging favourable responses amongst the workforce.
2. Reform planners need to take a closer look at the context within which the health system operates in order to recognise potential 'inhospitable elements' which may hinder reform objectives or 'hospitable elements' which may support reform initiatives and provide a basis for improvements in the operation and management of health systems.
3. Reform programmes need to incorporate active implementation research systems to learn the contextual dynamics and responses, as well as have inbuilt programme capacity for corrective measures.

4. Health workers are key stakeholders in any reform process and should participate at all stages, that is, conceptualisation, design and implementation. Reforms tend to create losers and winners or can change power structures but it is important, at the least, that winners and losers understand the purpose of change and have confidence in the process of consultations on which change has been determined.
5. How health workers perceive their relationship with the community will affect their job motivation and performance. This is an important but neglected criterion for evaluating the impact of human sector reforms.

6. Brazil

Health care system

Brazil has a mixed health system formed by a large public health system, the SUS (Unified Health System), the health supplemental companies, and out-of-pocket payments. The public system is one of universal coverage, so every Brazilian citizen can use it at no additional cost. In addition to public hospitals and clinics, SUS oversees the distribution of publicly funded medicines that are listed on Brazil's Essential Medicines List (EML), as well as medicines for rare diseases and those affecting small groups (e.g. anti-retroviral drugs for HIV/AIDS, Hepatitis B and C). Brazil has one of the largest healthcare systems in the world, committed to universal access to medicines.

Even with this guaranteed right to health, included in the country's constitution, 25 percent of the population (about 49 million people) have health insurance - though they are still entitled to use the public system (Branco de Araújo & Stefani, 2014).

Drug procurement system

In 1998 the National Medicine Policy was published that also includes medicine procurement and availability and utilisation in the health system. The procurement system in Brazil is a complex administrative process and it is conducted independently by more than 5,500 municipalities, 26 states and the Federal District and the federal government as well as hospitals under indirect public administration (Chama Borges Luz, Garcia Serpa Osorio-de-Castro, Magarinos-Torres, & Wettermark, 2017). This means that in Brazil both the manufacturers and wholesalers can supply hospitals (both private and public) and public administration. The pricing of the drug is subject to the approval of the Pharmaceutical Market Regulatory Board (CMED) which is made up of representatives from given ministries and supported by staff based in the Health Surveillance Agency (Anvisa). Generally, public hospitals and administrations are required to run biddings whose pricing is formalised by CMED's wholesale prices. However, the margin for pharmacists' discretion in public health facilities is constrained by the procurement rules and decisions of the procurement staff through both open and negotiated procedures for procurement (Fiuza, Ferraz, & Mourão, 2015).

The secretariat of Logistics and Information Technology in the Ministry of Planning, Budget and Management established an e-procurement system (COMPRASNET). This is a web-based online procurement system used by all the federal government procurement units. Federal entities register their procurement needs (both goods and services) and the system then automatically informs registered suppliers by email so they can download bidding information.

Auctions and prices are open for inspection by the public, and auction results are posted immediately. E-procurement is intended to provide an instrument for social control of public expenditure through its public transparency, accountability, efficiency and efficacy (Ozorio de Almeida, 2002). Sigulem and Zucchi conducted a study to evaluate the use of e-procurement to obtain supplies for a network of seven university hospitals with a joint purchase system (Sigulem & Zucchi, 2009). The focus/factors examined by the study included pricing, number of suppliers quoting, unit price, type of supplier etc. The results showed that the e-procurement was successful in achieving real savings and helped to overcome management concerns and corruption issues.

Enablers and barriers to e-procurement

Enablers-

- Political will inside the government;
- External pressures from citizens and groups for greater transparency and efficiency;
- Acceptance by suppliers.

Barriers/Challenges

- Technological factors causing disruption or temporary unavailability of the system;
- Legislative delays caused by new legislation and rules to allow for new forms of procurement.

Good governance is essential to a healthy health system but corruption in pharmaceutical procurement is always a threat (Klitgaard, Maclean-Abaroa, & Parris, 2000). This includes collusion in bidding, “fixed” procurement bidding and kickbacks to public officials to gain support for a bid. To address corruption in procurement, and especially in pharmaceutical procurement practices, governments across the globe are turning to good governance measures such as drug pricing transparency. Kohler et al. (2015) examined whether Brazil’s approach to increasing pricing transparency resulted in lower drug prices over time (Kohler, Mitsakakis, Saadat, Byng, & Martinez, 2015). The authors could extract such drug pricing information from a governmental online database (BPS), to which reporting of procurement pricing information, at the federal level, is mandatory. Analysis of the effect that pricing transparency has had on drug purchase prices in two socioeconomically different Brazilian states, Paraiba and Sao Paulo, over a five-year period was carried out. The results showed that although BPS allowed more transparency in drug pricing, there were no consistent reductions in drug purchase prices.

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