



Picture from the Democratic Republic of Congo, by J.C. Goussaud

Anti-corruption in the health sector: Preventing drug diversion through supply chain management

Drug supply is an essential component of health care systems, accounting for 10-30% of health care costs. Drugs can be expensive, and willingness to pay for drugs is high, creating the danger that employees will divert drugs for re-packaging and sale in the gray market, or for personal use.

This case-based brief¹ describes how the President's Emergency Plan for AIDS Relief (the U.S. PEPFAR initiative) and the related Supply Chain Management System (SCMS) Project are working to increase transparency and provide a secure, high-quality supply of HIV/AIDS drugs to developing countries in Africa and Asia.

One carton of an expensive product entering a pharmaceutical warehouse may be worth five years' wages for the average warehouse worker. Stock loss is a common problem in public sector medical stores, where loss rates often exceed 15%.

The global pandemic of HIV/AIDS, and the commitment to expanding access to antiretroviral treatment in developing countries, has increased the danger of corruption. Pressure to rapidly scale-up treatment programs leads to pressure

to spend funds quickly, a known risk factor for corruption. In addition, the gap in the supply of health workers is itself a risk². As health personnel become sick with AIDS themselves, or leave the country in search of a better life, the challenge of finding trained managers and putting in place controls on discretion increases. Drug supply pipelines which were already weak are now being filled with more product, allowing more opportunity for losses and system breakdown.

Two particular dangers for HIV/AIDS drugs are pharmaceutical “arbitrage” or parallel trade, and the risk of fake or counterfeit drugs. In the case of HIV/AIDS drugs, the fear of parallel trade is that drugs produced and sold at lower prices for the public sector market may instead be illegally diverted and re-sold for higher profit in the private market. To accomplish this diversion, fake or counterfeit drugs may be substituted for the publicly-purchased drugs. The result is decreased availability of drugs for the poor, increased risk of drug-resistant HIV, and higher rates of death and morbidity from counterfeit, fake, and sub-standard drugs. An additional outcome is less profit for pharmaceutical companies, which some people believe can undermine investments in research and development, or erode private sector commitment to expanding treatment access for the poor.

This case-based brief³ describes how the President’s Emergency Plan for AIDS Relief (the U.S. PEPFAR initiative) and the related Supply Chain Management System (SCMS) Project are working to increase transparency and provide a secure, high-quality supply of HIV/AIDS drugs to developing countries in Africa and Asia. To achieve this goal, SCMS is promoting commercial best practice in supply chain management in true public-private partnership with public sector programs. Drug manufacturers often contract directly with private distributors to deliver drug orders. Although less frequent, this type of outsourcing has also been used in the public sector, where countries such as Chile, Colombia, Mexico, Peru, and Thailand have contracted with suppliers to deliver drugs directly to service delivery points³. The management systems used by these private distribution companies are some of the best commercial practices

known. This case brief describes some of these practices now being used by Pharmaceutical Healthcare Distributors of South Africa, one of the team member organizations in the SCMS project, and other distributors to provide secure and quality pharmaceutical warehousing and distribution.

SUPPLY CHAIN MANAGEMENT AND PEPFAR

In September 2005, the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR), through the U.S. Agency for International Development, awarded the SCMS contract to strengthen the supply chains providing drugs to treat HIV/AIDS and other infectious diseases in PEPFAR-assisted countries. PEPFAR anticipates purchasing up to \$500 million in drugs to be delivered through these supply chains in the first three years of the SCMS project. The Partnership for Supply Chain Management Systems is a non-profit organization established by John Snow Research & Training, Inc. and Management Sciences for Health, Inc. The Partnership has brought together a team of 17 separate organizations from the private sector, academia, the non-profit sector, and the faith-based community to implement SCMS, and is well connected to existing delivery and purchasing systems in the developing world.

One of the SCMS team members is Pharmaceutical Healthcare Distributors (PHD) of South Africa, a member of the Fuel Logistics Group of companies. Started in 2000, PHD is a commercial service for drug stockholding and delivery and currently reaches 9,000 delivery points on behalf of 30 manufacturers. Services include secure warehousing, inventory management, and drug distribution to individual wholesalers, retailers, hospitals, clinics, and physicians’ offices.

INTERVENTIONS FOR TRANSPARENCY IN PROCUREMENT

SCMS has created a procurement system which follows the U.S. government federal acquisition guidelines. These guidelines require public listing of tenders and other procedures so that the procurement is open, competitive, and transparent.

To provide added transparency, SCMS will establish an online catalogue of prices for items procured under longer-term supply contracts negotiated for antiretrovirals and other commonly needed products. Price transparency is a deterrent to corruption in procurement, as evidenced by the hospital price reporting experience in Argentina. The Ministry of Health in Argentina created a price monitoring system that tracked prices paid by public hospitals for common drugs, sharing this data with the reporting hospitals. Purchase prices for monitored items immediately fell by an average of 12%⁴. Other organizations have implemented strategies for promoting transparency through the publication of comparative price information as well: for example, Management Sciences for Health, in collaboration with WHO, has been publishing the International Drug Price Indicators Guide since 1986⁵.

Having access to the prices paid by SCMS for HIV/AIDS supplies can be useful information to country procurement officers, national audit offices, and international donors. It enhances accountability by providing a standard against which to measure other procurements. If a country is procuring drugs at prices that are very different from those published, oversight committees can question why. This creates a deterrent to the bribes and kickbacks that inflate drug prices in many countries.

INTERVENTIONS FOR SECURE DISTRIBUTION

Once drugs have been procured, they must be safely and efficiently delivered through the supply chain to the ultimate consumers. Cost-effective strategies employed successfully by Pharmaceutical Healthcare Distributors to safeguard drug supply and avoid diversion focus on physical protection and security, segregation of workforce and duties, and risk analysis for dispatch and transportation. In addition, information management can be used to detect diversion of supply from public to private channels. SCMS will be adopting some of these best practices as it creates a network of regional drug distribution centers for HIV/AIDS commodity distribution.

PHYSICAL PROTECTION AND SECURITY

Physical protection is important to guard against theft. Standard measures include locked and gated facilities and compounds, divided areas with controlled access based on drug value, and security guards.

Sometimes people seek jobs in pharmaceutical warehouses to be in a position to steal; at other times, employees may be approached later and enticed to participate in a corrupt scheme. Security procedures can guard against these potential risks. First, terms of employment can make clear that all employees will be screened prior to employment, then annually, for credit history and criminal record. In addition, an employer can require that employees take annual polygraphs. Finally, surveillance can protect against the danger that an employee will leave a door unlocked, skip security procedures, sneak out supplies, or otherwise facilitate theft. Overt surveillance may involve guards frisking employees as they leave the premises, or independent checking of orders. Some organizations even use covert monitoring methods, which provide protection by placing paid informant staff in different roles, to listen and report back suspicious activity.

SEGREGATION OF WORKFORCE AND DUTIES

In addition to physical protection and security, a distributor can guard against corruption through the segregation of workforce. At PHD, for example, warehouses are divided into three divisions or units, each of which has separate physical areas, personnel policies, and operating procedures. A cage wall separates the Receiving and Warehousing personnel from the Security and Checking staff; another wall separates both these groups of personnel from the Dispatch and Transportation staff. Each division has separate shift times and tea times; personnel wear different color uniforms, report to different supervisors, and are paid on separate payrolls. Segregating the workforce in this manner prevents collusion and provides limits on discretion.

Pharmaceutical Healthcare Distributors has applied this principle

to the segregation of duties in the order fulfillment, checking, and transport processes as well. Each person has access only to the information they need to fulfill their own tasks. For example, in the Receiving and Warehouse department, the “order picker” (the person who assembles the different products requested by a particular client) knows the product name, bin location, and order quantity, but is not aware who the product is for or where it is going. Once the order has been picked, it is moved to Security and Checking unit. Here, the “order checker” (the person who inspects the order for errors and completeness) prints the invoice and places it in the box with the order; the box is then sealed and labeled only with the location. When the box is moved into the Dispatch and Transport department, the dispatch staff and driver only will know where the box is going: they are not given information on the contents or value of the shipment. Cell phones are restricted in the warehouse as well, to prevent sharing of information with people outside the warehouse. All these management procedures combine to create barriers to collusion and corruption.

DISPATCH AND TRANSPORTATION

The risk of theft during transport and delivery is reduced through risk analysis of routes and shipments. Corruption can occur if drivers have been bribed or were planted in the organization (although the danger of this is lessened through the security measures mentioned earlier). On high risk routes, a distributor may employ higher levels of control and security, with approaches ranging from satellite tracking to interactive driver response or even unmarked escort vehicles to guard delivery trucks. Satellite tracking and monitoring can also provide early warning if a vehicle deviates from the route the driver was scheduled to take. Sophisticated devices can even monitor patterns of braking and acceleration, which can indicate if a delivery truck has been hijacked. Transport dispatchers may phone drivers at regular intervals on very high risk routes. Finally, some organizations may attach a monitoring device to a high risk shipment, which allows the shipment to be tracked in the event that it is removed from the transport vehicle prior to the scheduled

delivery.

INFORMATION MANAGEMENT

Arbitrage, or the diversion of product intended for the public sector to private markets where the pharmaceuticals are sold for a higher price, creates barriers to equitable access to care, in addition to reducing margins for pharmaceutical manufacturers. Although it is difficult to measure the extent of the problem, one study in Greece estimated that 22-24% of pharmaceuticals imported or manufactured for consumption in that country were re-sold into other markets⁶. Applying the lower estimate (22%) to the total pharmaceuticals market in South Africa, this suggests that up to USD \$418 million (3.2 billion Rand) may be diverted each year from the public sector to private markets. Diversion of drug supply can be detected through batch monitoring. Each batch of product that is delivered from a manufacturer to the warehouse is assigned a unique code which identifies the appropriate channel (i.e. private or public distribution). When products are stocked on shelves and picked for orders, the product that is coded for the public channel will go only to public clients, while private channel stock will be packed and shipped to private clients.

Suspected leaks in supply can be investigated by tracing the batch number, and checking to make sure that the channel is correct. If the channel is not correct (i.e. if public stock has found its way into private facilities), then further investigation is warranted. To trace leaks, it is even possible to deploy covert bar-coded product into a particular distribution channel, to obtain evidence of diversion.

Packaging technology can also be used to prevent diversion of stock. For example, new technology enables a manufacturer, either on its own initiative or to comply with a tender, to print information on the inside of the blister pack foil backing used for drug packaging. For some drugs, the message printed on the inside of the foil is “State product, not for sale. If you have paid for this item, it was stolen.” Both the government and the manufacturers have an incentive to use such technology. The government assures that public supplies are not being stolen, while the manufacturers

assure that products they sell to public procurement agencies at discounted, public-sector prices are not being arbitrated back into private markets.

CONCLUSION

Drugs are expensive and essential to high quality medical care. With the growing HIV/AIDS pandemic, the market for drugs in the developing world is expanding, creating dangers of drug diversion and the possibility of counterfeit or fake drugs entering public and private markets, especially where government regulatory systems are weak. Poor and vulnerable population groups are most likely to be affected by these problems and to suffer higher morbidity and mortality as a result. Commercial best practice shows that there are logistics management techniques that can safeguard stock. In South Africa, Pharmaceutical Healthcare Distributors has reduced stock loss to less than 0.1%, providing evidence that investment in preventing diversion can save valuable commodities. These savings can allow more people to be treated. PEPFAR and SCMS are applying commercial best practices to ensure that safe, reliable, high-quality pharmaceutical products get to the patients and consumers who need them, and that supply chains operate in a sustainable manner. In the fight against corruption, it is an effort that deserves our attention and support.

NOTES

1. This brief is based on research and interviews with key informants working on drug supply logistics issues. Discussions with Dr. Iain Barton, CEO of Pharmaceutical Healthcare Distributors, and Mr. David Jamieson of Crown Agents were especially helpful. Mr. Richard Owens of SCMS reviewed an earlier draft of this case brief.
2. Dräger, S., G. Gedik and M R Dal Poz. 2006. Health workforce issues and the Global Fund to fight AIDS, Tuberculosis, and Malaria: an analytic review. Human Resources for Health. 4(23). Open Source journal available online without cost. <http://www.human-resources-health.com/content/4/1/23>.
3. WHO Action Programme on Essential Drugs. 1998. Double Issue on Managing Drug Supply. Essential Drugs Monitor [25 and 26], 1–36.
4. Schargrodsky, E., Mera, J., and Weinschelbaum, F.: Transparency and accountability in Argentina's hospitals. In Diagnosis Corruption: Fraud in Latin America's Public Hospitals, edited by R. di Tella and W. D. Savedoff. Inter-American Development Bank, Washington, DC, 2001, pp. 95-122.
5. Management Sciences for Health and WHO,

"International Drug Price Indicator Guide" Boston, MA: Management Sciences for Health, 2005. Online version at [at http://erc.msh.org/](http://erc.msh.org/)

6. Kanavos P, Cost-i-Font J, Merkur S, Gemmil M. 2004 "The economic impact of pharmaceutical parallel trade in European Union member states: a stakeholder analysis". London: London School of Economics and Political Science. Cited in Lynch K. April 2006. "Arbitrage and access: do measures to stop pharmaceutical arbitrage threaten access to medicines in source countries?" Boston MA: Department of International Health, Concentration Paper.

FURTHER READING

- The President's Emergency Plan for AIDS Relief (PEPFAR) www.usaid.gov/our_work/global_health/aids/pepfar.html
- Supply Chain Management Systems (SCMS) Project. www.pfscm.org
- Pharmaceutical Healthcare Distributors (Pty) Ltd. <http://www.phdist.co.za/opa5/Company/Default/Default.htm>

more information on
ANTI-CORRUPTION IN THE HEALTH SECTOR:

www.U4.no/themes/health/

- Causes and consequences
- Financial resources management
- Management of medical supplies
- Health worker / patient interaction
- Examples of good practice by donors
- Budget transparency
- Salaries
- Procurement in the health sector
- Public expenditure tracking surveys
- Literature review / Links



Anti-
Corruption
Resource
Centre
www.U4.no

CMI CHR.
MICHELSEN
INSTITUTE