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Original Research

Delivering medicines in a challenging environment: the pharmaceutical sector in East Timor (a descriptive study)

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ABSTRACT[*]

Background: The health status of the East Timorese population is very poor and much of the health system was destroyed during the violence of 1999. As in other developing countries, the lack of appropriate and high quality medicines significantly compromises patient care throughout the health system. The aim of this study was to examine the purchase, distribution and supply of pharmaceuticals in East Timor, and to identify the challenges faced by the pharmaceutical sector.
Methods: Key informant interviews were held with health professionals and others involved in health care and the pharmaceutical sector in East Timor; documents (including regulations and rules) were reviewed; and daily activities observed at the Central Store, health centers, pharmacies and retail shops.
Results: Some of the major challenges facing the pharmaceutical sector include lack of trained staff, sub-optimal facilities and lack of basic equipment. These lead to unsafe practices, and reliance on outside agencies.
Conclusions: There are significant threats to the supply and quality of medicines in East Timor. There is currently a high level of dependence on foreign expertise, which is unsustainable in the long term.

Keywords: Pharmaceutical Services. Delivery of Health Care. Developing Countries. East Timor.

RESUMEN

Antecedentes: El estado de salud de la población timoresa es muy pobre y la mayoría del sistema sanitario fue destruido durante la revuelta de 1999. Al igual que en otros países en vías de desarrollo, la faltad e medicamentos apropiados y de alta calidad compromete significativamente la atención a pacientes desde el sistema sanitario. El objetivo de este estudio fue examinar la compra, distribución y provisión de medicamentos en Timor Oriental, e identificar los retos a los que se enfrenta el sector farmacéutico.
Métodos: Se realizaron entrevistas informativas a relevantes profesionales de la salud y otros involucrados en el sistema sanitario de Timor Oriental; se revisaron documentos (incluyendo reglamentos y leyes); y se observaron las actividades diarias en el Almacén Central, centros sanitarios, farmacias y tiendas detallistas.
Resultados: Algunos del os mayores retos al os que se enfrenta el sector farmacéutico incluyen la falta de personal formado, establecimientos sub-óptimos y carencia de equipo básico. Esto lleva a prácticas inseguras, y dependencia de agencias externas.
Conclusiones: Existen amenazas significativas para el suministro y calidad del as medicinas en Timor Oriental. Actualmente hay un alto nivel de dependencia del os expertos extranjeros, que es insostenible a largo plazo.

Palabras clave: Servicios farmacéuticos. Provisión de sanidad. Países en desarrollo. Timor Oriental.

(English)

INTRODUCTION

East Timor became the world's newest independent state in May 2002. Centuries of colonization and the bloody struggles of recent decades have left East Timor with extreme poverty, poor or non-existent infrastructure, high levels of unemployment, low levels of education, considerable health problems and a failing health service. Although the development of oil resources south of the Island will bring increased revenue in the future[1], there are significant challenges to be overcome. In this paper we examine the challenges facing those trying to purchase, distribute and supply medicines in East Timor. As in other developing countries, the lack of appropriate and high quality medicines significantly

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compromises patient care throughout the health system. The problems facing the pharmaceutical sector also illustrate the difficulties facing the East Timorese health sector as a whole.

East Timor includes the eastern half of Timor Island (north of Australia) as well as a small enclave in the western half of the Island (around the town of Oeccuse), and two small islands, Atauro and Jaco. Portugal occupied East Timor in the mid 16th century. Independence from Portugal was declared in November 1975, but nine days later Timor was invaded by Indonesian forces and declared a province of Indonesia. A quarter of the population is estimated to have died during the Indonesian invasion and subsequent war.[2] Compared with other provinces of Indonesia, East Timor had lower incomes and an extremely inequitable income distribution.[3] In 1999 an overwhelming majority of Timorese voted for independence, in a UN-monitored referendum. In response, the anti-independence Timorese militia, organized and supported by the Indonesian military, carried out large scale killing and destruction of infrastructure, including water and irrigation systems and the electricity grid. Approximately 1,300 Timorese were killed and more than 75% of the population was displaced. The health system totally collapsed as a large number of health centers and other buildings were destroyed, and Indonesian health professionals left. The number of physicianss who remained in the country may have been three[4] or eighteen.[5] Attempts to provide health care and humanitarian relief were compromised by violence directed at humanitarian workers, and at patients in healthcare facilities.[6]

During and after the crisis period health services were provided by military medical teams from various countries[4,7-9], the International Committee of the Red Cross (ICRC) and many other NGOs. An Irish NGO, GOAL, brought in and distributed 46 essential medicines.[5] The Interim Health Authority (IHA) was established in February 2000 to manage the health services during the emergency period.[10] During 2002 a new constitution was drafted and the first election was held in April. The IHA was later re-named the Division of Health Services and is now under the Ministry of Health.

Accurate data are not available for many basic social and health indicators in East Timor. Current population estimates range from 800,000 to 1,062,777. UNICEF estimated GNI per capita in 2004, to be US$550. Infant mortality[11] is currently estimated at 45.89 per 1000, and life expectancy 66.26.[12] The unemployment rate is estimated to be about 70%. The maternal mortality rate may be as high as 830 deaths per 100,000 live births.[13] Three to four percent of children aged 6 months-5 years are acutely malnourished and 20% chronically malnourished. Malaria is highly endemic. Leprosy, lymphatic filariasis, and tuberculosis are also endemic.[4] High levels of unmet mental health needs, especially post-traumatic stress disorder, have been reported.[14] However rates of HIV and STDS appear to be low.[15,16]

The level of health knowledge in the population is thought to be very low.[4] The Roman Catholic church plays an important role in East Timor, but animistic beliefs are also prevalent and black magic is considered a cause of ill-health and death.[17]

In 2002, Povey and Mercer[3] published an detailed account of the health problems and existing health services in East Timor. A recent paper by Alonso and Brugha presented a more positive picture of a health system moving from NGOs to local administration.[18] Povey and Mercer[3], and Dukes[5] mentioned the pharmaceutical sector, but to our knowledge there is no other published information available on the pharmaceutical sector in East Timor. The aim of this study was to explore and document the challenges facing the pharmaceutical sector in East Timor.

METHODS

This paper is based on interviews with health professionals and others involved in health care and the pharmaceutical sector in East Timor; review of documents including regulations and rules; and observation of daily activities at the Central Store, health centers, pharmacies and retail shops. The seventeen key informants interviewed included the heads of each department at the Central Store, the chief of the Pharmacy Department, PMU (the World Bank management unit) staff, heads of health centers and health posts, pharmacist advisors, physicians and pharmacy assistants. Observation of dispensing practice and counseling was carried out at two health centres and one hospital. The study was carried out from December 2005-February 2006. All fieldwork was carried out by RBDS, who had previously worked as a technician in the Central Store, and is currently studying pharmacy in New Zealand.

Ethical approval for the study was granted by the University of Otago. The Minister of Health in East Timor also granted permission for the study to be carried out.

RESULTS

The main challenges facing the pharmaceutical sector in East Timor are the lack of trained staff, sub-optimal facilities and lack of basic equipment. These lead to unsafe practices, and continued reliance on outside agencies, which is not sustainable or desirable in the long term. In the following section, the implications of these challenges for the functions of the pharmaceutical sector will be discussed.

Public sector

Funding and procurement

In East Timor an Essential Drugs List was drafted in 2001 by overseas consultants and some experienced East Timorese staff. This was published in 2003. A draft National Drug Policy was also developed but has not yet been published. A policy on drug donations was also developed,

based on the WHO (World Health Organization) Guidelines for Drug Donations. This is actively used in both the public and private sector and has addressed some of the serious problems previously encountered with drug donations, including predominance of expired, poor quality, or inappropriate medicines, and excessive quantities of some medicines. Much unnecessary equipment was also donated. Under the new Drug Donation policy, donors must submit a letter of intention to either the Minister of Health or the Central Store for approval. Donated products must be on the Essential Drugs List, and must have a shelf life of at least two years after donation. However, in reality inappropriate donations are still received from one particular nation, and this often incurs extra cost for destruction of medicines.

Medicines in East Timor are primarily funded by the World Bank, the East Timorese government, UN agencies such as UNICEF, WHO, UNFPA, and other NGOs. The World Bank is the major funder (about US$2 million per year) and they pay for all types of medicines. The East Timorese government contributes about US$2 million for both equipment and medicines, and the funding of medicines is mostly in response to emergency cases (ie when there is no stock available in health facilities). Other agencies fund particular types of medicines, related to the programs they run. For example, UNICEF and JICA (Japan International Cooperation Agency) provide vaccines and mother and child kits, the WHO provides leprosy drugs, and UNFPA provides contraceptives.

SAMES, the government agency which runs the Central Store, is not involved in the procurement of pharmaceuticals, due to lack of skilled and experienced staff. Procurement is carried out by a Project Management Unit of the World Bank, based in East Timor. SAMES uses the Essential Drugs List, and data on the annual use of drugs in Timor from its database, to forecast the drugs and equipment that will be needed. These estimates are then submitted to the PMU. The PMU then calls for tenders and purchases the required products. Most suppliers of medicines to East Timor are from India, Australia or Indonesia. Products are brought to East Timor by air or sea.

There are some problems with this purchasing process. Firstly, although SAMES has a logistic management information system the estimates of need given to PMU are inaccurate. This is because of a lack of skilled people to operate the computer system, and inaccuracies in data sent from health facilities (discussed below). Secondly, the World Bank procurement system is complex and takes a long time, so there are frequent problems of lack of stock. After a supplier is chosen through the tendering process, approval for the purchase must be sought from Washington, DC, and this can take months. Thirdly, once products are landed in East Timor they must be cleared by customs and the Minister of Health. This can also take weeks, and during this waiting period medicines wait at the port rather than in a quality controlled environment.

Storage and distribution

The Central Pharmacy which previously managed the distribution of pharmaceuticals throughout the country was heavily damaged in 1999 and was re-established in April 2000 by UNICEF, JICA and WHO. Initially it was operated by an NGO from Ireland (GOAL) and then taken over by the Timorese government agency (SAMES).

SAMES now operates the former Central Pharmacy as the only pharmaceutical warehouse in East Timor, in the capital, Dili. All medicines purchased through any of the funding sources listed above are stored in the SAMES warehouse, and distributed by SAMES, apart from anti-retrovirals.

The warehouse is well ventilated and well-designed, but is too small for the volume of products it deals with. When there is not enough shelf space, products sit in aisles between shelves. This makes it more difficult for staff to move around the warehouse and get products to make up orders for health facilities. It also restricts the use of the forklift for placing boxes on shelves. Due to the lack of space, products are not stored either alphabetically or categorically. They are stored wherever space can be found. This leads to inefficiencies in locating products, and could lead to duplication or under-estimation of stock.

Air conditioning operates well in one room of the warehouse, and is maintained during power outages by a back-up generator. The other rooms are well ventilated, but most of the thermometers which should monitor the temperature are broken. When storage space in the warehouse is exceeded, medicines are stored in a container outside the warehouse, in the tropical heat.

Records in the warehouse are kept both on paper and on computer. While there is a good database system, there are no technicians to operate it or fix any problems. The system was set up by an Indian company, and in case of problems an e-mail must be sent to them for instructions.

SAMES distributes pharmaceuticals to a few approved NGOs that provide health services and to all public health facilities. These include the National hospital, four referral hospitals, and 13 health districts. Each Health district distributes medicines to its health centers and health posts.

Products are delivered to hospitals monthly, in SAMES vehicles. Health districts collect their products from SAMES every three months. As well as this, SAMES tries to respond when health facilities run out of stock of particular products. This often occurs for important drugs such as mebendazole (an anthelmintic for treating worms), potassium chloride (potassium supplement), nystatin (an antifungal) and nifedipine (a calcium channel blocker). However, sometimes SAMES itself has also run out of stock of these products. Because of these problems hospital patients often have to try to obtain their medicines at private pharmacies, at their own expense. In many cases they lack the financial resources to do this.

Hospitals and health centers calculate the amount of each product they use, assess their remaining stock and submit an order, based on this data, to SAMES. The Department of Quality control within SAMES looks at the amount ordered by each facility and determines how much they will be given. This is likely to be less than ordered, due to limited stocks within SAMES. However because the hospitals and health centers know this is the case, they often strategically over-estimate their needs, and sometimes end up with excess products. Thus the uncertainty about supplies ends up distorting the estimation and ordering process.

Delivery of medicines to hospitals is sometimes delayed because although SAMES has a truck it lacks funds to maintain it. Transportation of medicines between SAMES and the health facilities is generally unproblematic. All can be reached by road in a few hours apart from the enclave district of Oeccusee in the western side of Timor Island where medicines take about a day to arrive by boat, and the two small islands, Atauro and Jaco, where medicines can be transported by boat in less than six hours.

Storage facilities for medicines in most of the government facilities such as health centers and health posts are not of acceptable standard. Most are very small, dark, and not equipped with air conditioning. Some have air conditioning systems but most of these are not working. Some store products in alphabetical order, others arrange them randomly.

Control of medicines at the health facility level is often compromised. There are reports of staff using them for their own purposes, or taking them to sell in the market. The lack of appropriate management systems for medicines in health facilities is an additional reason for inaccurate forecasting of needs, and ordering.

Prescribing and use

Most medicines labels are in English or Indonesian. While some staff have no problems reading labeling, many staff in health centers do not understand English and have difficulty reading labels. The language of most people is Tetum. When drugs are dispensed to patients they are usually packed in a plastic envelope with only the dose written in Tetum. The patient's name, drug name, quantity and date of dispensing are not usually included. In addition, little or no verbal explanation is given to patients about the medicines they receive.

At the time of the study (Dec-Jan 2005/6) there were 54 East Timorese physicians, but most were studying overseas. Most physicians working in East Timor are from overseas, and are either contracted by the Ministry of Health or on humanitarian missions. Their countries of origin include Cuba (155 physicians), Indonesia, Australia, Philippines, Nepal, India, Brazil, China, and Portugal. In addition to physicians, midwives and nurses can also prescribe a restricted list of medicines. In reality they often prescribe other drugs as well.

There is only one pharmacist in East Timor, a New Zealander who is working as an advisor at the National hospital. Pharmacies at health centers are staffed by pharmaceutical technicians, nurses, and those with on-the-job training. Most of the 54 pharmacy technicians work in hospitals or the private sector. A training course for pharmaceutical technicians is being planned.

Pharmacies in health facilities do not have basic equipment, such as mortars and pestles, counting trays, measurement glasses, scales etc. There are 20 counting trays in the National Hospital and none in other health facilities. Because of this medicines are counted with bare hands, which is very unhygienic.

Due to lack of knowledge amongst dispensing staff, no suspensions, emulsions or ointments are made at health facilities. When medicines are dispensed for children (who are frequently unable to swallow tablets), tablets are usually ground into powder. A common prescription for children is paracetamol, an antibiotic and an antihistamine. In this case the powders are mixed and divided into the prescribed amount by hand, without scales. There are no scales even at the National hospital. Thus, it is likely that doses vary from patient to patient, and from day to day.

A good dispensing guide has been prepared to provide better service to patients, but this has not been implemented.

Private sector

The distribution of medicines in the private sector in East Timor is carried out under the oversight of CRAF (Pharmaceutical Activities Regulation Commission). Most drugs used in the private sector are imported from Indonesia, either through distributors in East Timor or directly from pharmacies or distributors in Indonesia. There are seven distributors in Dili who distribute drugs to private pharmacies and retail shops. By law each distributor must have at least one pharmacy technician who takes responsibility for the premises.

There are 20 private pharmacies in Dili (population around 50,000). Data is unavailable on the number of private pharmacies outside of Dili, as these are not kept by the Ministry of Health. Five pharmacies are licensed as Type B pharmacies. This means that in addition to the normal range of medicines, they can sell psychotrophic and narcotic medicines. Although the law stipulates that each pharmacy must be staffed by a technician, the shortage of technicians means that some are managed by nurses or midwives.

Only a small range of medicines such as vitamins and paracetamol are legally available outside pharmacies. However in reality, others such as the antibiotics amoxicillin, ampicillin, and streptomycin can be found in shops and street markets. In these instances no staff with any training on medicines are available to provide information. Although a committee has been established to address this

issue, shops continue to sell pharmacy-only medicines.

DISCUSSION

There are significant threats to the supply and quality of medicines in East Timor, as a result of lack of trained staff and resources. There is currently a high level of dependence on foreign expertise, which is unsustainable in the long term. Foreign health professionals and agencies bring a range of different ideas from their home countries about how the health sector should be organized.

Threats to supply include delays in the procurement process; the inefficient organization of products in central warehouse (due to its inadequate size); inaccurate information on medicine requirements as a result of strategies used by health facilities to avoid running out of stock, and because of lack of training in pharmaceutical management at health facilities; and the lack of ability to maintain the SAMES truck.

Threats to quality include the storage of medicines at the port while waiting for clearance, storage of some medicines in a container outside the SAMES warehouse, lack of basic equipment in health facilities compromising doses, limiting formulations, and probably leading to microbiological contamination, and the widespread availability of (possibly substandard) medicines outside of the formal supply system.

The health sector in general, and the pharmaceutical sector in particular are extremely dependent on international support at this stage. Although most developing countries experience shortages in trained health professionals[19], the shortage in East Timor is particularly acute because of its history. This means the purchasing system is fragmented (different agencies purchase different products), and administratively clumsy (approval must be obtained from Washington). The continued operation of the computer system at SAMES depends on access to advice from overseas software suppliers. Medical and pharmacy staff are predominantly foreigners. Local health professionals, who speak local languages, share the same cultural background as their patients, and understand local systems would strengthen the health system. On-going training of local Timorese staff should be a high priority for overseas agencies, so that the tasks they currently carry out can eventually be handed over to local people.

Lack of resources means basic equipment is often lacking or broken. A lack of basic equipment, such as paper, scissors, reflex hammers, otoscopes, stethoscopoes, latex glove, tongue blades, syringes and needles was noted by those providing health services in East Timor in 2000[20] and 2001.[4] We found no basic dispensing equipment in many health facilities, broken thermometers in the central warehouse, and broken air-conditioning systems in storage rooms in health centers. Maintenance of equipment and vehicles is lacking for several reasons, many of which are also common in other developing countries. These include lack of availability of funds for maintenance, the difficulty in getting extra funding when budgets are already exceeded, complex bureaucratic procedures, lack of expertise and spare parts.

In many ways the pharmaceutical sector in East Timor is similar to that in other developing countries. Limited funds are available to procure medicines, and there are significant difficulties in distributing medicines throughout the country. Running out of stock is a frequent occurrence and enforcement of existing laws and regulations is weak.[21] However the problems in East Timor are particularly acute, and the dependence on overseas expertise is particularly strong, especially in the procurement of medicines.

There are several signs that the situation will improve in East Timor. The Ministry of Health is interested and is playing a proactive role in the pharmaceutical sector. A training course for pharmacy technicians has been started, a committee has been set up to regulate the sale of medicines outside of pharmacies, and a drug donation policy has been implemented. East Timor has significant oil and gas reserves and the country's income has started to increase from oil revenue.[1] However the riots of May/June 2006 show that there are many challenges ahead.

CONCLUSIONS

The pharmaceutical sector in East Timor faces significant challenges. Neither the supply or the quality of medicines can be assured and the high level of dependence on foreign expertise is unsustainable in the long term.

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CONFLICT OF INTEREST

RBDS is East Timorese and is studying pharmacy at the University of Otago. He will return home to work in the pharmaceutical sector in East Timor.

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