Essential Drugs

Gianfranco Pezzino & Mesfin Haile

The right drugs in the right amounts

A study in Ethiopia’s Wollo region showed that the drug budget was reasonable but that the procurement and utilization of supplies left much to be desired. Ways of rationalizing drug management are suggested in the light of the observations made.

During 1987 Ethiopia’s Ministry of Health spent some US$9 million on drugs for state health institutions, about 15% of the country’s health budget. Many of the drugs were imported and paid for in hard currency.

In Ethiopia, drugs are distributed at the district level through regional branches of the Ministry. Each district has one or more health centres with satellite health stations, and each health centre has a yearly budget for drugs, usually decided centrally according to the number of health institutions and sometimes the size of the population in the catchment area. The health centre periodically applies to its regional health department for drugs for itself and its health stations, and the department deducts the value of the drugs released from the centre’s budget. The drugs are chosen by the health centre manager, usually a nurse, on the basis of previous consumption. In general, if the drugs are available in the regional store they are delivered to the health centre as requested. There is little or no control by the regional department over the type and quantity of drugs used; this depends essentially on the relationship between demand, as presented by the health centre, and supply (in the regional medical store), within the limitations of the established budget. In some areas there is often a shortage of drugs.

For some years an essential drugs programme has been supported by the World Health Organization. Drug management guidelines have been drawn up but not yet implemented at the peripheral level. Lists of essential drugs for the different levels of the health structure have been adopted by the Ministry.

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Most diseases seen in outpatient clinics can be treated in a standard manner on rational medical grounds. Complicated or unusual cases are referred to hospitals. A list of standard treatments for common diseases has recently been prepared for the Ministry by a special committee following a study of the literature, the situation in the country, and the national disease control strategies. It includes details of the drugs and dosages to be used against the diseases observed most commonly in outpatient settings.

**Assumptions**

The health centres and health stations that we studied were in the administrative region of Wollo, which extends to 82 143 square kilometres and has a population of about 3 600 000, 99% of whom are peasants. Drought and land erosion are important problems. A plateau rises to about 3000 metres, where the temperatures are usually moderate. The eastern part of the region is a desert with a very hot and dry climate. Dessie, with about 75 000 people, is the administrative capital. The region is divided into 12 districts.

The basic assumptions underlying the study are that there is a relationship between the diseases prevalent in an area and the type and quantity of drugs needed to treat them, and that this makes it possible to estimate the drug requirements for a certain period in a specific area, given that the morbidity pattern is known and fairly constant from year to year.

Ethiopia has a relatively well-organized system of morbidity reporting that covers all health stations, health centres and hospitals. Data are partly processed at the regional level and then sent to the central office of the Ministry. These reports indicated the diseases that had to be treated during the study period.

An effective stock balance system for drugs exists at both the regional and district levels. Records are kept of the quantity of each type of drug delivered to every health centre and health station. This made it possible to estimate the consumption of drugs in each district during the study period, on the assumption that all the drugs delivered were utilized. This assumption was supported by the observations that usually only drugs that were out of stock in health centres were requested by health centre chiefs and that destruction or losses were, in general, very limited.

**Expected and actual consumption**

In order to assess whether prescribing patterns in health centres and health stations were consistent with the morbidity picture, we determined the expected quantities of drugs necessary from July 1987 to June 1988 for the treatment of reported diseases, on the basis of the standard treatments mentioned above. The theoretical quantities needed were compared with the actual quantities of each drug delivered to the health centres. The theoretical and actual quantities were translated into money values at current prices. The values of drugs that health centres received free from the maternal and child health programme were
### Expected and actual expenditure on drugs, Wollo, Ethiopia, July 1987 to June 1988

<table>
<thead>
<tr>
<th>Drug group</th>
<th>Expected&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Actual&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Maternal and child health&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Excess/deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(US$)</td>
<td>(US$)</td>
<td>(US$)</td>
<td>(%)</td>
</tr>
<tr>
<td>Vitamins</td>
<td>1 856</td>
<td>11 114</td>
<td>10 255</td>
<td>1052</td>
</tr>
<tr>
<td>Antiparasitic</td>
<td>36 149</td>
<td>51 679</td>
<td>28 751</td>
<td>122</td>
</tr>
<tr>
<td>Nervous system</td>
<td>12 222</td>
<td>19 441</td>
<td>5 330</td>
<td>103</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>36 990</td>
<td>11 069</td>
<td>45 113</td>
<td>52</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>225 651</td>
<td>289 182</td>
<td>50 365</td>
<td>50</td>
</tr>
<tr>
<td>Antiallergic</td>
<td>2 270</td>
<td>370</td>
<td>2 340</td>
<td>19</td>
</tr>
<tr>
<td>Antianaemic</td>
<td>16 090</td>
<td>2 627</td>
<td>10 866</td>
<td>-16</td>
</tr>
<tr>
<td>Antiseptic</td>
<td>12 297</td>
<td>4 477</td>
<td>2 697</td>
<td>-42</td>
</tr>
<tr>
<td>Obstetric/</td>
<td>1 137</td>
<td>537</td>
<td>94</td>
<td>-45</td>
</tr>
<tr>
<td>gynaecological</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>11 057</td>
<td>4 052</td>
<td>297</td>
<td>-61</td>
</tr>
<tr>
<td>system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intravenous</td>
<td>13 234</td>
<td>28</td>
<td>3 609</td>
<td>-73</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>9 372</td>
<td>1 939</td>
<td>146</td>
<td>-78</td>
</tr>
<tr>
<td>Skin</td>
<td>16 243</td>
<td>1 361</td>
<td>1 155</td>
<td>-85</td>
</tr>
<tr>
<td>Hormones</td>
<td>22 726</td>
<td>0</td>
<td>0</td>
<td>-100</td>
</tr>
<tr>
<td>Others</td>
<td>12 874</td>
<td>5 433</td>
<td>694</td>
<td>-52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>430 167</strong></td>
<td><strong>403 329</strong></td>
<td><strong>161 712</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

<sup>a</sup> Expected cost to treat the reported diseases with standard treatments  
<sup>b</sup> Cost of drugs provided by the regional health department  
<sup>c</sup> Value of drugs from Maternal and child health programme

In some cases there were imbalances in the distribution of expenditure among the drugs of a group. For example, among antibiotics the expenditure on ampicillin and chloramphenicol was excessive whereas the money spent on procaine penicillin was on the low side.

There was much use of drugs that were either not on the Ministry's list of essential drugs or not meant for use in health centres and health stations. These drugs, for which the expected cost was zero, accounted for more than US$ 52 000, about 12% of the total theoretical budget.

### Reasons for variations

Substantial variation occurred between districts in the over- or underutilization of drugs. In money terms the range was from an excess expenditure of almost US$ 60 000 to a shortfall of approximately US$ 27 000.

In general, drug financing in the region was satisfactory. Even without the drugs donated by nongovernmental organizations and international agencies through the maternal and child health programme, the budget set by the Ministry was almost enough to meet the needs of the institutions at current levels of coverage and utilization.

The theoretical requirement for each drug may have to be adjusted to meet local situations.
were often prescribed without reference to the indications for their use, and consequently resources were wasted and risks were run of causing adverse effects on patients. Furthermore, the wide variation in the numbers of patients treated in the different units meant that the allocation of a budget proportional to the number of health institutions caused an imbalance in the distribution of drugs among the districts: some districts experienced severe shortages while others had surpluses.

The marked excess of expenditure on antibiotics is a particular reason for concern. Some drugs in this group are among the most expensive and others are potentially dangerous. Vitamins are often prescribed not because of signs of deficiency but as a placebo; together with the use of expensive proprietary products instead of generic ones, this explains the large excess expenditure on this group.

The group of drugs active on the central nervous system includes preparations containing noramidopyrine. These are not on the Ministry’s essential drugs list and their utilization is restricted in many countries because of their toxicity. Yet they are still widely used in Ethiopia and many other African countries. They are more costly than other drugs of choice such as acetylsalicylic acid, and this accounts for most of the excess expenditure on the group.

The cost of gastrointestinal drugs was higher than expected mainly because of the use of expensive antacid suspensions instead of generic tablets to treat nonspecific stomach complaints.

Where underfinancing occurred, the reason in some cases was that the expected cost was calculated on the assumption of long-term treatment for each patient, whereas in reality this was seldom feasible. In fact, at the time of the study, patients requiring hormonal treatment, e.g., for diabetes, were referred to hospital, even though the essential drugs list covers the provision of insulin to health centres. In other cases the underutilization of drugs was the result of inappropriate treatment schedules. For example, many patients with skin infections requiring treatment for several weeks received prescriptions lasting only a few days.

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Drug management requires careful evaluation of the quantities delivered and the appropriateness to local needs of the types of medicament provided. The situation described above exists in many other developing countries. The kind of study conducted in Ethiopia could easily be done elsewhere at little cost in money and time if the necessary information were available, and could help in assessments of the magnitude of problems in drug management. We used a computer but this is not necessary. After our study a decision was taken to adopt a new method of drug management involving a manual system with preprinted forms and allowing morbidity data to be entered and drug requirements to be calculated by health staff at the peripheral and regional levels.

A system for estimating drug requirements based on morbidity reports can be readily
Further reading


A system of estimating drug requirements based on morbidity reports would have the following advantages.

- Drugs would be purchased and distributed according to specific needs in each district so that wastage and shortages would be minimized.

- The pattern of drug consumption could be monitored and compared with morbidity reports with a view to investigating discrepancies between expected and actual consumption. This would show if there was a need for

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adopted if the following prerequisites are satisfied:

- a fairly reliable morbidity reporting system;

- a reliable administrative procedure for monitoring drug procurement and
distribution from the central to the peripheral level;

- similar disease patterns from year to year in each administrative unit;

- reasonably good diagnostic skills of health staff in the field (if such skills are below the acceptable level, training should precede any other intervention, since wrong diagnosis leads to wrong treatment);

- adoption of an essential drugs list and standard treatments for common diseases.

- Health staff would be able to see a practical reason for the accurate reporting of diseases, since drugs would be supervision and training of health staff in the diagnosis and treatment of specific diseases.
distributed in accordance with morbidity reports.

In the application of this system, the theoretical requirement for each drug may have to be adjusted to meet local situations. For example, if diabetes is reported and it is known that patients are not treated for the standard period, drug provision should reflect the real, not the theoretical, need, until follow-up and compliance improve. Furthermore, if a sudden change in the demand for a drug is conceivable, for example in the event of a malaria epidemic, a reserve stock should be held in each health institution.

For a system like this to be effective the compliance and participation of health staff are essential. Thorough training should precede any innovation and the aims of a new system should be made clear to all the people involved.

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Action for a healthy climate

The potential effects of global warming and ozone depletion are highly complex and will vary widely from one region to another.

The major effects of climatic change on health are caused by: heat stress; air pollution; alterations in the incidence of communicable diseases; undernutrition; and inundation.

The health authorities of national governments should undertake a comprehensive evaluation of the possible health implications of such changes, to identify the nature and magnitude of problems in specific areas and the subpopulations that would be susceptible to climatic change. They will need to determine priorities for planning and decision-making.

The health sector must play an active role nationally in formulating and implementing strategies to prevent climatic change and combat its effects. Thus, the health sector should be involved jointly with agricultural, meteorological, environmental, and planning agencies to ensure that health considerations are given adequate weight.