

Use of ICD-10 for morbidity and mortality notification for in-patients, in recourse limited settings.

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The experience of Mozambique using reduced disease lists.

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MOZAMBIQUE

Abstract The Mozambique health information system is paper-based and provides access to limited indicators of public health importance. In 2006, ICD-10 was adopted by the system and four pilot projects were implemented to provide facility-based mortality and morbidity data for public health use. Lists of selected diseases, included in paper forms for aggregated data, are used for hospital morbidity and mortality surveillance. The system is highly accepted by practitioners, is easy to use and implementable nationwide. Data are used to improve hospital management and to elaborate health facility profile reports.

Introduction

The Mozambican context

With a population of 20.5 million, Mozambique is the 7th largest country in Sub-Saharan Africa. In 2005 nearly 70% of the population was rural; the illiteracy rate was 60%. Since 2000, Mozambique has been surprisingly successful in terms of fostering macro-economic growth, improving welfare, and extending access to public services. Despite this progress, in 2005 the percentage of poor people in Mozambique was still 54% and the country was ranked 172nd out of 177 countries with available data on the human development index. An average coverage of 501,000 people per secondary hospitals and 17,000 people per health centre. Only 53% of all health facilities, and only 10% of level II hospitals, have running water. While all hospitals have electricity, only 36% of health centres have it; the source of energy is via regular public utilities in only 55% of facilities. Diagnostic services are also very scarce: only 16%, 5% and 2% of health facilities have access to laboratories, X-rays and ultrasound scans, respectively. In total 23% of health units (ranging from 4 to 56% in different provinces) have communication devices and only 4% have access to internet.

Of a total of 26,036 employees in the health sector only 2% are medical doctors (corresponding to one medical doctor or medical technician per 16,968 inhabitants).

The Health Information System and international standards

The Mozambican HIS is paper based and the different existing subsystems capture information on service delivery rather than patient-centred information; informatics technologies are available at the provincial and central level only, and they are mainly used to manage aggregated data from the district level. Analysis of data and integration of the subsystem is strongly hampered by the poor implementation of information standards in the HIS. Until 2006 no standard for disease classification was used. This impeded construction of a system that could provide useful morbidity and mortality data. Data on morbidity and mortality were available only from some subsystems focused on health conditions related to maternity and certain infectious diseases.

Morbidity and mortality data are becoming more and more important for public health purposes, especially considering the increased burden of chronic diseases, partially fuelled by the HIV epidemic (national prevalence of HIV infection is 16%).

MoH evaluated various class of systems and while some were partial applicable to the Mozambican context other were found to be infeasible. Therefore, in 2006 the Ministry of Health officially adopted the ICD-10 and ICF as standards and started to plan their implementation. The design of the implementation models had to face the numerous limitations of the health system (human resources, finances, infrastructure, ITC, alignment with the national plan for poverty reduction, etc).

With the aim to provide data for public health use, the MoH initiated several projects, namely:

- 1) Morbidity and mortality surveillance for in-patients through lists of selected diseases, to scale up nationwide by the end of 2010.
- 2) Mortality registers for in-patients of Maputo Central Hospital (HCM) using the whole ICD-10; to scale up to all hospitals nationwide by the end of 2010.
- 3) National death certificate with an annexed reduced list of basic causes of death, to be used if the certifier has no acquaintance or access to the whole ICD-10.
- 4) National Survey on causes of death through verbal autopsy (INCAM) based on deaths reported in the 2007 population census.
- 5) Assessment, through ICF, of Functioning and Disability of paediatric patients in one level II hospital in Maputo Province.

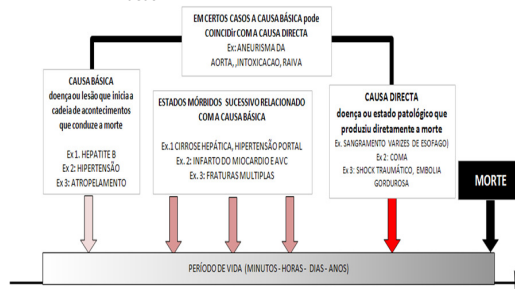
Methods & Materials

Before the official adoption of ICD-10 in Mozambique, this standard had already been independently introduced by some research centres and hospitals to produce statistics on causes of discharge and death within the hospital. The three hospitals opted for the implementation of reduced lists of diseases coded with ICD-10. The choice was motivated by constraints like lack of adequately trained staff, high staff workload, no computers available and no existing patient-based registration system. The decision was also motivated by the South African experience and collaboration. The lists in use were elaborated on the basis of clinical experience, selecting the most frequent diseases, and they were refined overtime through representativeness checks, for instance count of cases classified as "other cause", fittingness of codes attributed to the patient's file, etc.

In 2008, taking stock of those experiences, the MoH decided to define national lists of causes of discharge and death for hospital in-patients.

The objective was to elaborate a tool to set up a morbidity and mortality surveillance system to provide information to decision makers at all levels of the National Health System.

Figure N. 1: Schematic methodology for attributing the basic cause of death.



The lists had to

- i) be differentiated between level III-IV and level II hospitals;
- ii) be organized by ward within each existing department;
- iii) include a maximum of 30 items to be viable in a paper based system.

In October 2008 the MoH organized a national workshop to draft the lists.

To support the selection of the causes of discharge and death a scoring system was created based on four criteria:

- frequency of occurrence
- public health relevance and mandatory notification
- possibility to confirm diagnosis at the attendance level
- usefulness for hospital management

The attribution of public health relevance was based on the national policies for poverty reduction and for strengthening of the health sector and subjective opinion of the workshop participants. It was decided that diseases and conditions undergoing mandatory notification had to be included. The possibility to define diagnosis was discussed with the physicians and researchers, taking into account the diagnostic tools available by reference level of health facility, including availability of laboratory and anatomopathological confirmation within the national borders, and the level of education of health workers (specialized or general doctor, medical technician, medical agent) by hospital level. The score attributed to usefulness for hospital management was mainly based on direct experience of the physicians participating in the workshop: they considered the weight of each disease in terms of cost, hospitalization length, staff time required, bed availability by service, etc. The specific committees checked the exact correspondence between disease description and ICD-10 codes, and addressed difficulties and doubts raised during the workshop, through several working group sessions, research and consultation with experts from WHO/HQ and Portuguese speaking WHO Collaboration Centres.

Results

Two sets of lists, one for II and one for III-IV level hospitals, were elaborated; each set included separated lists for causes of discharges and death. A document on methodology and guidelines for users were developed. Up to now the lists have been revised but only the lists for Paediatrics (for three wards at II level and 9 at III-IV level) and the list for the death certificate have been finalized and validated. For some diseases or external causes some *ad hoc* codes have been used: "Complicated malaria (all *plasmodia*)", "Acute flaccid paralysis (AFP)", "Acute otitis media", "Complications caused by the use of traditional medicine". In each list we added the code 1111 for "Other cause", for all the causes not included in the lists, to ensure that the morbidity and mortality statistics would be complete. For each "Other cause" it has to be specified in which ICD-10 chapter the condition occurs. As a first step, the lists have been distributed to all the provinces; they have been included in a paper form to report daily aggregated data on morbidity and mortality on a monthly basis. Software to enter the monthly data and prepare statistics and reports is under development. As already said, the lists will be further assessed on the bases of the first year's results.

Conclusions

The adoption of ICD-10 and ICF as standards for diseases classification has been an important milestone in the process to strengthen the HIS in Mozambique and it has highlighted the need to introduce a national policy for standards introduction (terminology, dataset, IT standards, etc). However, the implementation of the standards in a limited-resource setting such as Mozambique is not easy, since the standards often seem to be conceived and designed for developed countries. In countries like Mozambique the constraints for a good use of the full ICD-10, even in hospital settings, are many; for instance patients are often attended solely by medical technicians or agents with limited diagnostic capacity, there's no access to the online version of ICD-10, the books are yet not available and too expensive to buy.

The loss of accuracy due to the use of reduced lists is considered acceptable. In fact, the feedback from hospitals using the locally developed lists over the last three years, shows a high acceptability by the users and data producers, easy to use, limited costs and no need for complex training. The elaboration of reduced lists allowed the highlighting of some specific needs of the developing countries in terms of conditions and coding, which are not addressed by the ICD-10 (ex. consequences of traditional medicine, complicated malaria, malaria during pregnancy, etc). However, the use of reduced lists is considered a transitional solution. Systems using the whole ICD-10 already exist and they are encouraged when there are enabling conditions. Mozambique is supporting the training of coders and aims, in the long term to implement broadly the whole ICD-10, without limiting it to hospital settings, inpatients, paper based tools and data aggregation. Nonetheless the use of reduced lists of causes of discharge and death is a good compromise between ideal implementation of standards and feasibility and it seems a good model to implement in poor resource settings in a short- or mid-term perspective.

Figure N. 2: Basic cause of death 2008/Age group – Central Hospital Maputo

