First analysis of national intra-hospital mortality register, Mozambique, 2009-2011
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Abstract In 2008 Mozambique started the national intra-hospital mortality register; to date it is installed nationwide, in all specialized and 18% of general hospitals. In 2009-11, 29,317 deaths were recorded. First analysis of national mortality data, routinely collected, shows that 38% of basic causes of death is related to infectious diseases (28% being HIV/AIDS) and 19% to conditions of the perinatal period. The register provides also data for better hospital management.

Introduction
In 2008 the Ministry of Health of Mozambique revised the mortality system within the health sector, according to the mandate of the National Health System.

1. The death certificate was revised (introduced nationwide in 2009) and it is the sole source of information for the mortality register.
2. Definition of data flow
3. Adoption of ICD-10 and training
4. Introduction of electronic tool for data management (SIS-ROH)

Intra-hospital mortality register was implemented in the Maputo Central Hospital (MCH) and progressively scaled up to other hospitals, from highest to lowest level of referral (IV to II level)

MOASIS and Jembi Health Systems supported the register implementation, training, maintenance, supervision and data analysis throughout the process.

Until Aug 2012 the mortality register was implemented in 28 sites:
- 17 Hospitals:
  - 3 central (IV level) (100%)
  - 7 provincial (III level) (100%)
  - 7 general/district/rural (II level) (18%)
- 11 Provincial Directorates of Health (100%)

There is at least one hospital per province (totally 11), ensuring national coverage of the register. This is the first analysis of intra-hospital mortality data at national level collected between 2009-2011.

Methods & Materials
- Death certificate filled by medical doctors for each inpatient who died in a hospital where SIS-ROH was installed
- Data entered in SIS-ROH
- Datasets of ≥12 months, up to Dec 2011, sent by each hospital to MoH to compile national database
- Descriptive analysis performed using full dataset for national level information and 2010-11 subset for comparisons between hospitals
- Analysis of causes of death was done using 3 and 4 digits codes and ICD-10 defined chapters

Results
Ten of 12 hospitals with dataset of ≥12 months provided their data (2 hospitals lost their dataset due to equipment being stolen or viruses). In total SIS-ROH registered 29317 deaths:
- 5259 in 2009 by MCH only
- 8995 in 2010 by 8 hospitals
- 15063 in 2011 by 10 hospitals

All provinces except Tete were represented.

The sex ratio M/F was 1.3 (overall and for each year). The age distribution shows two picks in <1 year (particularly due to 0-7 days old group) and 24-44 age bands.

53% of deaths occurred within 48 hours from hospitalization; higher proportion for inpatients in emergency and intensive care wards (62%) and lower in others (38%). Majority of deaths occurred in patient admitted on emergency (58%); 26% were transferred from another facility; 11% were deaths among newborns delivered in the hospital and 6% were hospitalized after outpatient visit. Distribution of deaths by type of admission (fig.2) is similar across different level of hospital referral, suggesting need for strengthening referral system of patients in the territory.

Most frequent underlying cause of death are infectious diseases (38%), followed by perinatal disorders (19%) and cardiovascular diseases (8%).

Conclusions
The mortality register allowed the first national mortality analysis based on routinely collected data. Despite still low coverage of the system, data are consistent to other national indicators and provide information useful for public health policies and hospital management.

Coverage of the register will be increased by further expansion and registration of extra-hospital deaths