Cause of death data from hospitals in Mozambique

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Jembi Health Systems - Moasis
Mocambique

“Improving cause of death and AIDS mortality measurement in Africa” Meeting
Cape Town, 15-16 Nov 2012
WHO in collaboration with
Medical Research Centre, Cape Town, South Africa
ALPHA Network & INDEPTH Network, UNECA
MoH - MOASIS – Jembi
a new cooperation model

- Moasis is a Living Lab program of UEM
- Have a 5 years MoU with the MoH
- Is supported by Jembi Health System SA (South-South Cooperation) and the Oasis network of HIS expert in the world
- Resources are coming from CDC CoAg, WHO, Twinning Centre, HMN
- Is becoming the E-Health Institute of Mozambique,  

Aims to:

- Strengthen local e-Health capabilities
- involve public, private, research and academic sectors.
- linking between in country and regional institutions.
MOASIS – Jembi in the world
Outputs

23 active national-level projects, prioritized according to the MoH strategic plan, main projects:

– National HIS policies
– Mortality system (SIS-ROH) and vital statistic
– national M&E system
– Hospital Informational System based on reduced ICD-10 list
– individual based electronic system
– Supply chain System
– Data analyses, dissemination and publication
Mortality registration in Mozambique
• In 2008 MoH started a revision of mortality system in the health sector
• NHS has the mandate to certify the cause(s) of death, classified and coded using ICD-10
• First phase = to set up intra-hospital mortality register (death and causes of death)

• Second phase = to initiate a inter-institutional collaboration to review the whole national CRVS
  – Create Inter-institutional Vital Statistic Working Group
  – Main focus on revision of overall mortality registration system and birth registration
Key Partners for mortality system

Development and implementation

• MOH
• MOASIS
• Jembi Health Systems

Technical and financial support

• WHO and HMN
• South African MRC and WHO-FIC CC
• CDC
Intra-hospital mortality register

Data source

- Source of data = Revised death certificate
  - Introduced nationwide in 2009 (books, 3 carbon copies)
  - Comprising 9 sections
    I. Identification of the issuing entity *
    II. Identification of the dead person *
    III. Residency of the dead person *
    IV. Place of occurrence of death *
    V. Information for death <1 year of age
    VI. Information for maternal mortality
    VII. Causes of death (underlying, intermediate, direct) *
    VIII. Identification of signing doctor
    IX. Information on external causes of death

* captured by SIS-ROH
Intra-hospital mortality register

Data management

Introduction of electronic tool for data management (*SIS-ROH*)

- Individual based electronic register
- Using all ICD-10 list
- Co-developed by mOASIS and MOH using national expertise
- Data quality through in-built data validations
- Produces automatic reports
- Restricted access to data
- Basic hardware requirements for installation
Intra-hospital mortality register

Data Flow

Extra-hospital death due to natural cause (family to request DC)

Health facility in proximity

DC filled by MD (or TM?)

District/provincial directorate of Health

Copy 1: Family of deceased

Civil Registration site

Copy 2: SIS-ROH (NEP)

Copy 3: Hospital patient file / archive

Death of inpatient

Death certificate filled by admission ward MD

Future phase

Pilot phase

Actually in place

No health facility in proximity

Auto de obito

DC with support of VA?

Extra-hospital death due to external cause

DC filled by MD of Forensic Medicine or Anatomopathology

Death of inpatient

District/provincial directorate of Health

Copy 1: Family of deceased

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User manuals and training materials

At central and provincial level:

– TOT on use of ICD-10 for classification and codification of COD

– Training on SIS-ROH software for IT public and private service providers (long term maintenance)

In each new implementation site:

– Training on ICD-10 for:
  • Clinical staff → to fill death certificate
  • Statistical unit staff → to code COD

– Training on use of SIS-ROH for data management, filing, backup, maintenance of software, helpdesk
Implementation of SIS-ROH to date

- Scaled up at national level *(2.5 YEARS)*
- Installed in 28 sites
  - 18 Hospitals:
    - 7 provincial (100%)
    - 3 central (100%)
    - 4 general (66%)
    - 4 rural (13%)
  - 10 Provincial Directorates of Health

~ 35,000 records
Analysis of SIS-ROH data: 2009-2011

- Datasets of $\geq 12$ months were included in the analysis.
- Totally 10 hospitals included:
  - 6 excluded because SIS-ROH was implemented from late 2011 onwards.
  - 2 excluded because dataset was lost for technical problems and theft of IT equipment.
Data available for analysis of mortality (10 hospitals)

Rapidly increasing coverage
Mortality by cause of death (chapter), Mozambique 2009-2011

- Infectious and parasitic dis. 37%
- Disorders of perinatal period 19%
- Cardio-vascular dis. 8%
- Neoplasms 5%
- Respiratory dis. 5%
- Nervous system dis. 3%
- Endocrine and metabolic dis. 4%
- Hematological dis. 2%
- Digestive dis. 2%
- Pregnancy, delivery, puerp. 2%
- Other causes 7%
- External causes 6%
Mortality by infectious diseases, Mozambique 2009-2011

HIV/AIDS is 28% of all causes of death

- HIV/AIDS: 73%
- Malaria: 10%
- Infectious diarrhea: 5%
- TB: 6%
- Other infectious diseases: 6%

HIV/AIDS is 28% of all causes of death.
Deaths due to HIV/AIDS, Mozambique 2009-2011

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<td>1%</td>
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<td>36</td>
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Need to disseminate mortality statistics and conduct further training on ICD-10 to increase accuracy of information.
Distribution of HIV/AIDS related deaths by sex and age, 2009-2011

M/F ratio
Overall = 1.3

Among 15-24 years old the risk to die for HIV/AIDS is significantly higher for women [RR = 1.6 (1.4-1.8)]
Distribution of deaths by age and cause of death, 2009-2011

% of deaths due to HIV/AIDS per each age group

Average age of death for >1 year is significantly lower for deaths due to HIV/AIDS (34.9) than to other diseases (39.1)
Deaths related to HIV/AIDS in each hospital, 2010-11

Prevalence of HIV infection in the province (F – 15-49 ys) – INSIDA 2009

- HCB: 18%
- HCM: 21%
- HCN: 5%
- HGJM: 20%
- HPC: 16%
- HPI: 10%
- HPL: 3%
- HPP: 10%
- HPQ: 15%
- HPX: 30%
- Total: 13%

Legend:
- HIV/AIDS
- Other causes
Distribution of the deaths by type of admission to hospital, 2009-2011

- **Other causes**
  - Transferred from another HF: 20%
  - Emergency: 56%
  - Outpatient visit or birth: 24%

- **Total HIV disease**
  - Transferred from another HF: 20%
  - Emergency: 71%
  - Outpatient visit or birth: 9%

MISAU - Mozambique
Trends of mortality per HIV/AIDS over time in HCM, 2008-2011

<table>
<thead>
<tr>
<th>Year</th>
<th>% of death due to HIV/AIDS</th>
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<tr>
<td>2008</td>
<td>35%</td>
</tr>
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<tr>
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<td>23%</td>
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<td>2011</td>
<td>24%</td>
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Data quality

• Overall quality
  – Underlying cause coded with
    • Chapter XVIII “Symptoms, signs and abnormal findings” 1.8%
    • Chapter XXI “Factors influencing health status” 0.6%
    • Chapter XIX “Injury, poisoning and other consequences of external causes” 3.3%
    • Garbage codes 0.9%
  – Incompatibility between cause and sex <1%
• Direct cause for deaths with underlying cause being HIV/AIDS
  – TB 12%
  – Kaposi sarcoma 5%
  – Pneumocystis pneumonia 1%
  – Malaria 2%
Comparison with other data sources (1)

Comparison with mortality indicators estimated by WHO (2010) and calculated using SIS-ROH data (2011)

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<td>30/1000</td>
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Overall SIS-ROH coverage around 5% of all estimated deaths

Expected to double by end of 2014

Neonatal mortality has higher coverage (12%)
Comparison with other data sources (2)

Comparison with mortality indicators measured by INCAM (2007) and calculated using SIS-ROH data (2011)

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Despite differences between subpopulation of inpatient and general population, SIS-ROH data could be a good proxy to monitor trends of HIV-related mortality in Mozambique.
Next steps for mortality registration development

• Development of SIS-ROH 2.0 to:
  − Record data on infant and maternal deaths
  − Enable recording of extra-hospital deaths

• Record extra-hospital deaths

  1. MD or *Tecnicos de medicina* (TM) available to fill death certificate → tools to facilitate selection/coding of COD:
     • Short list
     • mICD

  2. No MD or TM available → more likely options:
     • Recording circumstances of death only
     • Use of VA
Challenges

• Increase the coverage and quality of data

• Funds for expansion and supervision of SIS-ROH

• Funds for in depth assessment of current situation of CRVS

• Promote innovative tools/approaches
INNOVATIONS APPLICABLE TO MORTALITY SYSTEM

mICD: ICD mobile application

- To solve the ICD-10 codification issue, take advantage of the ubiquity of phones
- mobile application free and available to anyone to download and can be found on our website (http://www.moasis.org.mz/micd/micd.jar).

SIS Compact Station

- solve the issue of computer viruses, computer theft, and misuse
- developed a computer concept = embedded hardware and software.

Udata Capture Device

- Dedicated device to capture data at the point of care, low cost, sustainable
- Fully developed by Jembi: electronic, mechanic, hardware and software.
Success factors

• Bottom-up approach
  – Start little, be pragmatic
  – Obtain concrete results and grow based on success

• Local ownership and political commitment

• Informatics solutions suitable to the country setting

• Data used locally and in real time
Conclusions

• SIS-ROH allowed measuring the impact of HIV/AIDS on intra-hospital mortality

• Although inpatients are not representative of general population, SIS-ROH findings and trends over time allow to monitor impact of HIV/AIDS control programmes in a subset of population and to enhance management of patients in NHS

• Hospital mortality register showed to be suitable first step in the process of building routine national system to collect mortality data in Mozambique
Thank you

Obrigado