Integrating disparate mortality systems with official death registration systems

Insights from Peru and Ghana

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Systems thinking for CRVS

It is not uncommon that successful interventions are not adopted or do not produce the expected results – health system as a key factor

(Atun 2012, WHO 2018)
Every system is perfectly constructed to produce the results it produces

If you don’t like the product.....
Change the system!
Systems thinking for CRVS
Introduction to systems thinking

“...dividing the cow in half does not give you two smaller cows (...) This is what we mean when we say a system functions as a “whole”. Its behavior depends on its entire structure and not just on adding up the behavior of its different pieces.”

Kauffman, 1980, p2
Systems thinking for CRVS

Systems thinking to transcend complexity and increase effectiveness of health interventions

(Adam 2014)
CRVS As-Is processes

DEATH PROCESS AS IS IN GHANA - V.5

1. DEATH NOTIFIED
   2. DEATH VALIDATED

3. DEATH REGISTRATION
   - Death is reported to the nearest registration office
   - Family informs the doctor
   - Family notifies the police

4. DEATH CERTIFICATE
   - Death certificate is issued
   - Death certificate is submitted to the next of kin

5. DEATH JURISDICTION
   - Jurisdiction is determined
   - Jurisdiction is transferred to the next of kin

6. DEATH STATISTICS
   - Death statistics are recorded
   - Death statistics are analyzed

7. DEATH SUMMARY
   - Death summary is prepared
   - Death summary is submitted to the next of kin

8. DEATH ARCHIVED
   - Death is archived
   - Death is archived for future reference

9. DEATH REPORT
   - Death report is prepared
   - Death report is submitted to the next of kin

10. DEATH AUDIT
    -Death audit is conducted
    -Death audit is reported

11. DEATH MANAGEMENT
    -Death management is discussed
    -Death management is implemented
CRVS As-Is processes
Notification of deaths

There was no notification step for deaths in the community.

Ten CRVS Milestones

Objectives

1. To map all the systems and institutions that recorded any information about a death event (e.g. hospital records, police, civil registration...);

2. To document all the forms, reports and records use in that system to capture information about the deceased; and

3. To list all the data elements (e.g. name, age, sex, cause of death...) included in each of the forms.
Methods

• Descriptive cross sectional study in Peru and Ghana

• Use Business Process Mapping (BPM) to map the flow of activities and stakeholders recording any information about a death event;

• Document the information architecture of each system
## Methods

### Institutions visited

<table>
<thead>
<tr>
<th>Peru</th>
<th>Ghana</th>
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<tbody>
<tr>
<td>Public hospitals from the Ministry of Health</td>
<td>Public hospitals from the Ministry of Health</td>
</tr>
<tr>
<td>Social security system (ESSALUD) hospitals</td>
<td>Teaching hospitals from the Ministry of Education</td>
</tr>
<tr>
<td>Military and police hospitals</td>
<td>Public mortuaries</td>
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<td>Private clinics</td>
<td>Military and police hospitals</td>
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<tr>
<td>Health posts and health centres</td>
<td>Private clinics</td>
</tr>
<tr>
<td>Regional Health Directorate</td>
<td>Health posts and health centres</td>
</tr>
<tr>
<td>General office of information technology</td>
<td>Ghana Health Services</td>
</tr>
<tr>
<td>Institute for Legal Medicine</td>
<td>Ghana Statistical Services</td>
</tr>
<tr>
<td>Police department</td>
<td>Birth and Death Registration</td>
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<tr>
<td>Coroner</td>
<td>Police department</td>
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<tr>
<td>Funeral homes</td>
<td>Coroner</td>
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<td>Cemeteries</td>
<td>Funeral homes</td>
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<td>RENIEC</td>
<td>Public Cemeteries</td>
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<td>INEI</td>
<td>Private Cemeteries</td>
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<td><strong>Religious entities</strong></td>
<td>Religious entities</td>
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</tbody>
</table>
Multiple actors that are not the “usual suspects”
Results

Highly fragmented systems with multiple silos

9 independent information subsystems

Ghana death reporting system
Results

High burden on the family

*Peru death reporting system*  
*Ghana death reporting system*
Results

High burden on the family

The family may need to interact with up to 6 different institutions.
Results

Multiple silos and lack of integration

1. Death could be recorded in 9 Different information systems
Results

Multiple forms with a wide range of data elements
So....
Challenges

- High degree of fragmentation in their information architecture with several silos of information
- The process is highly dependent on the family of the deceased to transfer the information from one institution to the next one
- None of the different sub-systems identified in this study contained a complete picture of mortality in the country
Opportunities

• **Unexploited sources** of mortality information (e.g. police for deaths due to external causes or funeral homes)

• CRVS systems are digitized early in the process for most institutions involved, *technology is not a limitation* to integrate the several parallel information sub-systems

• **BPM very useful** in understanding the mortality surveillance ecosystem to harness these opportunities
Next steps

Need to understand who are we missing (the white space)
Thank you
Muchas gracias
How process mapping can be useful

Identify all relevant stakeholders and **align their views** of how the systems operates.

**Describe how systems operates capturing their complexity.**

**Identify inefficiencies and bottlenecks** in the process.

**Identify functional relationships between actors** (areas where interoperability is required).

Forces stakeholders to consider the system as a whole.