Policy and practice: developing countries and livestock drug use

3rd international conference on
Responsible Use of Antibiotics in Animals
29 September – 1 October 2014, Royal Tropical Institute, Amsterdam

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Key messages

1. FOOD & LIVELIHOODS
   Smallholder livestock systems contribute now and in the future

2. ANIMAL HEALTH & DISEASE
   Disease burdens in poor countries are very high

3. DRUG USE
   Most drug use is by untrained personnel: use varies from too little to too much

4. RESPONSES
   Controlling disease; community animal health; rational drug use
CGIAR: CGIAR 15 centres (IRRI, CIAT, IWMI...)
ILRI: International Livestock Research Institute

- Staff: 700.
- Budget: $70 million.
- 30+ scientific disciplines.
- 120 senior scientists from 39 countries.
- 56% of internationally recruited staff are from developing countries.
- 34% of internationally recruited staff are women.
- Large campuses in Kenya and Ethiopia.
- 70% of research in sub-Saharan Africa.
3 flagships on human nutrition

1 flagship on prevention and control of agriculture associated diseases
- Food safety
- Zoonoses
- Emerging diseases

aghealth.wordpress.com/
http://www.a4nh.cgiar.org
Food & livelihoods
Gains in meat consumption in developing countries are outpacing those of developed.
Change in global and regional demand for food: Livestock and other commodities

% change 2005/07 to 2050

-50 0 50 100 150 200 250 300 350

cereals
root/tuber
meat
dairy

Developed
Developing
SSA
SA

Modified from Alexandratos and Bruinsma 2012
Smallholder livestock keepers are competitive

East African dairy
- 1 million Kenyan smallholders keep Africa’s largest dairy herd
- Ugandans are the world’s lowest-cost milk producers
- Small- and large-scale Kenyan poultry and dairy producers have same levels of efficiency and profits

Vietnam pig industry
- 95% of production is by producers with less than 100 animals
- Industrial pig production could grow to meet no more than 12% of national supply in the next 10 years
- Smallholders will continue to provide most of the pork

IFCN, Omiti et al. 2004, ILRI 2012
Big productivity gaps, largely due to poor animal health, persist between rich and poor countries.
Animal health & disease
Annual losses from selected diseases – Africa and South Asia

*Estimates from BMGF*
Animal disease is a key constraint in Africa

- Animal disease is a key constraint: Remove it and animal productivity increases greatly
- As livestock systems intensify in developing countries, diseases may increase

Annual mortality of African livestock
(Around half due to preventable or curable disease)

<table>
<thead>
<tr>
<th>Animal</th>
<th>Young</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>22%</td>
<td>6%</td>
</tr>
<tr>
<td>Shoat</td>
<td>28%</td>
<td>11%</td>
</tr>
<tr>
<td>Poultry</td>
<td>70%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Otte & Chilonda, IAEA
A deadly dozen zoonotic diseases kill 2.2 million people and sicken 2.4 billion each year.

Almost all losses are in developing countries.
Emerging zoonotic disease events, 1940–2012

Potential Hotspots in US, Western Europe, Brazil, Southeast Asia

Most emerging human diseases come from animals. This map locates zoonotic events over the past 72 years, with recent events (identified by an ILRI-led study in 2012) in blue. Like earlier analyses, the study shows western Europe and western USA are hotspots; recent events, however, show an increasingly higher representation of developing countries.
Livestock drug use
• Global *human* health market = \$1,000 billion
• Global *animal* health market = \$20 billion
• Global *livestock* health market = \$13 billion
• Africa and South Asia = \$0.5 billion
• 15 countries make up 85% of the livestock market: most not poor
Africa: dozens of vets, tens of millions livestock
Around 80% of farmers rely on untrained health providers.

A district in West Africa

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>70,000</td>
</tr>
<tr>
<td>Farmers</td>
<td>25,000</td>
</tr>
<tr>
<td>Hawkers selling drugs</td>
<td>50</td>
</tr>
<tr>
<td>Market stall selling drugs</td>
<td>15</td>
</tr>
<tr>
<td>Public vet</td>
<td>1</td>
</tr>
<tr>
<td>Private vet</td>
<td>0</td>
</tr>
</tbody>
</table>
Livestock farmers
• 45 antibiotics from 10 classes
• 100% industrial farmers treat themselves; 60% of household farmers

Human drugs
• In one commune, 75% of children medicated by parents each year
Research 4 development responses

Risk assessment

- Survey residues
- Survey AMR organisms
- Survey drug use
- Examine relations between livestock & human AMR

Risk management

- Disease control
- Disease prevention
  - Vaccines
  - Resistant animals
- Community animal health
- Food quality improvements
- Rational drug use
<table>
<thead>
<tr>
<th>Animal</th>
<th>Description</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow</td>
<td>Ntura ba ani cikę misi 2 foroko dennin</td>
<td>25ml</td>
</tr>
<tr>
<td>Cow</td>
<td>Ntura ni ani cikę misi 1,5 foroko dennin</td>
<td>20ml</td>
</tr>
<tr>
<td>Goat</td>
<td>Misi san fila 1 foroko dennin</td>
<td>10ml</td>
</tr>
<tr>
<td>Calf</td>
<td>Misi deni 0,5 foroko</td>
<td>5ml</td>
</tr>
</tbody>
</table>
Results

Improvements in knowledge

Change in practice
– Less under-dosage
– Higher use prophylactics
– No increase in drug use

Better clinical outcomes
– Fewer failures (halved)
– Fewer side affects
More research 4 development responses

- ‘One Health’ approaches and ‘Rational Drug Use’ for both people and animals
- Delivery systems for dispersed farmers: CAHW; franchises
- Surveillance systems to detect drug resistance
- Pro-poor packaging / marketing (e.g. smaller packages, thermostable)
- Development of vaccines for Newcastle disease, East Coast fever
- Rapid diagnostics for residues and AMR
- Quality assurance for veterinary medicines
Policy responses

Vietnam

- One health task force
- Situational analysis
- Policy workshops
- Member of regional initiatives
- Compliance international norms (export only)
- National Action plan

Kenya

- One health taskforce
- Global partnerships
- Situational analysis
- Compliance: export only
Key messages

1. FOOD SECURITY
   Smallholder livestock essential

2. DRUG USE
   Most drugs given by untrained; too little drug use a problem

3. ANIMAL HEALTH
   Disease a heavy burden

4. SUCCESSES EXIST
   CAHW, RDU, Vaccines
Acknowledgements

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