Overview on cholera cases reported to WHO & Zimbabwe outbreak 2008/09

Meeting on integrating vaccines into global cholera control efforts
Les Pensières, Veyrier du Lac, France
14-17.04.2009

Dr Claire-Lise Chaignat
Global Task Force on Cholera Control
Cholera well known disease

- affects poor & marginalised populations, IDPs, refugees
- long lasting endemic occurrence
- explosive outbreaks with high mortality
- burden difficult to estimate
Vibrio cholerae 01
Adapted from: Nature 2000, 406:469

Malabo, Equatorial Guinea, 2004
Cholera: ... sub-regional occurrence ... hotspots ..... overlap with complex emergency countries...

Official notification / continent / year 1990 – 2008* (* preliminary data)
Diarrhoeal diseases:
Cholera, Shigellosis, typhoid fever, rotavirus

• third cause of death among CD
• estimated 1.8 - 2.8 million deaths/year
• explosive outbreaks (cholera, Sd1)

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<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000/1</td>
<td>Madagascar</td>
<td>37,000</td>
</tr>
<tr>
<td>2001/2</td>
<td>South Africa</td>
<td>116,000</td>
</tr>
<tr>
<td>2003</td>
<td>Liberia</td>
<td>34,000</td>
</tr>
<tr>
<td>2004</td>
<td>East African coast</td>
<td>30,000</td>
</tr>
<tr>
<td>2005</td>
<td>West Africa</td>
<td>&gt; 76,000</td>
</tr>
<tr>
<td></td>
<td>Afghanistan</td>
<td>155,000</td>
</tr>
<tr>
<td>2006/07</td>
<td>HOA: Sudan, Ethiopia, Somalia</td>
<td>(44,000; 54,000; 41,000)</td>
</tr>
<tr>
<td></td>
<td>Angola</td>
<td>&gt; 86,000</td>
</tr>
<tr>
<td>2007/08</td>
<td>Iraq</td>
<td>4700 + AWD (?)</td>
</tr>
<tr>
<td>2008/09</td>
<td>Zimbabwe</td>
<td>&gt; 95,000 over 5 months</td>
</tr>
</tbody>
</table>
Major outbreaks 2006-2007:
affected countries which did not report cases for years

- (Somalia: ~41,600 cases; CFR 2.8%)
- Sudan: ~44,400 cases; CFR 3.3%
- Ethiopia: ~54,000 cases; CFR 1%
Countries affected by recurrent epidemics
2000 – 2007/8

<table>
<thead>
<tr>
<th>Country</th>
<th>Cases/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somalia</td>
<td>4000 – 41,000</td>
</tr>
<tr>
<td>DRC</td>
<td>7000 – 31,000</td>
</tr>
<tr>
<td>Tanzania</td>
<td>11,000 – 14,000</td>
</tr>
<tr>
<td>Uganda</td>
<td>1,500 – 5,000</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>100 – 700,000 (estimates)</td>
</tr>
<tr>
<td>India</td>
<td>2,200 – 4,300 (? reporting)</td>
</tr>
<tr>
<td>Pakistan /Afghanistan</td>
<td>?</td>
</tr>
</tbody>
</table>
Shift from official notification to surveillance

- Revised International Health Regulations - IHR (2005)
- Public Health Event of International Concern (PHEIC)
  
  all public health events involving any 2 of the 4 criteria:
  - serious ph event
  - unusual or unexpected nature
  - significant risk of international spread
  - significant risk of restrictions on international travel or trade

- Legally binding; national focal point and basic ph capacities
Global Alert and Response System:
Ongoing diarrhoeal disease outbreaks as of 30 November 2006

Sudan 28,671c, 808d
N-Sudan
9,516 cases, 250 d; CFR 2.6%
S-Sudan:
19,155 cases, 558 d; CFR 2.9%

Under verification
AWD Vibrio cholerae confirmed
Cholera confirmed
Limitations in surveillance systems:
Gross underestimation in diarrhoeal disease burden

need for

- improved surveillance, based on standardized case definition and reporting format
- improved sharing of information and data
- improved early warning and timely reporting of outbreaks
- molecular epidemiology and strain tracking
- identification of risk factors (environmental, behavioural...)
Angola - spread of cholera across provinces, February - July 2006

Overall >85,630 cases, CFR 4% between February – December 2006
Trends over time, aggregated data for Eastern DRC


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AWD and cholera cases by week, Iraq 2008

Case definition?

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Zimbabwe, cholera outbreak 17.08. 08 – 14.03. 09
weekly incidence

As of 12 April 2009: 95 919 cases, 4165 deaths; CFR 4.4%
Cholera outbreak Zimbabwe, 2008 – 2009

Context:

- Major economical disruption
  - Negative gross domestic product growth rate
  - Massive devaluation
  - Collapse of the industry
  - Poverty and food shortage
  - Departure of trained professionals
  - Economical and legal sanctions against Zimbabwe worsening the situation

- Collapsing of
  - Infra-structure and public services
  - Health services delivery & surveillance activities
  - Water systems and sewage systems
An epidemic of unprecedented scale

- As of 11 April 2009 (end of week 15)
  - 95,823 cases reported and 4,163 deaths (CFR 4.4%)
  - 61.2% of deaths seem to have occurred at community level

- In the capital town
  - Hundreds of patients treated in Chitungwiza and Harare city
  - Harare city: More than 2,400 cases from 16-22 Nov
    (average 350 new cases per day)

- In the country from November on
  - All provinces affected, while 3 hotspots (Harare/South/West)
  - Urban and rural areas
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As of 2.Dez.08: HRE: 5829 /108; Mudzi 1111 /46; Beitbridge 3037 /82
Reported cholera cases by district, 19-25 December 2008
Case Fatality Ratio by District, 19-25 December 2008

19 Dec 2008

25 Dec 2008
**78% of cases reported from 4 provinces only**

Suspected cholera cases reported in Zimbabwe from 17 Aug 08 to 28 Mar 09

<table>
<thead>
<tr>
<th>Province</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mashonaland West</td>
<td>7,014</td>
</tr>
<tr>
<td>Harare</td>
<td>18,014</td>
</tr>
<tr>
<td>Mashonaland East</td>
<td>6,304</td>
</tr>
<tr>
<td>Midlands</td>
<td>7,014</td>
</tr>
<tr>
<td>Masvingo</td>
<td>11,479</td>
</tr>
<tr>
<td>Matebeleland South</td>
<td>5,246</td>
</tr>
<tr>
<td>Matebeleland North</td>
<td>1,136</td>
</tr>
<tr>
<td>Mashonaland Central</td>
<td>9,950</td>
</tr>
<tr>
<td>Manicaland</td>
<td>12,889</td>
</tr>
</tbody>
</table>

93,482 cases Crude CFR 4.4%
Case fatality ratios remaining high although improving along the epidemic

Cholera in Zimbabwe from 16 Nov 08 to 28 Mar 09
Weekly crude and institutional case-fatality ratios

Epidemiological weeks

W3: Start of support for case management
W11-12: Batch back reporting of deaths
High proportion of community deaths all along the epidemic

Cholera in Zimbabwe 14Dec08 - 21 Mar 09
Weekly number of reported deaths by location

- Institutional deaths
- Community deaths

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Key epidemic features

- Country wide outbreak; Urban and rural
- Person
  - All age group affected
  - More than 70% of cases $\geq 15y$; in Harare 6.5% under 2y
  - In some areas, men are over-represented
  - Age and gender distribution of the population unknown
- Basic indicators
  - Crude and institutional CFR remained high for a long time
  - Possible under-estimation of the weekly and cumulative AR of cases in CTC because of over-estimation of population size
  - Likely under-estimation of the overall true incidence of cases since many cases might have received home-based treatment
Difficulties encountered

- Deterioration of infrastructures (health system, water, sewage)
- Sub-optimum reporting procedures and means at upper levels
- Data retention used as a mean for pressure for salaries payment
- Low level of knowledge on infection control procedures in CTC/CTU
- Case management practices sub-optimal
  - High percentage of patients put under IV rehydration
  - Irrational use of antibiotics
- Ruralisation of the outbreak represents a challenge for
  - Choice and scope of intervention; dispatch of drugs & supplies
  - Access to treatment (HCW network not functional, use of ORS corner started late; no money to buy sugar for home made ORS)
  - Access to safe water (turbid water, acceptance of chlorine tablets ?)
  - Lack of communication means for community awareness
WHO – C4 activities

- Technical support
  - Medical, epidemiological, logistic, water and sanitation
  - Reviewing guideline for infection control, funerals, case management
  - Workshop on C4 concept
  - Workshop on infection control in CTC/CTUs
  - Contribution to workshop on social mobilisation
  - Support of the surveillance system (epidemiological and laboratory)
- Logistic coordination until logistic cluster activated
  - Support to National stock management
  - Coordination with partners for supply and orders
  - Emergency order for drugs and laboratory consumable and materials
- Epidemic monitoring: data managing, analysis and reporting
- Targeted field assessments
- Financial support (allowances)
Take home messages

1. The scope of the epidemic was unprecedented and lead to enlightening of many weaknesses

2. Zimbabwe population will remain at great risk of other major outbreaks, starting with diarrheal and waterborne diseases, as long as restoring of the health system and water and sewage distribution plans is not completed

3. There is an urgent need to work towards systems restoring and emergency preparedness

4. With governmental approach, money availability and knowledge gained on weaknesses and strengths, there is now a key opportunity to work towards better preparedness for detection and response to epidemics