Use of antibiotics for cholera chemoprevention: Example of Rann, Nigeria

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GTFCC Case management meeting, 2019
6. Mass chemoprophylaxis is not recommended. There is currently insufficient evidence to evaluate the effectiveness of selective chemoprophylaxis (household contacts, enclosed communities). It is recommended that any use should be within the context of a prospective study specifically designed to measure effectiveness of antibiotic prophylaxis and development of antibiotic resistance in household contacts (i.e., sharing a meal) of a suspect cholera patient, as well as any impact of such strategy on outbreak evolution.
Key questions

- Rationale for household prophylaxis – household contacts at higher risk?

- Antibiotic use
  - Role of antibiotics in cholera
  - Effectiveness against cholera of household prophylaxis at individual level
  - Impact on the epidemic?
  - Risk of antimicrobial resistance

- Feasibility during outbreak control interventions
Key questions: rationale for HH prophylaxis

Are household contacts at higher risk? Yes:

- Having HH contact with cholera – OR 2.9 (1.6-5.2) (1)
- Living within 50 m of the index case: RR 36 (95% CI: 23–56) within 3 days of the index case presenting to the hospital (2)
- Relative risk of next cholera case within 40 m distance to another case within days 0-4 (3):
  - Ndjamen: RR 32.4 (95% 25-41)
  - Kalemie: RR 121 (95% CI 90-165)

3) Azman et al. Micro-hotspots of risk in urban cholera epidemics. JID 2018
Key questions: antibiotic use?

• Duration of diarrhea: median duration shorten for -36.77 hours (95% CI -43.51 to -30.03)
  • Mean duration in control group: 29-127 hours

• Stool volume reduction: 50% (95% CI 0.45 to 0.56)
  • Volume in control group: 13.5 liters in adults, 368 ml/kg in children

• Amount of rehydration fluids required reduced by 40% (95% CI 0.53 to 0.68)
  • Volume required in control group: 14 liters in adults, 374 ml/kg in children

• Fecal excretion of vibrios: median duration shorten for -2.74 days, 95% CI -3.07 to -2.40)
  • Mean duration in control group: 2.97-6 days

Cochraine review. Antimicrobial drugs for treating cholera (2014)
Efficacy of chemoprophylaxis: culture positive cholera

Culture positive cholera, 1414 participants; RR 0.34 (95% CI 0.18 to 0.66)

Large-scale targeted chemoprophylaxis: feasibility and «impact»

- Doxycycline prophylaxis to household contacts recommended
- Contact: same roof, table, food, water point, latrine

- Proportion of household contacts among cases:
  - 30% in January,
  - 0.2% at the end
- No change in *V. cholerae* sensitivity

![Table 1. Distribution of antibiotics during the 2004 cholera outbreak in Douala.](image)

<table>
<thead>
<tr>
<th>Nombre de bénéficiaires (N)</th>
<th>Doxycycline orale (cp)</th>
<th>Amoxicilline orale (cp)</th>
<th>Amoxicilline sirop</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malades</td>
<td>4 572</td>
<td>423</td>
<td>18</td>
<td>5 013</td>
</tr>
<tr>
<td>Contacts intrahospitaliers</td>
<td>15 484</td>
<td>118</td>
<td>26</td>
<td>15 628</td>
</tr>
<tr>
<td>Contacts communautaires</td>
<td>145 895</td>
<td>12 625</td>
<td>3 205</td>
<td>161 725</td>
</tr>
<tr>
<td><strong>TOTAL bénéficiaires</strong></td>
<td><strong>165 951</strong></td>
<td><strong>13 166</strong></td>
<td><strong>3 249</strong></td>
<td><strong>182 366</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Contacts/malade</th>
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</thead>
<tbody>
<tr>
<td><strong>TOTAL</strong></td>
<td>35,37</td>
</tr>
</tbody>
</table>

Guevart et al. Large-scale selective antibiotic prophylaxis during 2004 cholera outbreak in Douala, Cameroon. Santé 2007
Rann, Borno State, Nigeria 2018

• Around 48’000 people
• Difficult access
  • Arial bombing, insecurity – no permanent humanitarian presence
  • Flooding during rainy season
• No pre-emptive OCV campaign
Rann, Borno State, Nigeria 2018

- Short explosive outbreak:
  - 129 cases, 13 deaths (half in community) – 10% CFR

- MSF team assessment 31/10/2018

- Initial proposal:
  - Standard response (re-enforcement of case management, HP, wash)
  - ORS points focus+++ 
  - Antibiotic prophylaxis (doxy): to all suspected cholera cases at CTU/ORS points
  - Investigation team sent to the HH – for HP, wash, doxy to contacts
Rann, Borno State, Nigeria 2018

- Short explosive outbreak:
  - 129 cases, 13 deaths (half in community) – 10% CFR

- Intervention in reality
  - Standard response (re-enforcement of case management, HP, wash)
  - ORS points (11) + CTU
  - Antibiotics prophylaxis to cases >12 years old (and contacts?) presenting to CTU/ORS points, together with ORS and soap
Future

• Antibiotic prophylaxis already used in several countries, but not documented
• Rapid response teams
• Package interventions – wash + antibiotics + OCV around index case