Epidemiological Situation of Cholera and its Response in Nepal

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Email: drbasupandey@gmail.com
• Population: 28 million
• Life expectancy: 67 years (2010)
• Gross national income per capita $1,210 (2010)
• Health Expenditure pp: US$ 24
• Human Development Index: rank 140
• Incidence of poverty: 31%
• IMR: 46/1000 live birth (2011)
• U5MR: 54 /1000 live birth (2011)
Nepal: Ecological Regions

- Mountains (16 districts)
- Hills (39 districts)
- Terai (20 districts)
Cholera: A Public Health Problem

- Cholera is endemic in Nepal. Epidemics in different parts of the country/years with varied morbidity and mortality
  - In Kathmandu Valley, cholera cases are reported almost every year especially during the rainy season
  - Frequent outbreaks (yearly) in other areas of the country, but sporadic
- Existing surveillance of cholera is inadequate to cover all of the districts in the country
- Cholera is a EWARS reportable disease
- Suboptimal WASH status
## Reported Clinical Cholera Cases (2011-2014)

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Region</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Eastern</td>
<td>2101</td>
<td>45.9</td>
<td>488</td>
<td>28.0</td>
</tr>
<tr>
<td>2</td>
<td>Central</td>
<td>825</td>
<td>18.0</td>
<td>431</td>
<td>24.7</td>
</tr>
<tr>
<td>3</td>
<td>Western</td>
<td>443</td>
<td>9.7</td>
<td>302</td>
<td>17.3</td>
</tr>
<tr>
<td>4</td>
<td>Mid –Western</td>
<td>863</td>
<td>18.9</td>
<td>115</td>
<td>6.6</td>
</tr>
<tr>
<td>5</td>
<td>Far – Western</td>
<td>345</td>
<td>7.5</td>
<td>408</td>
<td>23.4</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>4577</td>
<td>1744</td>
<td>5042</td>
<td>4170</td>
</tr>
</tbody>
</table>

Source: HMIS, DoHS
## Number of Cholera Outbreaks in Nepal

<table>
<thead>
<tr>
<th>SN</th>
<th>Year</th>
<th>Region</th>
<th>Reporting sites /districts</th>
<th>Laboratory Confirmed Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2009</td>
<td>Mid/Far Western</td>
<td>NPHL</td>
<td>109</td>
</tr>
<tr>
<td>2</td>
<td>2010</td>
<td>Mid Western/ Western</td>
<td>NPHL</td>
<td>61</td>
</tr>
<tr>
<td>3</td>
<td>2011</td>
<td>Central</td>
<td>Dhulikhel Hospital</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2012</td>
<td>Western/Eastern/ Central</td>
<td>BPKIHS</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>2013</td>
<td>Central</td>
<td>Nepal Medical College, KIST Medical College</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>2014</td>
<td>Central</td>
<td>Rautahat</td>
<td>600</td>
</tr>
<tr>
<td>7</td>
<td>2015</td>
<td>Central</td>
<td>Kathmandu</td>
<td>80</td>
</tr>
<tr>
<td>8</td>
<td>2016</td>
<td>Central</td>
<td>Kathmandu valley and Saptari, Sarlahi</td>
<td>169</td>
</tr>
</tbody>
</table>

Source: National Public Health Laboratory (NPHL)
Distribution of Vibrio isolates from AMR network: 2006-2016

8 diseases are under AMR surveillance

1. Vibrio cholerae
2. Shigella species
3. Streptococcus pneumoniae
4. Haemophilus influenzae
5. Neisseria gonorrhoeae
6. Salmonella species (included since 2002)
7. ESBL E. coli (included since 2009)
8. Methicillin Resistant Staphylococcus aureus (included since 2013)
Cholera Situation in Kathmandu Valley, 2016

- First case confirmed on: 30th June
- Last case confirmed on: 16th Nov
- Cumulative cholera cases: 169
  (119: Lalitpur, 31 Kathmandu, 1 Bhaktapur, 1 Kavre, 6 Dhading, 3 Saptari, 8 Unknown)
- No deaths reported
Age and sex wise distribution cases

Epi-curve of cases from 30 June to 12 Dec 2016 (N=169)
AMR of Vibrio cholerae various antimicrobials (2006-2012)
Cholera Response

• Epidemiology and Disease Control Division (EDCD) implemented the Comprehensive Targeted Interventions (CTI) to Control Cholera in Kathmandu Valley

• CTI components are enhanced surveillance, laboratory diagnosis, field investigation, WASH and OCV vaccination.

• More than 700 volunteers were mobilized

• Activities include health education messaging, distribution of Chlorine solution (*Piyush*) for water disinfection, water testing, surveys, and miking
Case presents to hospital with AWD

Hospital Lab or NPHL preforms RDT/Culture

+RDT/Culture initiates CTI mobilization within 24 to 48 hours

Desired outcome: Rapid response delivered to those at highest risk will prevent spread of outbreak

**Continuous Traveling Immunization (CTI) Ring Strategy**

- Index case/Questionnaire
- WASH Intervention
- Optional WASH
- Vaccine
- OCV / Health Education Ring

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CTI Ring Diagram:

- 100 m radius

Diagram illustrates the spread of a case (red square) and the subsequent mobilization of WASH and vaccine interventions within 24 to 48 hours.
Door to Door Awareness Campaign

Orientation and IEC materials distribution

• Point of use water treatment
• Handwashing at critical times
• Food hygiene
• Personal hygiene
Community Level Intervention

• Booth Campaigns – Strategic Locations
• Awareness rallies
• Miking (In mobile vehicle and also during rallies)
• Awareness sessions to community groups and key community actors
• Food and food outlet inspection- Food authority and Municipality
• Mass communication by various media and special programs
• 300 schools reached to education children on Cholera and prevention
Use of H2S test kit (P/A Vial) – Triggering tool for – HHs, Schools, Community Sources, Tankers, Jar-Water

Free Residual Chlorine Tests – HHs, Tankers

No. of water quality testing – 650
Water Quality at Source & Service Level

Kathmandu Upatyaka Khanepani Limited (KUKL) - ensured proper dosing of Chlorination of water being supplied through their utility service

Private Tanker Association - No. of Tankers chlorinated - 3970

Kathmandu Valley Water Supply Management Board (KVWSMB) - identified 8 location surrounding the valley for testing of chlorine and dosing in water tanker; ensuring regular dosing and regulating tankers

Water testing of Jar waters and sharing of the results to community with solutions.

KVWSMB shared the test results to the Jar vendors for action
Institutional Capacities

Epidemiology and Disease Control Division (EDCD):

• Setting up of sentinel sites for active surveillance
• Link with NPHL and selected hospitals to initiate and monitor the surveillance process
• Lead on cholera and diarrheal outbreak investigation and rapid response in coordination with NPHL, UNICEF, GTA, DPHO and WASH NGOs
• Review and publish daily/weekly situation report of cholera and AGE

National Public Health Laboratory (NPHL):

• Receive stool and water samples
• Test samples and provide results to EDCD
• Receive information on supply needs for the selected hospitals
District Public Health Office (DPHO):

- Implement the decisions from EDCD, Department of Health Services, Ministry of Health
- Coordinate with local governmental and non governmental stakeholders working in health and WASH
- Mobilize periphery level health workers and FCHVs in community level.
Steering Committee for Enteric Disease Control

- Steering Committee for Enteric Disease Control was formed under the leadership of Director General of Department of Health Services in 2015
  - Member secretary - Director of EDCD
  - Members – Child Health Division, National Public Health Laboratory, WHO, UNICEF, professional organization, GTA
  - Invitee members - JHU, IVI, Sabin Vaccine Institute
- Several meetings of the steering committee were conducted to guide and make decisions for prevention and control of enteric diseases
- Task Force for Cholera Control was formed under the chairmanship of Director of EDCD.
Closure link with WASH

• WASH Package in response
• Sharing the information between WASH and health team
Strengthened Partnership

WASH Intervention at district level supported by- UNICEF WASH partners – ENDO, CDO Nepal, OXFAM, ENPHO, Nepal Redcross Society
Experience of OCV Vaccination

- OCV Vaccination conducted in Routahat (2014) Nuwakot and Dhading (2015) with more than 95% coverage in 2015
- OCV vaccination was conducted at Banke district with 84% coverage in 2016
- Pre-emptive vaccination can effectively organized within the public health system of Nepal
- Proved the collaborative partnership is the key to success
National Preparedness and Response Plan for AGE / cholera

• A multiyear plan (2017-22) is drafted with comprehensive package
• Plan has covered the surveillance system, laboratory diagnosis, coordination, WASH, logistics and supplies, immunization and monitoring & evaluation
Conclusion

• Nepal is a Cholera endemic country with potential for outbreaks.
• Gaps in surveillance and response.
  • Surveillance need to be strengthened to cover nation wide.
  • Need for comprehensive and integrated intervention of enhanced surveillance, investigation and WASH response.
• Enhanced collaboration and coordination across the multiple stakeholders at various levels (health, water and sanitation sectors) is crucial
• Strengthening the existing support from partners
• Advocacy needed to introduce the OCV vaccination
• Cholera Prevention and Response National Road Map should be developed urgently
Thank you!