Surveillance for Foodborne Illness in India: A Capacity Review

National Centre for Disease Control
(Directorate General of Health Services, GOI)
What is surveillance?

- The systematic, ongoing, collection, analysis, interpretation, and dissemination of data for public health action
Foodborne Illness Surveillance in India

Integrated Disease Surveillance Programme (IDSP)
• decentralized State based surveillance system for epidemic prone diseases to detect the early warning signals
  – Weekly reporting
  – P Form
  – L Form
  – Early warning signals for Outbreaks
## Foodborne Illness Surveillance in India

<table>
<thead>
<tr>
<th>S.no</th>
<th>Diseases/Syndromes</th>
<th>No. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acute Diarrhoeal Disease (including acute gastroenteritis)</td>
<td></td>
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<tr>
<td>2</td>
<td>Bacillary Dysentery</td>
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<tr>
<td>3</td>
<td>Viral Hepatitis</td>
<td></td>
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<tr>
<td>4</td>
<td>Enteric Fever</td>
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<tr>
<td>5</td>
<td>Malaria</td>
<td></td>
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<tr>
<td>6</td>
<td>Dengue / DHF / DSS</td>
<td></td>
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<tr>
<td>7</td>
<td>Chikungunya</td>
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</tr>
<tr>
<td>8</td>
<td>Acute Encephalitis Syndrome</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Meningitis</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Measles</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Diphtheria</td>
<td></td>
</tr>
</tbody>
</table>

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### FORM L

<table>
<thead>
<tr>
<th>Diseases</th>
<th>No. Samples Tested</th>
<th>No. found Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dengue / DHF / DSS</td>
<td></td>
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<tr>
<td>Chikungunya</td>
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<td>JE</td>
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<tr>
<td>Meningococcal Meningitis</td>
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<tr>
<td>Typhoid Fever</td>
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<tr>
<td>Diphtheria</td>
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<tr>
<td>Cholera</td>
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<tr>
<td>Shigella Dysentery</td>
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<tr>
<td>Viral Hepatitis A</td>
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<tr>
<td>Viral Hepatitis E</td>
<td></td>
<td></td>
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<tr>
<td>Leptospirosis</td>
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</tbody>
</table>
Person has symptoms

Person goes to doctor
(HP/CHC/DH- P form)

Doctor requests sample

Sample submitted to lab

Lab identifies pathogen

Confirmed case reported- L form

Pyramid of surveillance
IDSP Syndromic Surveillance

- P Form data
- Outbreak detection:
  - Time from illness onset to signal: low
  - Number of cases needed for signal: high
  - Sensitivity for low-level widespread events: low
IDSP Lab-confirmation

- L Form data
- IDSP district public health labs: 250 approved for strengthening, 135 strengthened
- IDSP state referral labs: 108 in 23 states
IDSP Lab-confirmation

- Confirmation of etiology

- Yield of IDSP lab confirmed cases low:
  - Diagnostic capacity
  - Stool sample request
  - Stool sample collection
  - Antibiotic course
Cycle of Foodborne Disease Control & Prevention: Stages of an Outbreak Investigation

IDSP Surveillance
Detecting a cluster in the first place

Applied Research

Epidemiologic Investigation
Rapid response team-State/District

Prevention Measures

- Describe illness in time, place, person
- Identify likely etiology, food vehicle
- Inform stool and food testing
- Identify likely setting for contamination
Outbreak Investigation

- Coordinated epidemiology lab response required

- In IDSP reporting week 1-12, 2018:
  - 51 events of Foodborne outbreaks detected
  - In 11/51 (21%)* events, stool samples collected
  - Water samples collected in most

- Training potential!

*Indicative figure
Lab based Subtype Surveillance

- Shift in food production and supply chain from local to large distribution network
- Potential for industrial contamination
- Geographically widespread cases
- Need to develop pathogen specific lab surveillance
Linkages with FSSAI

• NCDC/ IDSP
  – Generate evidence for public health action and policies
  – Training

• FSSAI
  – Develop food related policies
  – Enforcement
  – Risk assessment and management of production facilities
Shellfish Poisoning Outbreak
Cuddalore district, Tamilnadu, 2015

• January 2015, 20 cases, median age 16.5 years, AR= 100%

• April 2015, 199 cases, median age 23 years, AR= 95%, OR= 302

• Public Health Actions were:
  – Food safety officials prohibited sale of shellfish during red tide/ algal bloom
  – Some harvesting sites declared unsafe
Next Steps

• Need to increase stool sampling and lab capacity
• Strengthen coordinated epi-lab response
• Data sharing and linkage possibility between NCDC/IDSP and FSSAI are:
  – Develop guidelines/ SOP’s for foodborne illness investigation district level above
  – Coordinate response during foodborne outbreak investigation
Thankyou