### Infectious Disease Threats by the Decade

<table>
<thead>
<tr>
<th>Decade</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970s</td>
<td>Legionella</td>
</tr>
<tr>
<td>1980s</td>
<td>MRSA, HIV</td>
</tr>
<tr>
<td>1990s</td>
<td>Nipah Virus, West Nile Virus</td>
</tr>
<tr>
<td>2000s</td>
<td>Monkeypox, SARS</td>
</tr>
<tr>
<td>2010s</td>
<td>Antibacterial Resistance, Ebola</td>
</tr>
</tbody>
</table>

### Clinical Disease Analyses Performed for Iowa by the State Hygienic Laboratory Fiscal Year 2016 = 90,385*

<table>
<thead>
<tr>
<th>Disease</th>
<th>1970s</th>
<th>1980s</th>
<th>1990s</th>
<th>2000s</th>
<th>2010s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legionella</td>
<td>981</td>
<td>1,502</td>
<td>2,249</td>
<td>2,341</td>
<td>2,234</td>
</tr>
<tr>
<td>MRSA</td>
<td>345</td>
<td>540</td>
<td>893</td>
<td>1,075</td>
<td>860</td>
</tr>
<tr>
<td>HIV</td>
<td>111</td>
<td>187</td>
<td>387</td>
<td>500</td>
<td>475</td>
</tr>
<tr>
<td>Nipah Virus</td>
<td>9</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>West Nile Virus</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Monkeypox</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SARS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Antibacterial Resistance</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ebola</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Based on fiscal year 2016 numbers

### Components of Disease Control

- Detection
- Surveillance
- Rapid Diagnostics
- Outbreak Investigation
- Response
- New Technologies and Methods

### Steps in an Outbreak Investigation

1. Detect a possible outbreak
2. Find cases in an outbreak
3. Generate hypotheses through interviews
4. Test hypotheses through analytic studies and laboratory testing
5. Solve point of contamination and original source of outbreak vehicle
6. Control outbreak through recalls, facility improvements, and industry collaboration
7. Decide an outbreak is over

If cases continue: Not finding associations
If cases stop: If cases stop
SURVEILLANCE
The State Hygienic Laboratory identifies the incidence and location of illnesses that affect population health, and does so in partnership with:
- Iowa Department of Public Health and local health departments
- The Centers for Disease Control and Prevention
- Health care facilities across Iowa
- Laboratory Response Network
- Food Emergency Response Network

OUTBREAKS
The laboratory’s Disease Control Division helps limit the spread of illnesses by rapidly identifying pathogens that cause outbreaks.
- Multiple foodborne outbreaks – Salmonella, Listeria
- Mumps primarily in Iowa’s Regent universities
- Noroviruses often in long-term care and child-care facilities

SPECIALIZED TESTING
As Iowa’s public health laboratory, the State Hygienic Laboratory maintains expertise and capacity in many areas of specialized testing.
- Environmental Microbiology – food and water testing and foodborne outbreaks
- Microbiology – statewide antimicrobial resistance monitoring, rabies testing, foodborne pathogen testing
- Molecular – influenza surveillance
- Serology – Zika virus screening
- Maternal Screening – identification of genetic dispositions

NATIONAL LEADERSHIP
Our laboratory scientists lead the nation in many areas of public health.
- Organism genotyping (Mycobacterium, Salmonella, Shigella, E. coli)
- Detecting Cryptosporidium and Cyclospora
- Laboratory Response Network (LRN) and Food Emergency Response Network (FERN) responses
- Advanced methods to detect pathogens at the molecular level