Outbreak of gastroenteritis at a local restaurant on Easter Sunday, 16th April 2017

Dr Jason Attard

Dr Maria Louise Borg
Mr Alastair Donaiche
Dr Tanya Melillo

#PHSymposium17
Steps of an outbreak investigation

1. Confirm outbreak and diagnosis
2. Form Outbreak Control Team
3. Define a case (case definition)
4. Identify cases and obtain information
5. Describe data by time, place, person
6. Develop hypothesis
7. Test hypothesis: analytic studies
8. Additional studies
9. Communicate results:
   - Outbreak report, publication
10. Implement control measures

#PHSymposium17
Background

• 18\textsuperscript{th} April 2017:
  – Contacted IDCU directly by the public by two separate groups of people who ate at the restaurant
  – Symptoms: abdominal cramps, diarrhoea and nausea

• Outbreak investigation:
  – To assess the extent of the outbreak
  – To identify the mode and vehicle of transmission
  – To identify the causative agent
  – To implement appropriate control measures
Methods

• Retrospective cohort study
• Case Definition:
  – A person who had consumed food at the restaurant on the 16th April and developed diarrhoea (3 or more loose stools in 24 hours) within the next 72 hours
• Case Finding:
  – List of all bookings the restaurant had on the day
  – Social media (Facebook)
  – Detailed menu of the food served was provided
  – Google Form questionnaire was developed
  – Telephone / Online questionnaire
Methods

• Analysis: descriptive and analytical
• Laboratory Analysis: stool samples
• Environmental investigations
  – Thorough inspection
  – Risk assessment of the premises
  – Collect details on food preparation and storage
  – Take environmental swabs/samples
Results

• Descriptive Findings:
  – 178/200 persons participated (89%)
  – 64 (32%) reported an illness of which 59 (30%) met the case definition
  – Main symptoms:
    - Diarrhoea (100%)
    - Nausea (49%)
    - Fever (3%)
    - Lethargy (2%)
    - Abdominal cramps (75%)
    - Vomiting (10%)
    - Headache (2%)
Results - Epicurve

Number of cases by date and time of onset of symptoms

Date and time of onset:
- 16/04 12:00-16:00
- 16/04 16:00-20:00
- 16/04 20:00-00:00
- 17/04 00:00-04:00
- 17/04 04:00-08:00
- 17/04 08:00-12:00
- 17/04 12:00-16:00

Number of cases:
- 0
- 5
- 5
- 20
- 20
- 10
- 5
- 0
Results

• Laboratory Findings:
  – 2 stool samples were collected from only one person, which were negative for norovirus and pathogenic bacteria

• Environmental Findings (19/04/2017):
  – Hygienic conditions: good
  – Premises and equipment: good (only minor issues)
  – No ghost meals were kept / Leftover food was discarded
  – None of the staff reported being sick or showed suspected symptoms during inspection
  – Environmental swabs/samples: negative
## Results – Analytical Findings

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Risk Ratio</th>
<th>95% Confidence level</th>
<th>p value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rib eye steak with mushroom sauce</td>
<td>6.12</td>
<td>3.59-10.42</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1.58</td>
<td>1.05-2.38</td>
<td>0.035</td>
<td>&gt;0.050</td>
</tr>
<tr>
<td>Spaghetti marinara</td>
<td>1.65</td>
<td>1.09-2.49</td>
<td>0.026</td>
<td>&gt;0.050</td>
</tr>
<tr>
<td>Chips (adults)</td>
<td>2.55</td>
<td>1.01-6.44</td>
<td>0.021</td>
<td>&gt;0.050</td>
</tr>
</tbody>
</table>

#PHSymposium17
Conclusions

• The epidemic curve of this outbreak suggests a common point source.

• The rib eye steak, which was served with mushrooms sauce was the most likely vehicle of transmission.
Limitations

1. The public contacted the IDCU two days after the event.

2. Cases were reluctant to submit stool samples for analysis in view of short-lasting symptoms, which had already subsided at the time of contact.

3. Ghost meals were not available.
This study highlights the importance of:

1. Epidemiological investigations
2. The use of social media to detect and investigate outbreaks
3. Establishment to keep ghost meals
4. Early notification of outbreaks to health authorities to:
   - be able to conduct timely investigations
   - find cases more willing to submit samples and
   - find environmental samples for analysis
Steps of an outbreak investigation

1. Confirm outbreak and diagnosis
2. Form Outbreak Control Team
3. Define a case (case definition)
4. Identify cases and obtain information
5. Describe data by time, place, person
6. Develop hypothesis
7. Test hypothesis: analytic studies
8. Additional studies
9. Communicate results:
   - Outbreak report, publication
10. Implement control measures

#PHSymposium17
Thank you