Estimates of burden of foodborne disease – European perspective
“Food safety is a hidden, and often overlooked, problem.”

Dr Margaret Chan, WHO Director-General
Foodborne disease – a serious public health challenge

- More than 200 diseases are spread through food
- Caused by microorganisms (bacteria, viruses, fungi, prions, parasites) or chemicals, radioactivity or even physical agents
- From short-term to long-term illness
- Can cause very severe consequences, some of which can be long term, including kidney and liver failure, brain and neural disorders, reactive arthritis, cancer, septicaemia and death
- May be more serious in children, pregnant women, those who are older, or who have a weakened immune system
Food safety is a shared responsibility

“Today, the journey from where our food comes from to how it ends on our plate is longer and more complex than ever before. Food safety risks exist at every step. Our food safety and control systems must adapt and work together across sectors, along the entire food chain.”

Dr Zsuzsanna Jakab, WHO Regional Director for Europe
31 hazards included in the final FERG analyses

<table>
<thead>
<tr>
<th>Parasites</th>
<th>Chemicals</th>
<th>Invasive bacteria/virus</th>
<th>Diarrheal disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascaris spp</td>
<td>Aflatoxin</td>
<td>Brucella spp</td>
<td>Campylobacter spp</td>
</tr>
<tr>
<td>E. multilocularis</td>
<td>Cassava cyanide</td>
<td>Hepatitis A virus</td>
<td>Cryptosporidium spp</td>
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<tr>
<td>E. granulosus</td>
<td>Dioxin</td>
<td>Listeria spp</td>
<td>Entamoeba histolytica</td>
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<tr>
<td>Clonorchis sinensis</td>
<td></td>
<td>Mycobacterium bovis</td>
<td>Enteropathogenic E.coli</td>
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<tr>
<td>Fasciola spp</td>
<td></td>
<td>Invasive non-typhoid Salmonella</td>
<td>Enterotoxigenic E.coli</td>
</tr>
<tr>
<td>Intestinal flukes</td>
<td></td>
<td>Salmonella Paratyphi A</td>
<td>Giardia spp</td>
</tr>
<tr>
<td>Opisthorchis spp</td>
<td></td>
<td>Salmonella Typhi</td>
<td>Norovirus</td>
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<tr>
<td>Paragonimus spp</td>
<td></td>
<td></td>
<td>Non-typhoid Salmonella</td>
</tr>
<tr>
<td>Taenia solium</td>
<td></td>
<td></td>
<td>Shigella spp</td>
</tr>
<tr>
<td>Toxoplasma gondii</td>
<td></td>
<td></td>
<td>Shiga toxin-pr. E.coli</td>
</tr>
<tr>
<td>Trichinella spp</td>
<td></td>
<td></td>
<td>Vibrio cholerae</td>
</tr>
</tbody>
</table>
The burden of foodborne diseases is substantial

Every year foodborne diseases cause:

- almost **in 10** people to fall ill
- **33 million** healthy life years lost

Foodborne diseases can be deadly, especially in children <5

- **420 000** deaths
- Children account for **1/3** of deaths from foodborne diseases

Foodborne diseases are preventable. Everyone has a role to play.

For more information: [www.who.int/foodsafety](http://www.who.int/foodsafety)

#SafeFood

Main findings globally

• 1 in 10 (~600 million) fall ill every year from contaminated food
  – 420,000 die

  • 30% in children <5 years
    – EPEC, non-typhoid *Salmonella*, ETEC, *Campylobacter*, typhoid
    – *Taenia solium* is the dominant parasitic cause of childhood mortality

• The burden varies greatly across the world
  – WHO African and South-East Asia Regions have the highest incidence and highest death rates
Main findings globally (cont’d)

• **Diarrhoeal diseases**
  – Causing more than half of the burden
    • 550 million ill people (220 million <5yrs) and
    • 230,000 deaths (96,000 <5 yrs) every year
  – Norovirus and *Campylobacter* most common causes
  – Non-typhoid *Salmonella* followed by typhoid fever
    causing majority of deaths and the highest burden

• **Other important hazards to the global burden**
  – Hepatitis A virus, *Taenia solium*, aflatoxin
Foodborne diseases in the WHO European Region

Every year

23 million people fall ill
5000 people die

Diarrhoeal diseases are responsible for most foodborne illnesses

Norovirus infection = almost 15 million cases

Campylobacter = nearly 5 million cases

Foodborne diseases are preventable. Everyone has a role to play.

For more information: www.who.int/foodsafety

#SafeFood

Main findings – European region

• More than 23 million people, 3 million < 5 years, fall ill from unsafe food every year
  ➢ 5000 deaths

• Children <5 years account for
  • 13% of illness
  • 14% of deaths
  • ~25% of total burden
Diarrheal foodborne disease - European region

• More than 22 million illnesses per year
  • ~15 million due to norovirus
  • Close to 5 million due to campylobacteriosis
• Almost 3000 deaths per year
  • Almost 2000 due to non-typhoid Salmonella
• Diarrheal disease account for
  • 96% of foodborne illnesses
  • 62% of deaths
  • 57% of DALYs
## European data – ranking of illness and burden

<table>
<thead>
<tr>
<th>Rank</th>
<th>Illnesses</th>
<th>Rank</th>
<th>DALYs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Norovirus</td>
<td>1.</td>
<td>Non-typhoid <em>Salmonella</em> spp</td>
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<tr>
<td>2.</td>
<td><em>Campylobacter</em> spp</td>
<td>2.</td>
<td><em>Campylobacter</em> spp</td>
</tr>
<tr>
<td>3.</td>
<td>Non-typhoid <em>Salmonella</em> spp</td>
<td>3.</td>
<td><em>Toxoplasma gondii</em></td>
</tr>
<tr>
<td>5.</td>
<td><em>Giardia</em> spp</td>
<td>5.</td>
<td><em>Listeria monocytogenes</em></td>
</tr>
<tr>
<td>7.</td>
<td>Shiga toxin-producing <em>E.coli</em></td>
<td>7.</td>
<td><em>Brucella</em> spp</td>
</tr>
<tr>
<td>8.</td>
<td>Hepatitis A virus</td>
<td>8.</td>
<td>Hepatitis A virus</td>
</tr>
<tr>
<td>10.</td>
<td>Enteropathogenic <em>E.coli</em></td>
<td>10.</td>
<td><em>Mycobacterium bovis</em></td>
</tr>
</tbody>
</table>
Foodborne toxoplasmosis – European Region

- Nearly 20% of the total foodborne disease burden
- Affects more than 1 million people each year
- Spread through undercooked or raw meat and fresh produce
- Very severe zoonotic parasitic disease
  - Pregnant women/fetus
    - Miscarriage, stillbirth
    - Child disability, impaired vision
  - Immunocompromised
    - Neurological conditions
Foodborne listeriosis – European Region

• Less common disease, but severe
  – Pregnant women, elderly, immunocompromised
• Causes an estimated 400 deaths annually
• Significant burden, similar to the global level
• Can result in septicaemia and meningitis
• Usually spread by consuming
  – contaminated raw vegetables
  – ready-to-eat meals
  – processed meats
  – smoked fish or soft cheeses
Websites

• The WHO report *Estimates of the Global Burden of Foodborne Diseases*:
  www.who.int/foodsafety/publications/foodborne_disease/fergreport

  – And online tool:
    https://extranet.who.int/sree/Reports?op=vs&path=/WHO_HQ_Reports/G36/PROD/EXT/FoodborneDiseaseBurden

• Food safety in the WHO European Region:
  http://www.euro.who.int/foodafety
Five keys to safer food

Key 1: Keep clean
Key 2: Separate raw and cooked food
Key 3: Cook food thoroughly
Key 4: Keep food at safe temperatures
Key 5: Use safe water and raw materials

Video:
https://www.youtube.com/watch?v=ONkKy68HEIM