Prevention of health-care-associated infections (HAI) and antimicrobial resistance (AMR) in Europe

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WHO Regional Director for Europe
Presentation overview

- Global situation
- Situation in Europe
- Challenges
- WHO’s response
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Overlapping areas
that must be addressed together

Health-care-associated infections (HAI)

Antimicrobial resistance (AMR)

Usually associated with a weak health care system
AMR: antimicrobial use is the key driver of resistance

Paradoxically this selective pressure comes from a combination of **overuse** in many parts of the world, particularly for minor infections, **misuse** due to lack of access to appropriate treatment and **underuse** due to lack of financial support to complete treatment courses.

HAI: poor infection control is the key driver of health-care-associated infections.

Infection control is acknowledged universally as a solid and essential basis towards patient safety and supports the reduction of health-care-associated infections and their consequences.

Clean Care is Safer Care, WHO, May 2010
Prevalence of HAI worldwide

Figure 1 Prevalence of HCAI in developed countries*

* Systematic review conducted by WHO, 1996-2008
**Incidence


Almost twice as high as in developed countries.
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HAI burden in Europe: European Union (EU) data
Significant health and economic impact

Prevalence: 3.5–14.8% (average: 7.1%)

• 4 131 000 affected patients
• 4 544 100 episodes of HAI every year
• 16 million extra days of hospital stay
• 37 000 attributable deaths (and contribution to an additional 110 000)

• Annual economic impact: about €7 billion
(direct costs only)

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of cases/year</th>
<th>No. of deaths/year</th>
<th>Costs/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>100 000</td>
<td>5 000</td>
<td>1 billion</td>
</tr>
</tbody>
</table>

*Annual epidemiological report on communicable disease in Europe, 2008, ECDC*
Improving Patient Safety in Europe (IPSE)
2006–2008

Review of existing guidelines, standards and indicators of infection control and antimicrobial resistance programmes in European countries: 1/3, no programme; 2/3, no legislation

National programmes for AMR
- Yes: 62%
- No: 38%

National laws on prevention and control of AMR
- Yes: 32%
- No: 68%
Proportion of AMR isolated from blood samples

Gram positive
Staphylococcus aureus (MRSA)

Gram negative
Klebsiella pneumoniae

Multidrug-resistant tuberculosis (MDR-TB) high-burden countries

The first 15 most affected countries are in the WHO European Region

<table>
<thead>
<tr>
<th>Country</th>
<th>New (%)</th>
<th>Re-treated (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td>22.3</td>
<td>55.8</td>
</tr>
<tr>
<td>Republic of Moldova</td>
<td>19.4</td>
<td>50.8</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>16.5</td>
<td>61.6</td>
</tr>
<tr>
<td>Ukraine</td>
<td>16.0</td>
<td>44.3</td>
</tr>
<tr>
<td>Russian Fed.</td>
<td>15.8</td>
<td>42.4</td>
</tr>
<tr>
<td>Estonia</td>
<td>15.4</td>
<td>42.7</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>14.2</td>
<td>56.4</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>14.2</td>
<td>49.8</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>12.5</td>
<td>42.1</td>
</tr>
<tr>
<td>Belarus</td>
<td>12.5</td>
<td>42.1</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>12.5</td>
<td>42.1</td>
</tr>
<tr>
<td>Latvia</td>
<td>12.1</td>
<td>31.9</td>
</tr>
<tr>
<td>Armenia</td>
<td>9.4</td>
<td>43.2</td>
</tr>
<tr>
<td>Lithuania</td>
<td>9.0</td>
<td>47.5</td>
</tr>
<tr>
<td>Georgia</td>
<td>6.8</td>
<td>27.4</td>
</tr>
</tbody>
</table>

WHO European Region represents 19% of the MDR-TB global burden

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<tr>
<th>Country</th>
<th>New (%)</th>
<th>Re-treated (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>5.7</td>
<td>25.6</td>
</tr>
<tr>
<td>Myanmar</td>
<td>4.2</td>
<td>10</td>
</tr>
<tr>
<td>Philippine</td>
<td>4.0</td>
<td>20.9</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2.9</td>
<td>35.4</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>2.7</td>
<td>19.3</td>
</tr>
<tr>
<td>India</td>
<td>2.3</td>
<td>17.2</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>2.2</td>
<td>14.7</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2.0</td>
<td>14.7</td>
</tr>
<tr>
<td>Congo, Dem. R.</td>
<td>1.8</td>
<td>7.7</td>
</tr>
<tr>
<td>Nigeria</td>
<td>1.8</td>
<td>7.7</td>
</tr>
<tr>
<td>South Africa</td>
<td>1.8</td>
<td>6.7</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>1.6</td>
<td>11.8</td>
</tr>
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The bacterial challenge

Resistant isolates: many species involved

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Based on partnership and a cross-cutting approach

Building on the WHO Global Strategy for Containment of Antimicrobial Resistance (2001)

To further implement World Health Assembly resolution WHA51.17 on emerging and other communicable diseases: antimicrobial resistance (1998)
Partnership

European Antimicrobial Resistance Surveillance System

European Surveillance of Antimicrobial Consumption

Improving Patient Safety in Europe

Antibiotic Resistance Surveillance & Control in the Mediterranean Region

European Union Invasive Bacterial Infections Surveillance Network

ARPEC: Antibiotic Resistance and Prescribing in European Children
Partnership

WHO collaborating centres (CCs) in the European Region

WHO CC for Reference and Research on Hospital Infections
- Laboratory of Healthcare Associated Infection, Health Protection Agency, London, United Kingdom

WHO CC on Patient Safety
- Infection Control Programme, Department of Internal Medicine, University of Geneva Hospitals, Geneva, Switzerland

WHO CC for Antimicrobial Resistance in Foodborne Pathogens
- Danish Institute for Food and Veterinary Research, Department of Microbiology, Copenhagen, Denmark

WHO CC for Research and Training in Surveillance of Communicable Diseases and Antimicrobial Resistance
- National Centre for Infectious and Parasitic Diseases, Sofia, Bulgaria

WHO CC for Drug Statistics Methodology
- Norwegian Institute of Public Health, Oslo, Norway
Cross-cutting approach

WHO resources in antimicrobial resistance

- Health system strengthening
- Infection control
- Improving the use of antibiotics
- Patient safety
- Food safety and zoonoses
- Stop TB
- HIV/AIDS
- Malaria
Development of national action plans

A four-prong strategy

- **Surveillance** to document the problem
- **Prevention** to slow the emergence of HAI and AMR
- **Containment** to reduce the spread
- **Research** to develop new tools
European Surveillance of Antimicrobial Consumption (ESAC)

- Continuous collection of comprehensive antimicrobial consumption data, from ambulatory and hospital care
  - 27 EU Member States
  - 3 EEA/EFTA countries
  - 3 candidate countries (Croatia, the former Yugoslav Republic of Macedonia, Turkey)

ESAC (http://app.esac.ua.ac.be/public) is a project funded by ECDC.
European Antimicrobial Resistance Surveillance System (EARSS)

• Network of national centres in 31 countries
  – 800 public health laboratories serving over 1300 hospitals

• Surveillance of antimicrobial susceptibility of:
  – *Streptococcus pneumoniae*
  – *Staphylococcus aureus*
  – *Enterococcus faecalis*
  – *Enterococcus faecium*
  – *Escherichia coli*
  – *Klebsiella pneumonia*
  – *Pseudomonas aeruginosa*

• ECDC: transition to European Surveillance System (TESSy)
→ Prevention … through awareness

European Antibiotic Awareness Day

- **EAAD 2008**
  - Keeping antibiotics effective is everyone’s responsibility
  - Focus: community

- **EAAD 2009**
  - Communicating with patients is key
  - Focus: primary care prescribers

- **EAAD 2010**
  - Focus: hospital prescribers

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*European Antibiotic Awareness Day*  

*COLD? FLU? TAKE CARE NOT ANTIBIOTICS*

A European Health Initiative
WHO patient safety programme (launched in 2004)

- Reporting
- Classification
- Research

- Education
- Knowledge management

- Solutions
- High 5
- Technologies

- Patients for patient safety
- Safety prize

- Patient safety challenges
- Eliminating central line associated blood stream infections

⇒ Prevention … through infection control
Prevention ... through **hand hygiene**

an old but effective measure

- **29** WHO European Member States pledged to “Clean Care”
- **4377** health care facilities in 40 WHO European countries signed on to “Save lives” by 5 May 2010
- **16** national/subnational dedicated campaigns in Europe
- Hand hygiene guidelines adapted and translated in several European languages

Clean Care is Safer Care. WHO headquarters (http://www.who.int/gpsc/tools/en)
→ Prevention

A focus on
drug-resistant
TB in the WHO European Region
Containment

• Improving access to appropriate antimicrobials
• Rationalizing the prescribing and use of antibiotics
  – Antibiotic guidelines and prescribing policies in hospitals and general practice
• Enforcing regulations and legislation
• Strengthening health systems and their surveillance capabilities
Containment … a country example

STRAMA (Swedish strategic programme against antibiotic resistance): working model for containment

Overall aim

– To preserve the effectiveness of antibiotics in humans and animals

Strategy

– Two levels:
  • local multidisciplinary groups
  • national executive working group
– Collaboration with national and regional news media
– Proposal of Swedish plan of action against antibiotic resistance

Results

– Decrease in antibiotic use from the mid 1990s until 2004

Swedish Institute for Infectious Disease Control
(http://www.smittskyddsinstitutet.se/in-english/statistics/methicillin-resistant-s-aureus-infection-mrsa/)
Research

More research is needed on non-pharmaceutical interventions to prevent and control AMR, such as:

- determining the *mechanisms by which resistant stains emerge* and how to limit their spread;
- expanded surveillance for drug resistance to *evaluate the impact of changes in antimicrobial drug use*;
- studies of *methods to reduce community-acquired AMR* (particularly MRSA) infections;
- investigations of re-infections to *identify risk associated with past antibiotic use*;
- understanding of *how antimicrobial resistance patterns predict treatment outcomes*. 
Key points for AMR and HAI control in the European Region

Awareness
Introduce AMR and HAI in the agenda of WHO governing bodies
World Health Day 2011

Surveillance
Strategic partnership with ECDC
Expansion of the ESAC and EARSS networks

Containment
Development of national policies and national action plans
Solidarity with and support to Member States in eastern Europe, with a focus on drug-resistant TB

Research
Collaboration with all relevant institutes in the Region
World Health Day 2011

Thank you