WHO perspective on antimicrobial resistance

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Overview of presentation

- The World Health Organization and public health perspectives of AMR
- WHO perspective on foodborne AMR
- Mechanisms and activities:
  - Training
  - Mentoring
  - Awareness raising
The evolving threat of antimicrobial resistance
Options for action

"In terms of new replacement antibiotics, the pipeline is virtually dry. But much can be done. This includes prescribing antibiotics appropriately and only when needed, following treatment correctly, restricting the use of antibiotics in food production to therapeutic purposes and tackling the problem of substandard and counterfeit medicines."

COMBAT
DRUG RESISTANCE

No action today, no cure tomorrow

7 APRIL 2011 WORLD HEALTH DAY
Many other factors contributing to development of resistance

- Misuse occurring broadly in many settings
  - Clinical medicine, communities, agriculture

- Few countries have national plans to limit use
  - No clear accountability

- Insufficient information on scope & key trends
  - Surveillance systems weak or absent
Many other factors contributing to development of resistance

- Inadequate systems for ensuring quality medicines
- Inadequate use of available infection prevention & control guidance
- Insufficient research & development of antimicrobial medicines & diagnostic tests
- Unrestricted sale & use of antimicrobial drugs in some settings
Widely used in food animals

- Growth enhancement & therapeutic purposes
- Same classes of antimicrobials as used in humans
- Food considered most important vector for spread of resistance between humans & animals
- Globalized distribution of food
  - Require international cooperation
Need better implementation of guidance available from WHO & others

- Comprehensive plan, accountability, civil society engagement
- Strengthen surveillance and laboratory capacity
- Access to essential medicines of assured quality
- Rational use of medicines
- Enhance infection prevention and control
- Foster innovation and R&D for new tools
WHO Global Principles for Prevention and Control of Foodborne Antimicrobial Resistance

- National and international interdisciplinary cooperation
- Prudent use of antimicrobial agents in all sectors
  - No use of antimicrobial agents for growth promotion (EU ban January 1, 2006)
  - Good regulatory system for approval and licensing
  - Prescription-only, appropriate antimicrobial product and administration route
  - Practitioners not having economic profit from prescription
  - Routine prophylactic use of antimicrobials not a substitute for good health management
  - Accurate diagnosis and antimicrobial susceptibility testing

- Infection control
  - Successful disease control relies on a holistic approach encompassing hygiene, animal husbandry and management, nutrition, animal welfare, and vaccination
WHO Global Principles for Prevention and Control of Foodborne Antimicrobial Resistance

- Antimicrobials identified as critically important in human medicine to be used in animals only if justified (updated every 2 years)
  - Fluoroquinolones, 3 + 4 generation cephalosporins

- Monitoring of antimicrobial resistance and antimicrobial usage in human and animals
  - Useful information on prevalence and trends
  - Input for risk assessment and risk management
  - A basis for choosing, implementing and evaluating interventions
WHO list of Critically Important Antimicrobials (CIA)

- **Criterion 1**: Antimicrobial agent used as sole therapy or one of few alternatives to treat serious human disease *(SOLE THERAPY)*

- **Criterion 2**: Antimicrobial agent is used to treat diseases caused by
  - 1) organisms that may be transmitted to man via non-human sources, or
  - 2) diseases caused by organisms that may acquire resistance genes from non-human sources *(NON HUMAN SOURCE)*

- Critically Important: those antimicrobials which meet both criteria 1 and 2

- Highly Important: those antimicrobials which meet either criterion 1 or 2

- Important: those antimicrobials which meet neither criterion 1 nor 2
Advisory Group on Integrated Surveillance of Antimicrobial Resistance - AGISAR

Tackling foodborne antimicrobial resistance through integrated surveillance

- 31 Members
- Subcommittees
  - Antimicrobial Usage Monitoring
  - Antimicrobial Resistance Surveillance
  - Capacity Building & Pilot Projects
  - Data Management
- Meetings:
  - Copenhagen, Denmark, June 2009.
  - Guelph, Canada, June, 2010.
  - Oslo, Norway, June 2011
  - Aix-en-Provence, France, June, 2012
AGISAR Country Pilot Projects Objectives

- Supplement the work of AGISAR by providing data from various parts of the world, particularly from developing countries.
- Contribute in strengthening the capacities of countries to establish their own program on integrated surveillance of AMR and antimicrobial drug use.
- Foster communication and collaboration between animal, food and health sectors.
- Increase awareness and commitment among countries to implement strategies for prevention and control of foodborne diseases and containment of AMR.
- Use data generated at country level to influence policy.
Global Foodborne Infections Network (GFN)

Who: A network of professionals and institutions in public health, food and veterinary

What: strengthening integrated surveillance, investigation, prevention and control of foodborne and other enteric infections

Where: national, regional, global

Why: foodborne and enteric diseases constitute a significant burden of disease

When: on identification of need and commitment/ readiness of country to embark in process
How does GFN work?

- **Lead organization:** World Health Organization

- **Steering committee**

- **Affiliated organizations**

- **Laboratory and Epidemiology Subcommittees**

- **Regional centres**

- **GFN Members**
What do we mean by capacity building

Moving towards

- Assessing needs and in-context problem solving
- Translating knowledge acquired to the workplace
- Measuring the outcome and impact of GFN activities
- Influencing policy-makers to support technical implementation
- Strengthening laboratory quality assurance and linkages to laboratories for reference testing

System Level
Policies, strategies, law, regulations interdependencies and interaction among stakeholders from farm to table

Organization Level
Resources, procedures, structures, decision making, infrastructure

Individual Level
Knowledge, skills, competencies, work ethics
Challenging but worthwhile

- A continuing problem… new challenges will arise, including food safety, trade issues

- Need harmonization of methods and reliable data on antimicrobial use and antimicrobial resistance (capacity building, pilot studies in developing countries)

- Codex to set standards based on best science and Codex AMR Task force output 'CAC/GL 77-2011: Guidelines for risk analysis of foodborne antimicrobial resistance'

- Holistic approaches
  - FAO, OIE, WHO
  - WHO-AGISAR
  - Appropriate prevention and control measures

- Basic and applied research driving policy
  - Mechanisms, trends and risk factors
  - New antimicrobials, alternatives to antimicrobials, tests, vaccines

- Ending unnecessary use!
Thank you!

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### WHO list of Critically Important Antimicrobials (CIA) – sole therapy & non-human use

<table>
<thead>
<tr>
<th>Aminoglycosides</th>
<th>Macrolides and ketolides</th>
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<tbody>
<tr>
<td>Ansamycins</td>
<td>Oxazolidinones</td>
</tr>
<tr>
<td>Carbapenems and other penems</td>
<td>Penicillins (natural, aminopenicillins and antipseudomonal)</td>
</tr>
<tr>
<td>Cephalosporins (3&lt;sup&gt;rd&lt;/sup&gt; and 4&lt;sup&gt;th&lt;/sup&gt; generation)</td>
<td>Quinolones</td>
</tr>
<tr>
<td>Glycopeptides</td>
<td>Streptogramins</td>
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<tr>
<td>Glycylcyclines</td>
<td>Tetracyclines</td>
</tr>
<tr>
<td>Lipopeptides</td>
<td>Drugs used solely to treat TB or other mycobacterial diseases</td>
</tr>
</tbody>
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## Highly Important Antimicrobials for sole therapy or non-human use

<table>
<thead>
<tr>
<th>Highly Important Antimicrobials</th>
<th>Details</th>
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<tbody>
<tr>
<td>Amdinopenicillins</td>
<td>Pseudomonic acids</td>
</tr>
<tr>
<td>Aminocyclitols</td>
<td>Penicillins (Antistaphylococcal)</td>
</tr>
<tr>
<td>Aminoglycosides (Other)</td>
<td>Pleuromutilins</td>
</tr>
<tr>
<td>Amphenicols</td>
<td>Polymyxins</td>
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<tr>
<td>Cephalosporins (1\textsuperscript{st} and 2\textsuperscript{nd} generation)</td>
<td>Riminofenazines</td>
</tr>
<tr>
<td>Cephamycins</td>
<td>Sulfonamides, DHFR inhibitors and combinations</td>
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<tr>
<td>Fusidic acid</td>
<td>Sulfones</td>
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<td>Monobactams</td>
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