Preventing disease
Promoting and protecting health
12th Meeting Caribbean National Epidemiologists and Laboratory Directors

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Strengthening the capacity of CARPHA and National Laboratories Network for anti-microbial resistance detection and surveillance

Dr Cristina Gutierrez
Laboratory Director
Head, Laboratory Services and Networks

Preventing disease, promoting and protecting health
Antimicrobial resistance (AMR) endangers the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi such as those that cause pneumonia, diarrheal diseases, tuberculosis, sexually transmitted diseases and malaria.

- Back to pre-antibiotic era
- High impact on morbidity, mortality, associated costs
Antimicrobial resistance: global report on surveillance (WHO 2014)

Key findings

• Very high rates of resistance in bacteria that cause common health-care associated and community-acquired infections (e.g. urinary tract infection, pneumonia) in all WHO regions.

• Significant gaps in surveillance, and a lack of standards for methodology, data sharing and coordination.
### Bacteria commonly causing infections in hospitals and in the community

<table>
<thead>
<tr>
<th>Name of bacterium resistance</th>
<th>Examples of typical diseases</th>
<th>No. out of 194 Member States providing data</th>
<th>No. of WHO regions with national reports of 50% resistance or more</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia coli</em></td>
<td>Urinary tract infections, blood stream infections</td>
<td>86/92</td>
<td>5/6 5/6</td>
</tr>
<tr>
<td>- vs 3\textsuperscript{rd} gen. cephalosporins</td>
<td></td>
<td></td>
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<tr>
<td>- vs fluoroquinolones</td>
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<tr>
<td><em>Klebsiella pneumoniae</em></td>
<td>Pneumonia, blood stream infections, urinary tract infections</td>
<td>87/71</td>
<td>6/6 2/6</td>
</tr>
<tr>
<td>- vs 3\textsuperscript{rd} gen. cephalosporins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- vs 3\textsuperscript{rd} carbapenem</td>
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<tr>
<td><em>Staphylococcus aureus</em></td>
<td>Wound infections, blood stream infections</td>
<td>85</td>
<td>5/6 5/6</td>
</tr>
<tr>
<td>- vs methicillin &quot;MRSA&quot;</td>
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</table>

### Bacteria mainly causing infections in the community

<table>
<thead>
<tr>
<th>Name of bacterium resistance</th>
<th>Examples of typical diseases</th>
<th>No. out of 194 Member States providing data</th>
<th>No. of WHO regions with national reports of 25% resistance or more</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Streptococcus pneumoniae</em></td>
<td>Pneumonia, meningitis, otitis</td>
<td>67</td>
<td>6/6 6/6</td>
</tr>
<tr>
<td>- non-susceptible or resistant to penicillin</td>
<td></td>
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<td></td>
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<tr>
<td><em>Nontyphoidal Salmonella</em></td>
<td>Foodborne diarrhoea, blood stream infections</td>
<td>68</td>
<td>3/6 2/6</td>
</tr>
<tr>
<td>- vs fluoroquinolones</td>
<td></td>
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</tr>
<tr>
<td><em>Shigella species</em></td>
<td>Diarrhoea (&quot;bacillary dysenteria&quot;)</td>
<td>35</td>
<td>2/6 2/6</td>
</tr>
<tr>
<td>- vs fluoroquinolones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Neisseria gonorrhoea</em></td>
<td>Gonorrhoea</td>
<td>42</td>
<td>3/6 2/6</td>
</tr>
<tr>
<td>- vs 3\textsuperscript{rd} gen. cephalosporins</td>
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</table>

Antimicrobial resistance: global report on surveillance. WHO 2014

Preventing disease, promoting and protecting health
CMS Laboratory Capacities Survey 2014, Preliminary results, 18 CMS and 24 Laboratories

Culture & ID
Preventing disease, promoting and protecting health

Serology
Objectives of the collaborative proposal

1. To improve AMR detection and surveillance programs at national and regional level

2. To establish a regional network for expanding the AMR monitoring to the Caribbean
Expected results

- tools and standards for harmonized AMR laboratory-based surveillance developed

- strategies for AMR population-based surveillance elaborated

- more extensive AMR information available:
  • to guide patients care and AM use policies
  • to develop prevention and intervention strategies to fight against AMR
  • to improve epidemic preparedness and response
  • to measure health and economic impact

- collaboration between existing AMR surveillance networks established for coordinated regional and global surveillance
Proposed activities - 1

- Second microbiologist to CARPHA laboratory

- Assess capacities and gaps for AMR surveillance:
  - Pathogens
  - Lab needs (HR, equipments, supplies, reagents, quality and IT systems)

- Develop or update standard operating procedures (SOPs) for AST and QC of the selected pathogens using standardized methods

- Conduct training in new SOPs and information systems

- Procurement of essential reagents, supplies and equipments

- Network inter laboratory comparisons to meet proficiency requirements
Proposed activities - 2

- Second microbiologist to CARPHA laboratory
- Implementation of laboratory-based surveillance of AMR
- Setting up a database for collecting and sharing information
- Develop proposals of national and regional plans for strengthening AMR surveillance
- Strengthening and expanding integration on regional (Americas) and global networks for AMR surveillance
- Monitoring system