Effective Surveillance of AMR

Susan Hopkins
Healthcare Epidemiologist, Public Health England
Consultant Infectious Diseases & Microbiology, Royal Free London
Honorary Senior Lecturer, University College London
Objectives

• To outline key surveillance in relation to AMR
• To outline the importance of data sharing
• To share experiences
English Surveillance Programme for Antibiotic Use and Resistance (ESPAUR)

Established by PHE in 2013 in response to the strategy
Terms of reference updated in 2015, at year 2 review

Focuses on bringing together NHS, PHE, Private sector across all prescribers and clinicians to improve

Surveillance data on AMR and prescribing
Antimicrobial stewardship activities
Education and training for healthcare professionals
Work with Comms/ Marketing for the Public
Population 56million
Four regions, 15 PH centres, 27 NHS area teams

Eight Knowledge and Intelligence Teams
- London
- South West
- South East
- West Midlands
- East Midlands
- North West
- Northern and Yorkshire
- East

Other local presence
- ten microbiology laboratories
- field epidemiology teams

Additional support
- Local teams can also draw on national scientific expertise based at Colindale, Porton Down and Chilton
AMR: role of surveillance & epidemiology

**Environment**
- Chlorine used for cleaning in outbreaks
- Systems in place to assure high standard of cleaning
- Patient equipment cleaned after each use
- Policy available – hospital/GPs
- Systems in place to monitor & benchmark prescribing
- Antibiotic pharmacist
- Reduce use of broad spectrums
- Prudent prescribing

**Antimicrobials**

**Surveillance & epidemiology**
- Lab SOPs reliably identify cases
- Systems in place to recognise epidemic/virulent strains
- Research to understand causes and risk factors
- Systems in place to detect & trigger response ↑ in cases
- Systems in place to identify & manage cases

**Healthcare workers**
- Can recognise cases early
- Know how to monitor & treat cases
- Know about infection control
- Can identify high risk patients

**Delivery**
- Symptomatic patients isolated
- Stop unnecessary Rx
- High frequency of hand hygiene
- Research to evaluate prevention measures

**Administrative procedures**
- Systems in place to respond to ↑ in cases
- Sufficient isolation rooms

**Prevention of AMR infections**

SGSS: Second Generation Surveillance System

- Laboratory text files (preferred method)
- Bespoke Excel format (CDR and AMR)
- Legacy CoSurv/ Amsurv files

- Web Upload
- Email
- Web Data Entry

- sFTP

- SGSS Laboratory Data Import
- SGSS Operational Database

- BI Security layer
  - Role based model based on requirement / permission to view patient level or aggregate data
  - Business Intelligence Layer (BI)

- SGSS Data Warehouse

- Web
- Reporting

- Mining and Analysis

- HPZone

- PHE network

- External networks
Resistence in *Escherichia coli*

- Proportion resistance stable
- Increased rate of bacteraemias & antibiotic resistant bacteraemias
- Regional variation across the country

*E. coli* isolates non-susceptible to ciprofloxacin, 3rd gen cephalosporins and gentamicin, England 2010-2013

Grey areas represent ATs where <70% of isolates had susceptibility data available.
Carbapenems

~0.3% of total use
31% increase from 2010 to 2013
99% hospital use
Majority of regions increased
Huge variability across AT

Map of carbapenem consumption by ATs, DID, 2013
Support and contribute to EU surveillance
Proportion of Carbapenems Resistant *K. pneumoniae* Isolates in Participating Countries 2006-2012

Data source: ECDC (EARS-Net)
Conclusions

• Antimicrobial resistance a significant threat
  • crosses hospital and community
  • crosses organisations, borders, regions etc

• Need effective information for action
  • antimicrobial use and resistance
  • voluntary and mandatory surveillance
  • sentinel and routine surveillance
  • geographical and organisation specific

• Laboratory and Surveillance Strategy goes hand in hand
  • early interaction and development key
  • decide on outputs (i.e. key needs and information for action/ policy etc)
  • develop feedback systems