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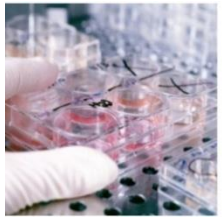
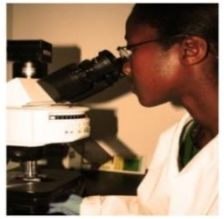


Surveillance for AMR, global and local perspective

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Layout

- Global aspects of AMR surveillance
- GERMS SA surveillance
- Electronic surveillance
- SASCM
- Recommendations

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Purpose of surveillance

- To measure magnitude of AMR
- To recommend empirical treatment
- To identify new resistance
- To assess trends of resistance
- To measure burden of AMR and risk factors

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Priorities for AMR surveillance

- **Stakeholders mandate to conduct surveillance**
- **Risk assessment for AMR**
- **Prioritization of pathogens setting for AMR**
- **Identify core and enhanced epidemiological information**

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The function of surveillance

- To recognize differences at local, national, regional and global surveillance levels and apply efficiently.
- To obtain data at local level as foundation for specific epidemiological purpose
- To utilize diagnostic stewardship

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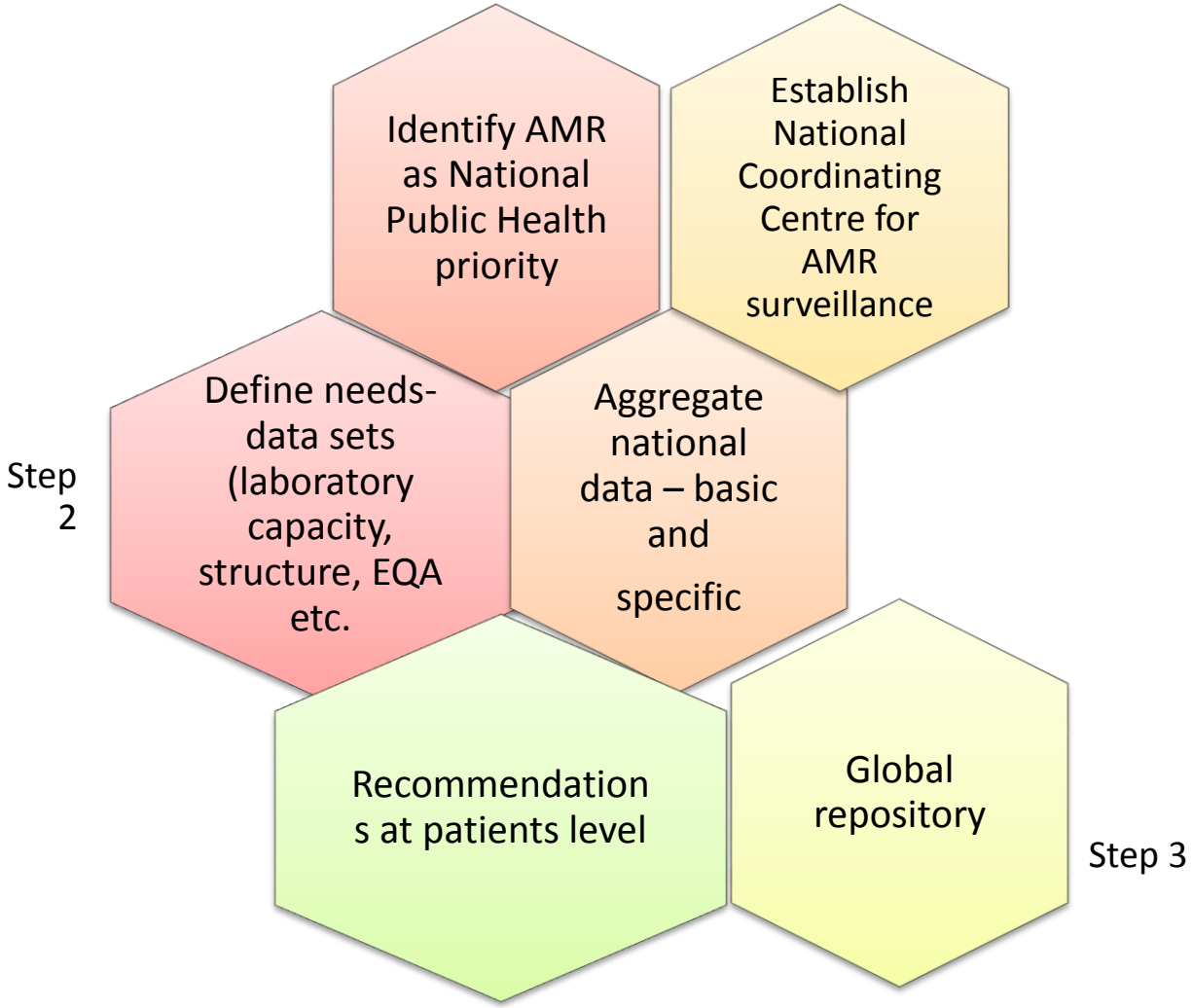
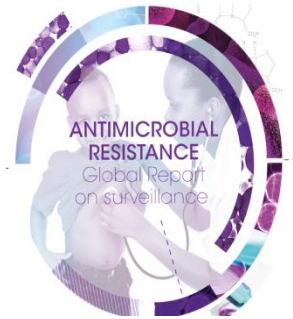
Metric for AMR, WHO recommendation-the global AMR surveillance system



Global list of priority organisms for AMR surveillance for initial implementation

World Health Organization



Bacteria commonly causing infections in hospitals and in the community

Name of bacterium/ resistance	Examples of typical diseases
Escherichia coli/ - vs 3rd gen. cephalosporins - vs fluoroquinolones	Urinary tract infections, blood stream infections
Klebsiella pneumoniae/ - vs 3rd gen. cephalosporins - vs 3rd carbapenems	Pneumonia, blood stream infections, urinary tract infections
Staphylococcus aureus/ - vs methicillin "MRSA"	Wound infections, blood stream infections

Bacteria mainly causing infections in the community

Name of bacterium/ resistance	Examples of typical diseases
Streptococcus pneumoniae/ - non-susceptible or resistant to penicillin	Pneumonia, meningitis, otitis
Nontyphoidal Salmonella/ - vs fluoroquinolones	Foodborne diarrhoea, blood stream infections
Shigella species/ - vs fluoroquinolones	Diarrhoea ("bacillary dysenteria")
Neisseria gonorrhoea/ - vs 3rd gen. cephalosporins	Gonorrhoea

Initial implementation phase of global surveillance :

1. Proposed framework in 2015
2. Identification of countries with core infrastructure for surveillance
3. Acceptance of priority infections and pathogens
4. Invitation to commit to AMR surveillance trough MOU
5. Reporting surveillance at national level
6. Submission aggregated data at regional and global levels.

GERMS-SA case definitions for laboratory-confirmed cases at health care facilities within SA

Pathogen	*Site of specimen*	*Acceptable laboratory diagnostic test*	*Recurrent case (in the same patient)*
Cryptococcus spp.	Any site	○ India ink positive or ○ Cryptococcal antigen (CrAg) test positive or ○ Culture positive	Readmission with laboratory confirmation or Laboratory confirmation ≥ 30 days after first confirmed lab diagnosis, where admission data is unavailable
Salmonella enterica (including *Salmonella* Typhi)	Any site	○ Culture positive	Laboratory confirmation > 21 days after first confirmed lab diagnosis
Shigella spp.	Any site	○ Culture positive	Laboratory confirmation > 21 days after first confirmed lab
Diarrhoeagenic *Escherichia coli*	Lower gastrointestinal tract (stool or rectal swab)	○ Culture positive	Not specified
Vibrio spp.	Any site	○ Culture positive	Not specified
Campylobacter	Any site	○ Culture positive	Not specified
Streptococcus pneumoniae	Any normally sterile body site*	○ Culture positive or ○ Latex agglutination test positive and supporting evidence (consistent Gram stain or PCR positive)	Laboratory confirmation > 21 days after first confirmed lab diagnosis
Neisseria meningitidis	Any normally sterile body site*	○ Culture positive or ○ Latex agglutination test positive and supporting evidence (consistent Gram stain or PCR positive)	Laboratory confirmation > 21 days after first confirmed lab diagnosis
Haemophilus spp.	Any normally sterile body site*	○ Culture positive or ○ Latex agglutination test positive and supporting evidence (consistent Gram stain or PCR positive)	Laboratory confirmation > 21 days after first confirmed lab diagnosis
Staphylococcus aureus	Blood culture only	○ Culture positive	Laboratory confirmation > 21 days after first confirmed lab diagnosis
Other ESKAPE organisms	Blood culture only	○ Culture positive	Laboratory confirmation > 21 days after first confirmed lab diagnosis
Carbapenem-producing Enterobacteriaceae CPEs (*Klebsiella* spp., *E. coli*, *Enterobacter* spp., *Serratia* spp., *Providencia* spp., *Citrobacter* spp.)	Blood culture only	○ Culture positive (resistant to ertapenem)	Laboratory confirmation > 21 days after first confirmed lab diagnosis

Electronic surveillance

- Antimicrobial Susceptibility Testing (AST) individual reports are sent timely to the clinician.
- Provide antimicrobial directed treatment.
- Alert system for pathogens of importance
- Compile data from routine laboratories.
- Corporate Data Warehouse (CDW) reports on AST.
- 2012, 2013 and 2014 reports were released at FIDSSA web site and published at NICD bulletin.

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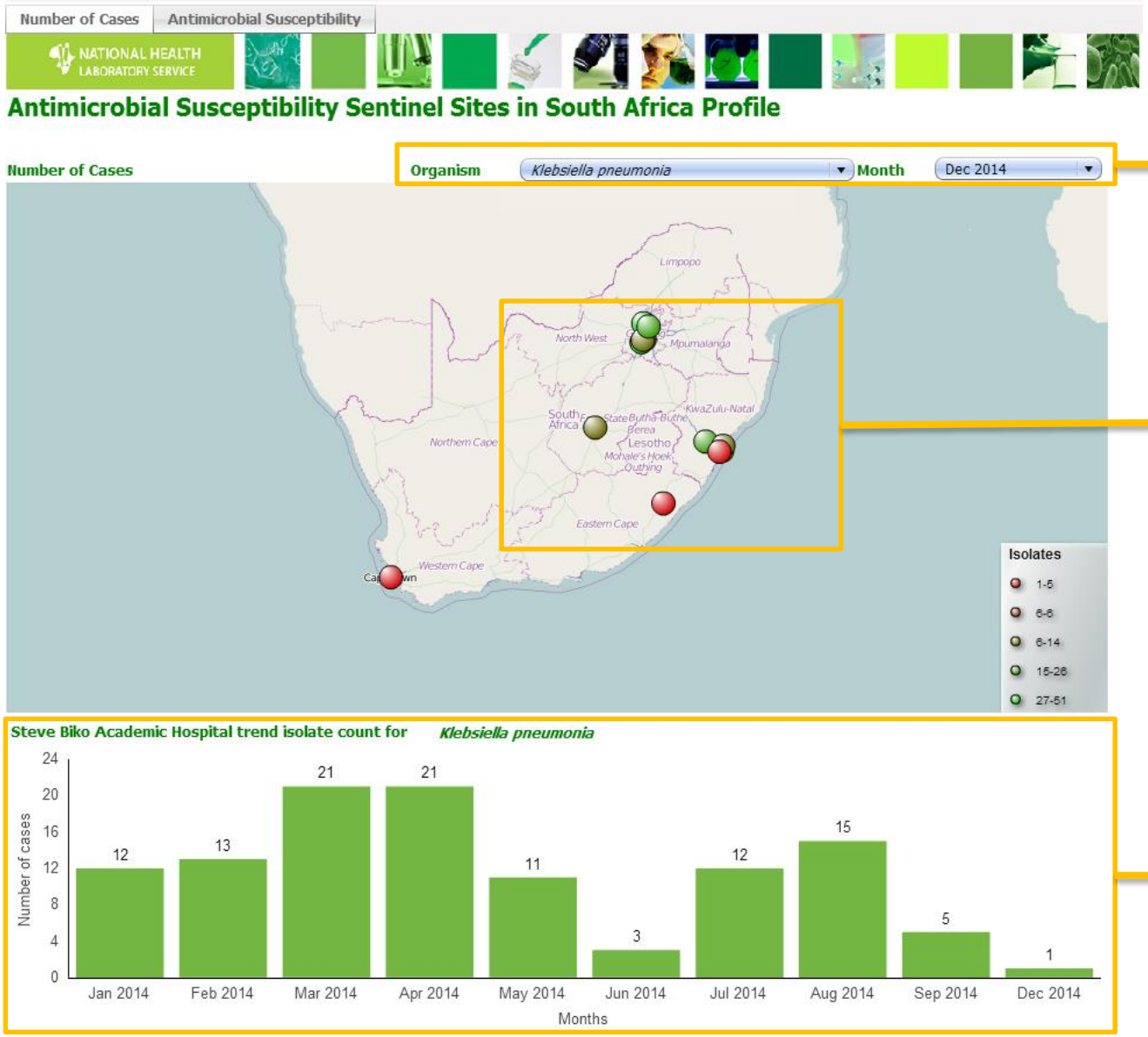
Antimicrobial resistance surveillance from sentinel public hospitals, South Africa, 2013 and comparison with 2012 data

Methods

All data were sourced from the National Health Laboratory Service (NHLS) Corporate Data Warehouse (CDW). This is a national repository for all public health hospitals in South Africa and contains archived data from two laboratory information systems (LIS), DISALAB and TrakCare.[2]

Bloodstream infections for the period January to December 2013 were extracted for the following pathogens ESKAPE: *Acinetobacter baumannii* complex, *Enterobacter cloacae* complex, *Escherichia coli, Enterococcus faecalis, Enterococcus faecium, Klebsiella pneumoniae, Pseudomonas aeruginosa* and *Staphylococcus aureus.* Routine data were collected from sentinel sites (mostly academic sites)



Filter selection

Location Selection

Monthly trend of selected Location

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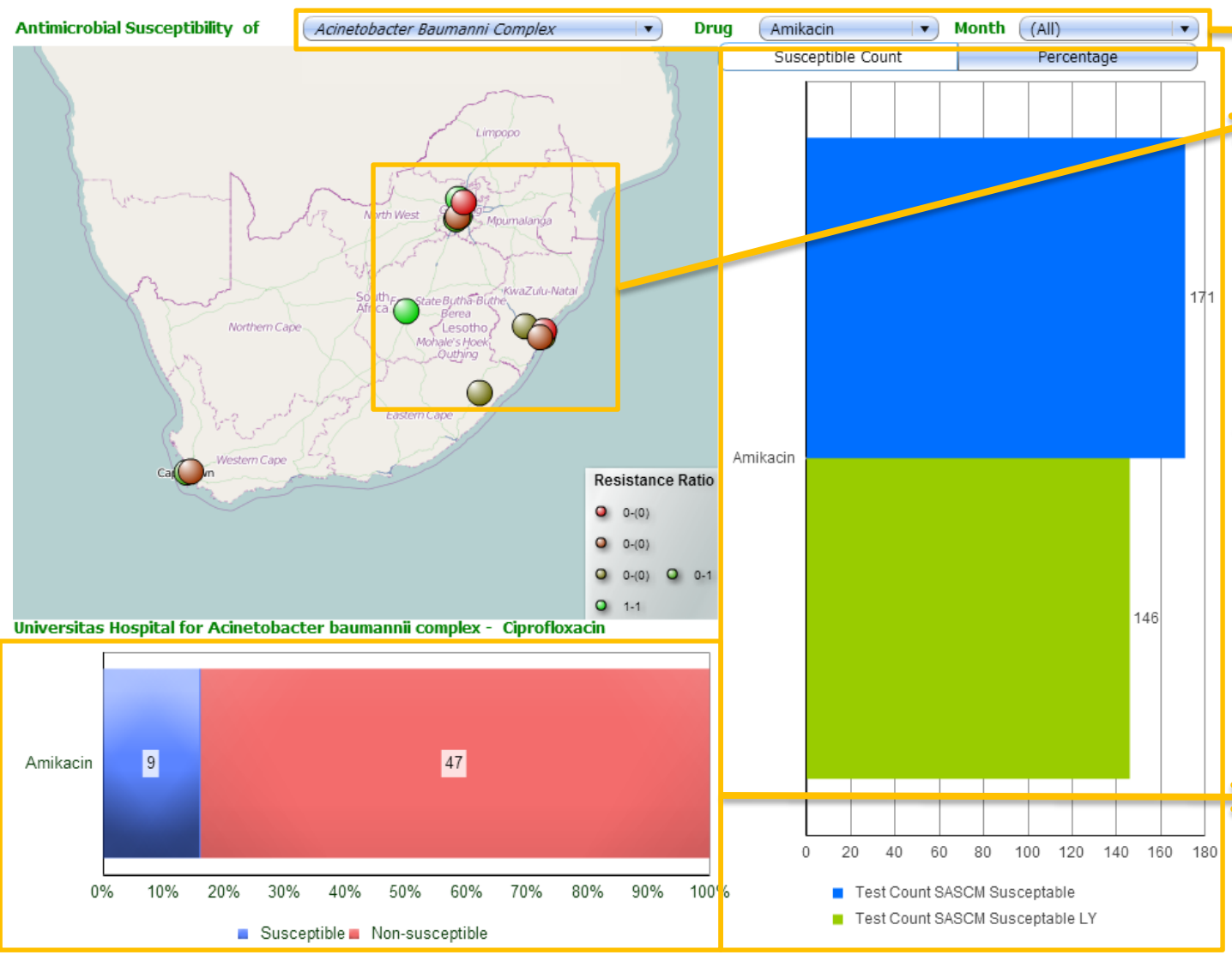
Antimicrobial Susceptibility Sentinel Sites in South Africa Profile



Filter selection

Location Selection

Current Year Values Vs Last Years' Values

Susceptible vs Non Susceptible

Limitations of electronic submission

- Laboratory standardization at national level
- Laboratory quality system measured by national accreditation body.
- Data are reported as received through the CDW.
- No clinical data or epidemiological data were available to distinguish between hospital-associated and community acquired infections.

AMR surveillance strategy in current situation and recommendations

Laboratory based surveillance for AMR

- Selection of sentinel sites (when population-based surveillance is not feasible
- National reference laboratories to: confirm AST, detect unusual resistance and outbreak, implement national laboratory standards
- Laboratory networks

Electronic surveillance

- Alert system from laboratory information system compiled trough corporate data warehouse
- Collection of data from LIS according case definition exclusion and inclusion criteria and defining denominator data-CDW
- Laboratory quality management systems
- Data reporting
- Surveillance for consumption of antimicrobial agents in humans and animals.
- Needs for additional resources

Recommendations

- Surveillance for AMR need to be ongoing in order to identify trends as well as possible outbreaks (CDW alert system.
- National laboratory standardization, and accreditation
- Compiling public and private electronic data in centralized national resistance map
- GERMS methodology to be used as a pilot
- Global collaboration and networking
- Surveillance for consumption of antimicrobial agents in humans and animals.
- Needs for additional resources

Thank you for your attention