Antimicrobial Resistance Map

SASCM workshop 14th Feb 2015

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SAASP

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Redefining Healthcare

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- Why do we want to map AMR?
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- Confidentiality, POPI act and ethics approval

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Background to the Resistance Map

This is a collaborative project between:

- the National Department of Health (NDoH),
- public sector and
- private sector laboratories
- and the Center for Disease Dynamics, Economics & Policy (CDDEP),

to build an antimicrobial resistance map for South Africa.

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CDDEP

THE CENTER FOR
Disease Dynamics, Economics & Policy
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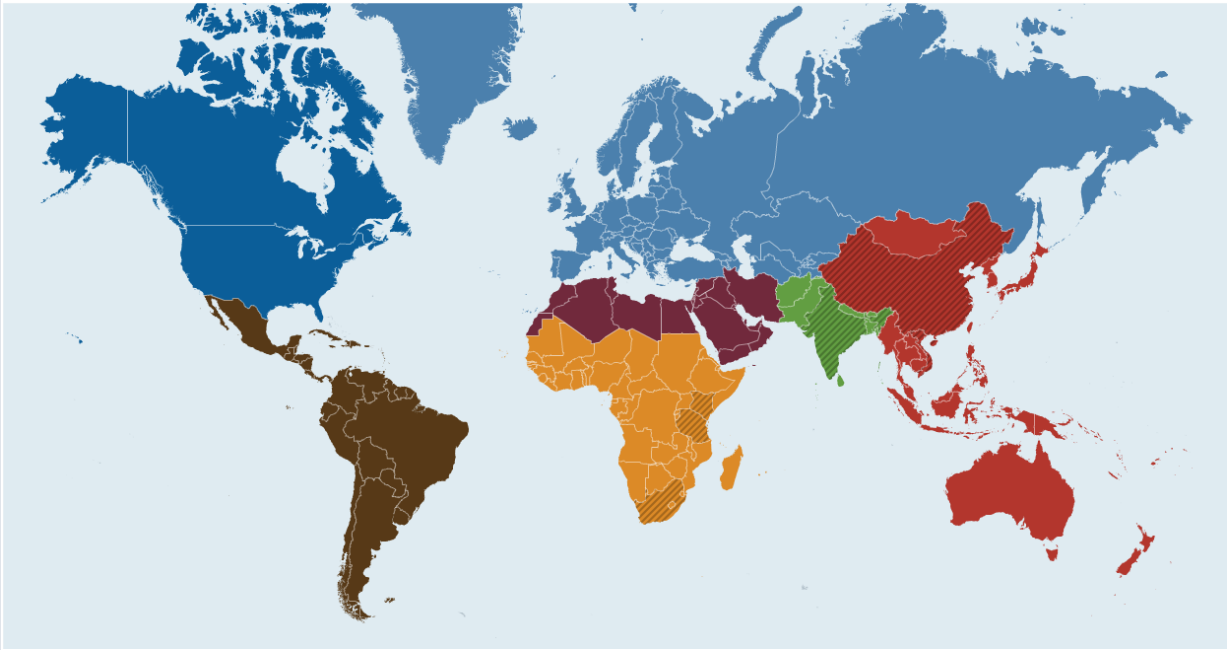

Produces independent, multidisciplinary research to advance the health and wellbeing of human populations in the United States and around the world.

Dr Ramanan Laxminarayan

Research Areas:
AMR

- Disease control priorities
- Environmental Health
- Malaria
- Alcohol and Tobacco
- Health and Development

www.cddep.org/

ResistanceMap

It's a visual representation of the patterns of antibiotic use and antibiotic resistance in South Africa, displayed with as much detail as the data allows.

Ideally, it would be by "bug-drug combinations," that is, separate maps showing each important bacterial pathogen and each important antibiotic used to treat it.

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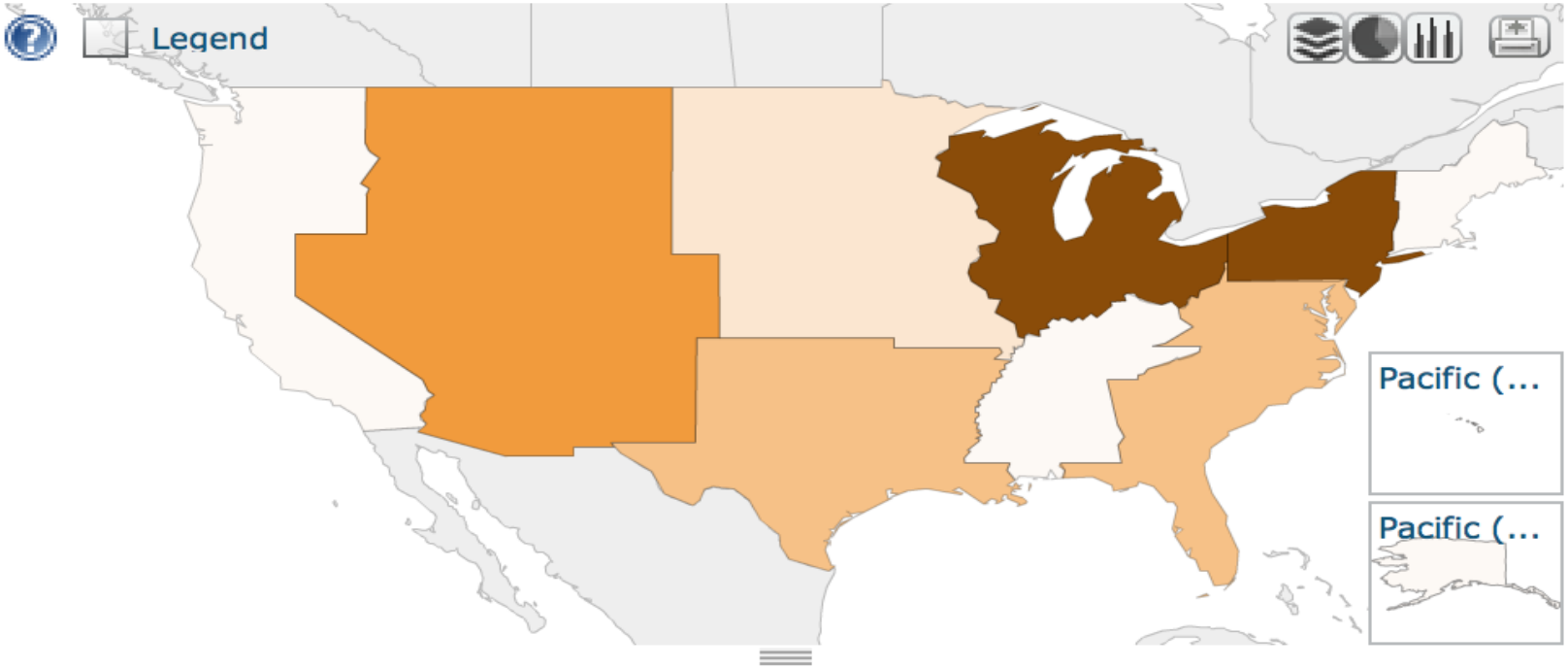
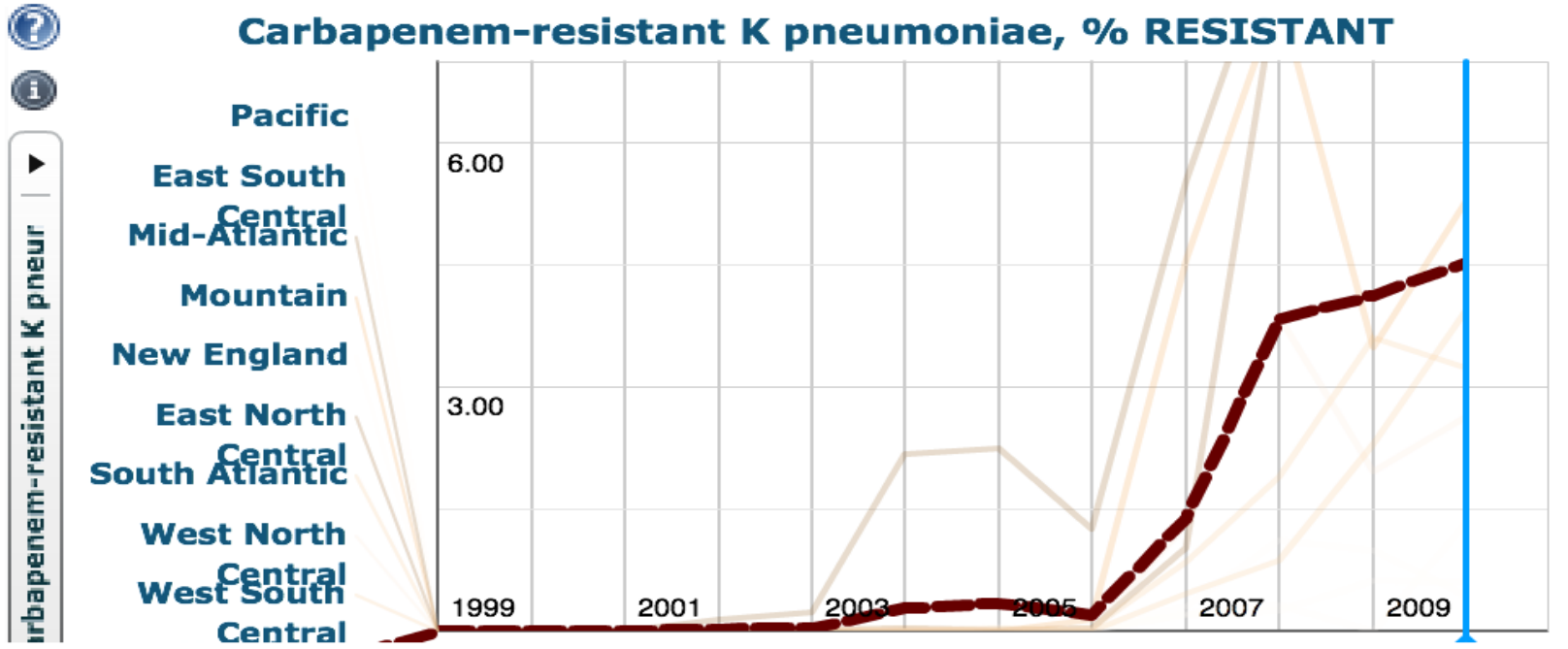
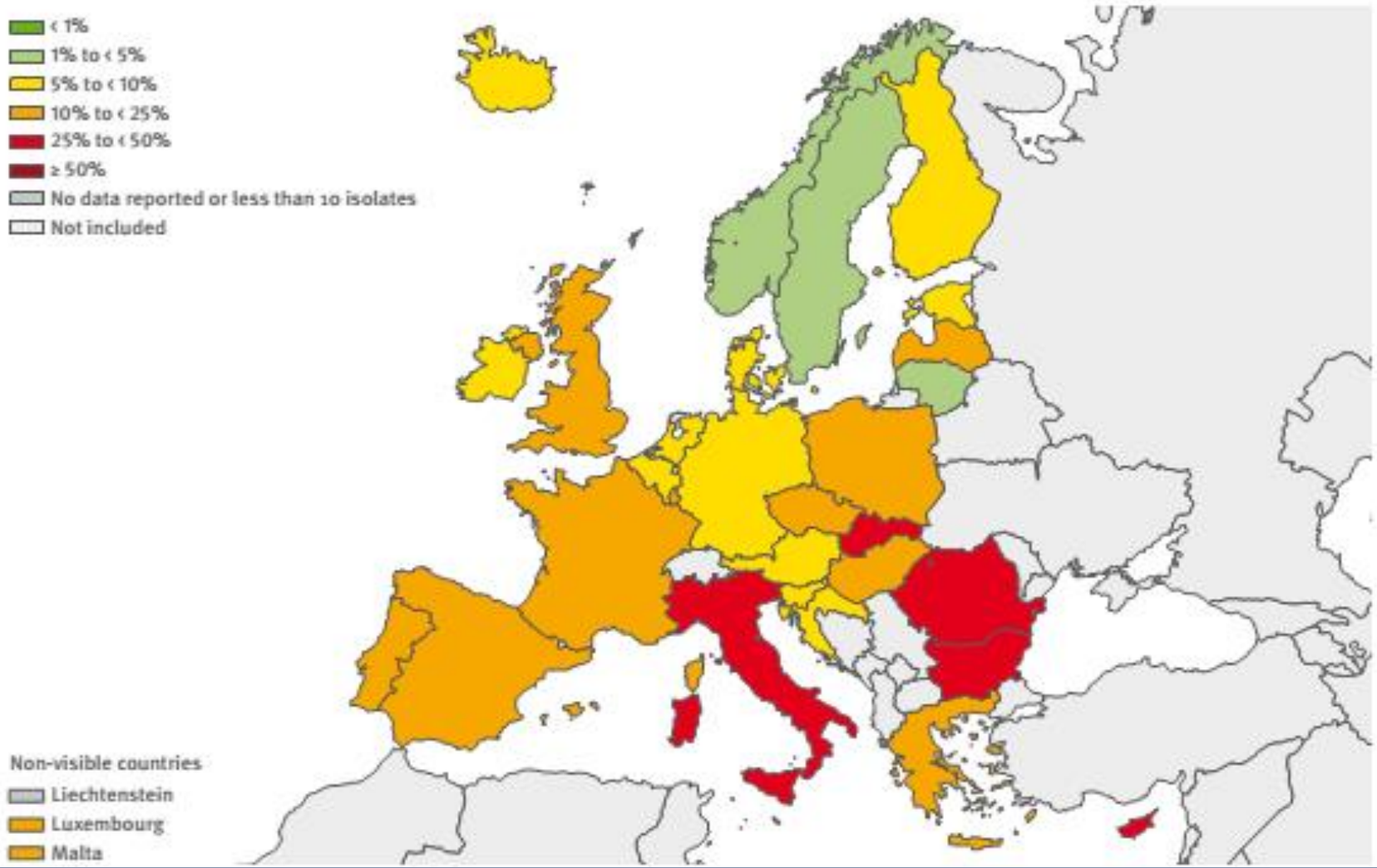

Legend
Pacific (...
Pacific (...

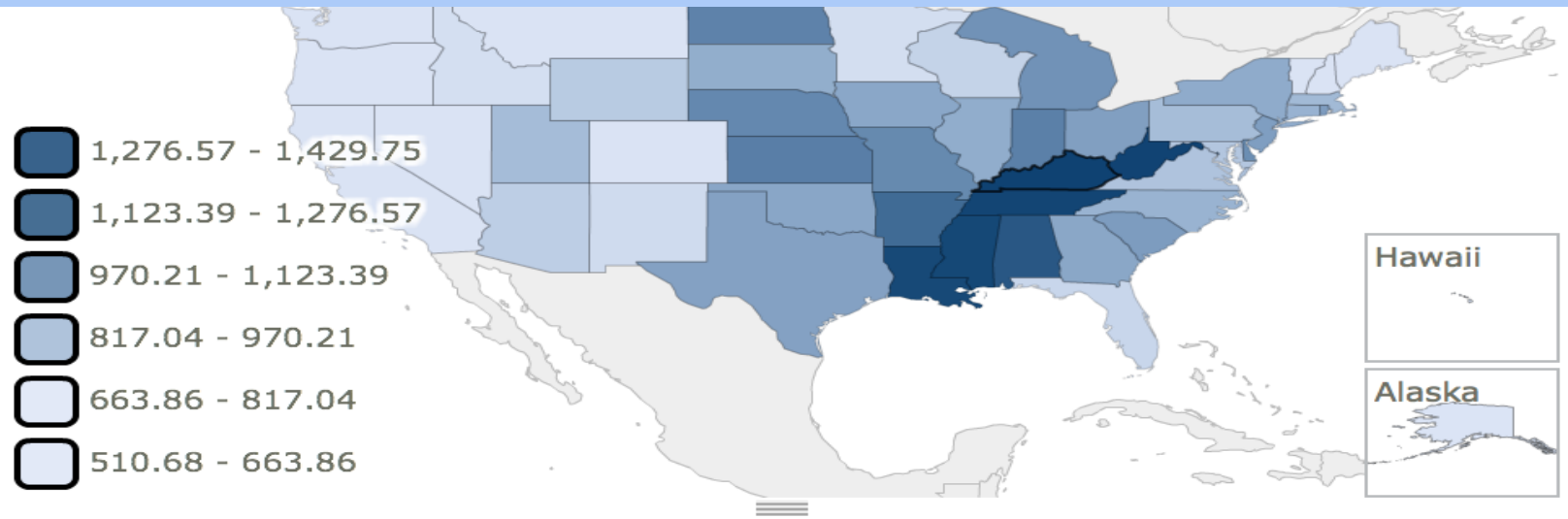

Carbapenem-resistant K pneumoniae, % RESISTANT
Pacific
East South Central
Mid-Atlantic
Mountain
New England
East North Central
South Atlantic
West North Central
West South Central
6.00
3.00
1999
2001
2003
2005
2007
2009

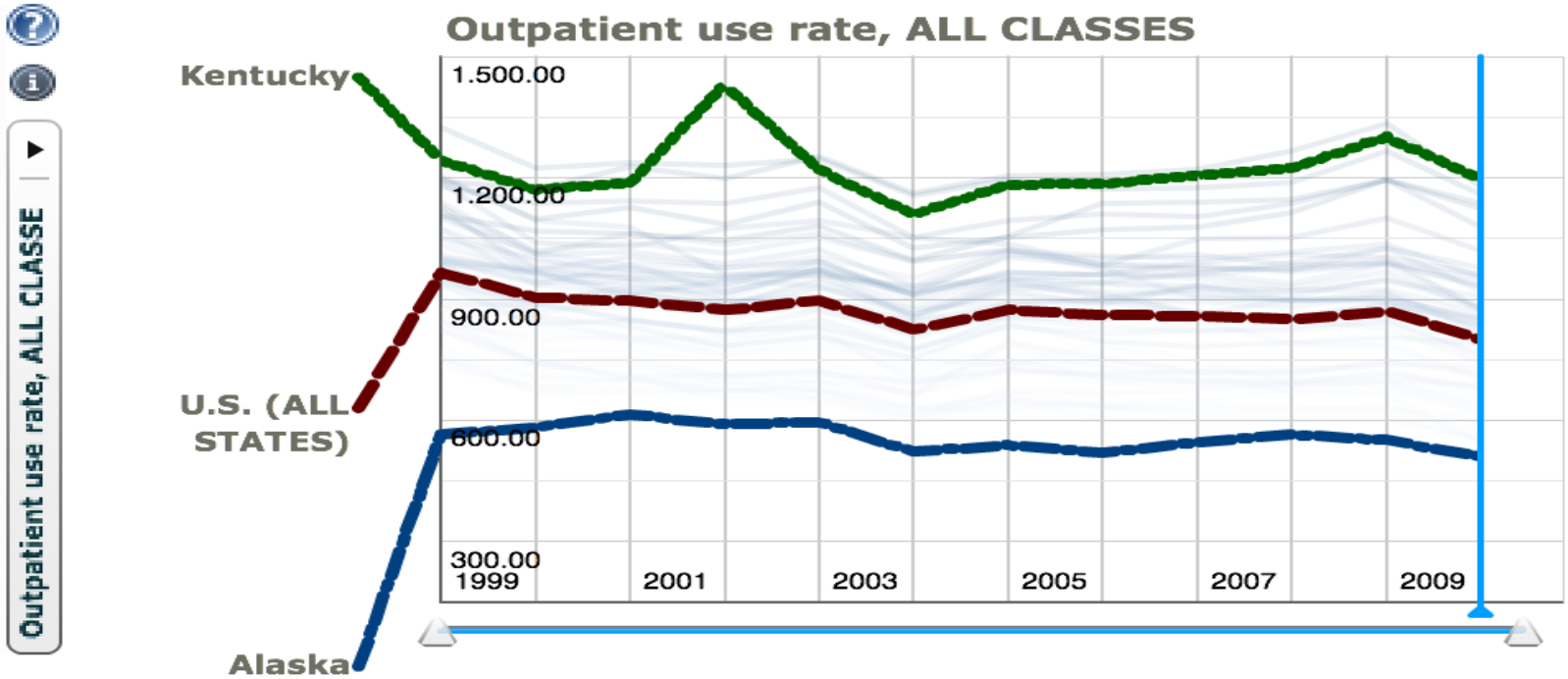
ResistanceMap

Figure 3.1. *Escherichia coli*. Percentage (%) of invasive isolates with resistance to third-generation cephalosporins by country, EU/EEA countries, 2012

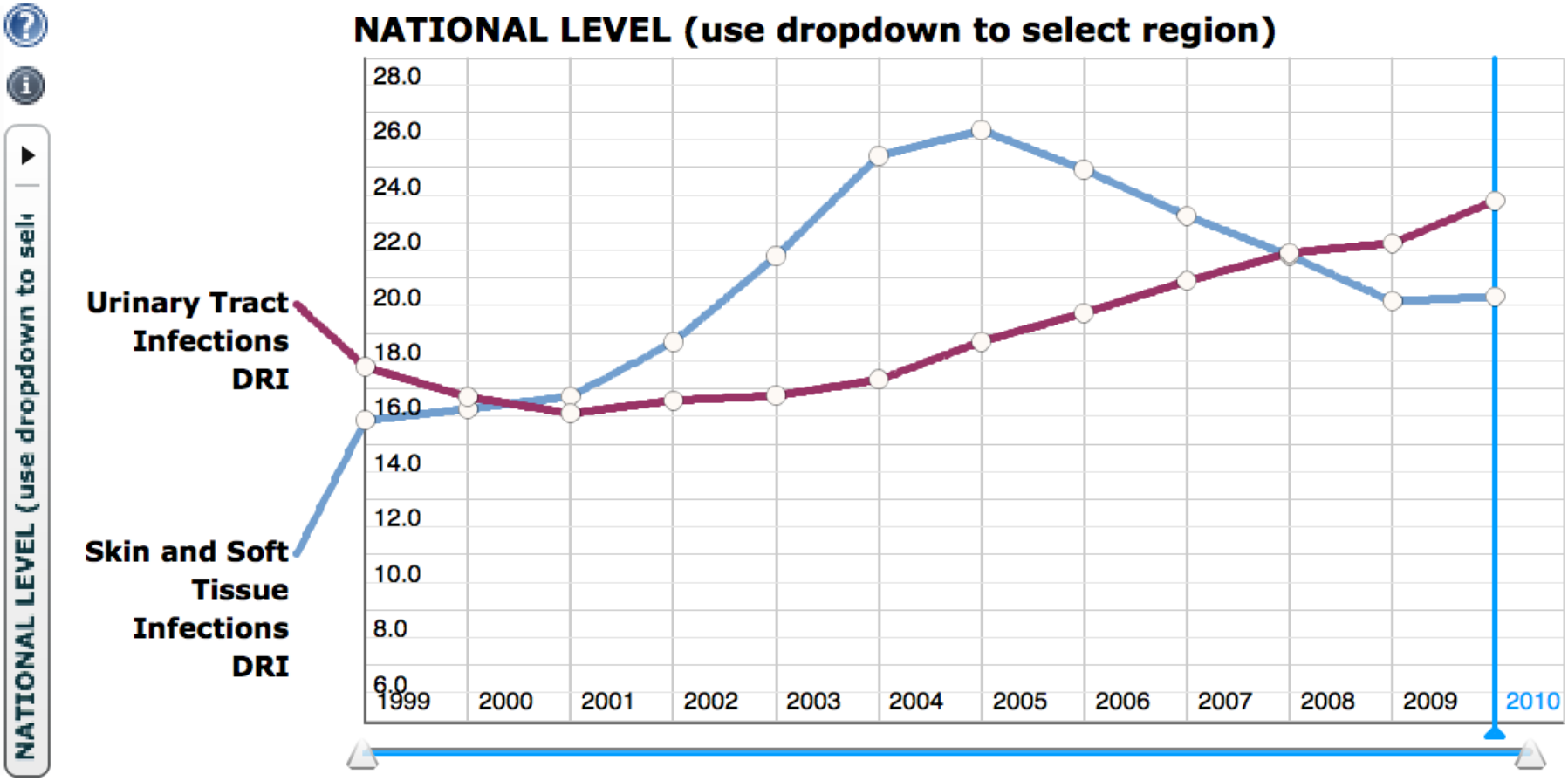


What are the most dispensed antibiotic classes and where is consumption most intensive?





DRUG RESISTANCE INDEX FOR UTIs AND SSTIs



The Drug Resistance Index (DRI) is a composite measure that combines the ability of antibiotics to treat infections with the extent of their use in clinical practice. ***- See more at: http://www.cddep.org/projects/resistance_map/***

Why do we want to map AMR?

- To create a consolidated view of antimicrobial resistance for South Africa. It should:
  - Show public and private data sets for antimicrobial resistance
  - Map antimicrobial use where the data exist
  - Develop our own Drug Resistance Index
- To determine trends in antimicrobial resistance over time

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Why do we want to map AMR?

- To help guide empiric treatment, particularly to inform:
  - National Standard Treatment Guidelines development and policy decisions on Essential Medicines List (EML) (NEDLAC);
  - individual hospital-level formularies and maybe even district-level formularies in the future;
  - future General Practitioners (GP's) prescribing and Primary Health Care (PHC) standard treatment guidelines

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Why do we want to map AMR?

- Gather data to support research into antimicrobial resistance and other strategic initiatives, policy and planning decisions within public health realm in South Africa.

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CDDEP's MOU with labs

Data sharing agreement:

- laboratory submitting the data will continue to own the data and have rights to claim the data and extracts when needed.
- If CDDEP gets a request for data to be sent for research to another party they will first get permission from the data owners.
- The data will sit on their server with its own security settings and then be published on their website.
- Lab may at any time remove their data by withdraing CDDEP's right to use the data
- CDDEP will use the data to create graphs, maps and publications – Labs will be acknoledged
- Labs may continue to publish the data themselves

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How do we create the maps?

Phase 1 – aggregate data

- Existing published data from SASCM
- As far back as possible
- Both public and private data

Phase 2 – line item data

- Blood specimen data to start with and potentially also urine specimens in the future

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How do we create the maps?

Phase 1 – aggregate data

1. For data before 2014 :
   - as already submitted to SASCM for publication on its website
   - Sent to CDDEP in excel format (no extra work)
   - Needs an MOU between each Lab and CDDEP (confidentiality protection)
2. For data from 2014 onwards:
   - Simple standardised spreadsheet template to allow the individual labs information to be collected and aggregated with minimal additional intervention

SASCM spreadsheet template

E.coli: BLOODCULTURE

	# Susceptible	
	SITE 1	SITE 2
n = Total of isolates	226	251
Ampicillin	43	48
Cefuroxime	147	166
Ceftriaxone/cefotaxime	153	176
Cefepime	153	181
Amox / clavulanate	147	100
Piperacillin/tazobactam	225	171
gentamicin	181	196
amikacin	226	23
Ertapenem	226	248
Imipenem/meropenem	226	248
Ciprofloxacin	136	156
Tigecycline	226	251
% ESBL	62	83

How do we create the maps?

- Geographic location
  - Area code
  - Province, District, Ward
  - Facility name
- Laboratory code or name
- Patient ID – unique identifier, (Age, Gender)
- Date of specimen collection
- Date of patient admission (day, month, year)
- Patient location (Inpatient, Outpatient, Nursing home etc), Location in facility
- Source (Blood, urine, respiratory, wound, skin)
- Results (Sensitive, Intermediate, Resistant)
- Bugs and drugs need to be decided by advisory committee
- Quantitative results (MIC and disk zone diameters) *
- Testing method (if Automated like Vitek or Microscan etc.) *

Phase 2 – disaggregate or line item data

Patient identifier information that is needed only to deduplicate

POPI act personal information

* Not critical

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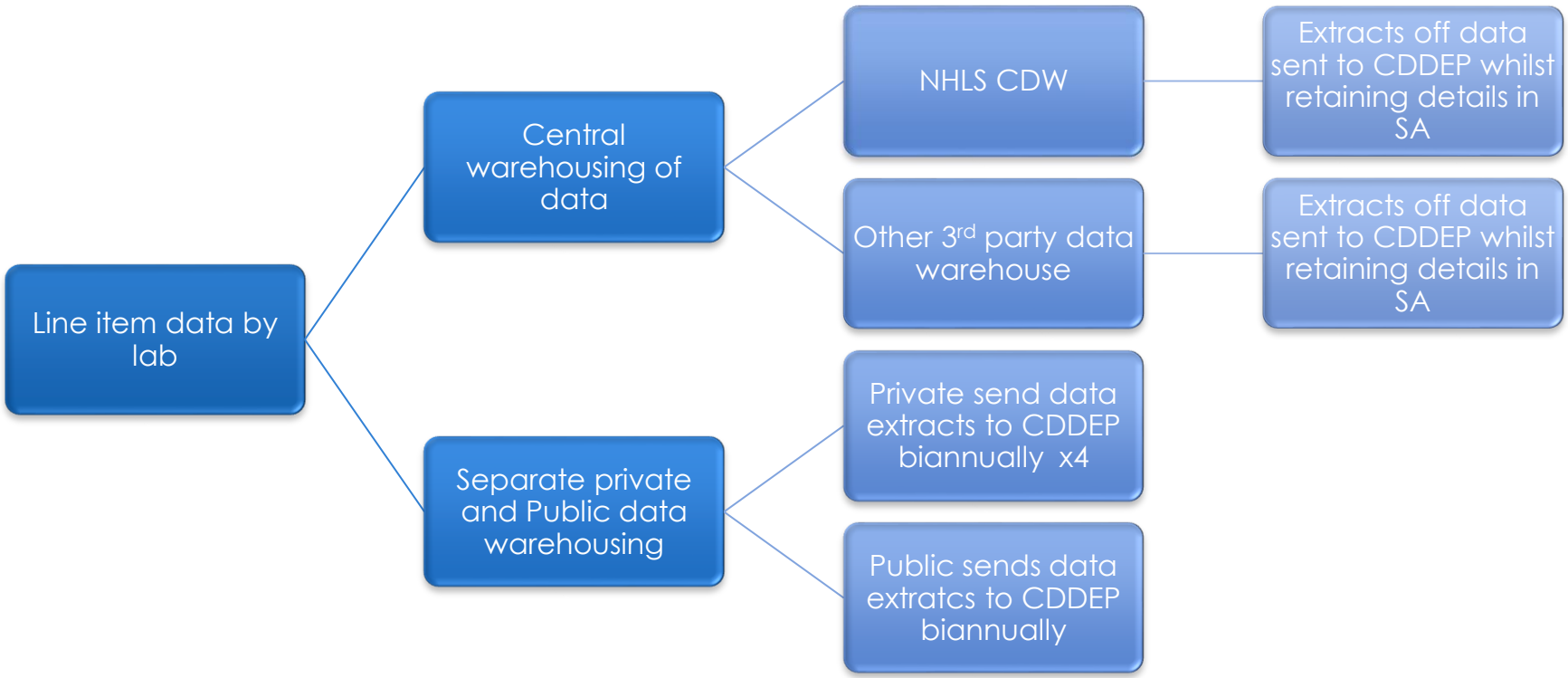
How do we create the maps?

Need to think bigger picture here in terms of "SURVEILLANCE" in general

Phase 2 – disaggregate or line item data



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Personal Protection of Information Bill (POPI)

- The importance of confidentiality of patient information cannot be overemphasized. This includes:
- All patient identifiers to be removed and only needed information retained such as unique code, sex and age
- Laboratory holds all the patient confidential information and only submits deduplicated, anonymised data
- Ethics approval for surveillance will be sought for the country

Ethics – initial thoughts

Professor Sabiha Essack Opinion

- Data collection in context of the routine role & continuous quality improvement for service delivery by the NDoH, then ethical clearance is not necessary.
- If private and public data is covered by GERMS – no ethic clearance, assuming that the ethical clearance is routinely reviewed & renewed by the ethics committee in question.
- The complexity comes in if the data is used for publication/research especially as all journals have an ethics requirement.

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Ethics – initial thoughts

Professor Sabiha Essack Opinion

- Phase 2 does require ethical clearance:
  - Class clearance across all public & private laboratories and hospitals as well as other entities that will generate such surveillance data
  - National Health Research Ethics Council.
  - Gatekeeper permission from the Heads of the labs, hospital groups, PDoH, NDoH, Council of Medical Schemes etc. confirming anonymity & confidentiality.
- Endorsement from the Office of Heath Standards Compliance
- Participating institutions should include this as part of the patient waiver/indemnity.

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Discussion points? Questions to answer?

- Does the Resistance Map add value to the surveillance process?
- Phase 1 – can we collect 2014 data soon
- Phase 1 – can we submit 2014 and prior data to CDDEP
- Phase 1 – can the labs sign the MOU?
- Phase 2 – how do we create the process for the line item data to be collected?

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