STATENS SERUM INSTITUT

DTU

FWD AMR· RefLabCap

Model protocol for national AMR surveillance
Overview of work with priority countries

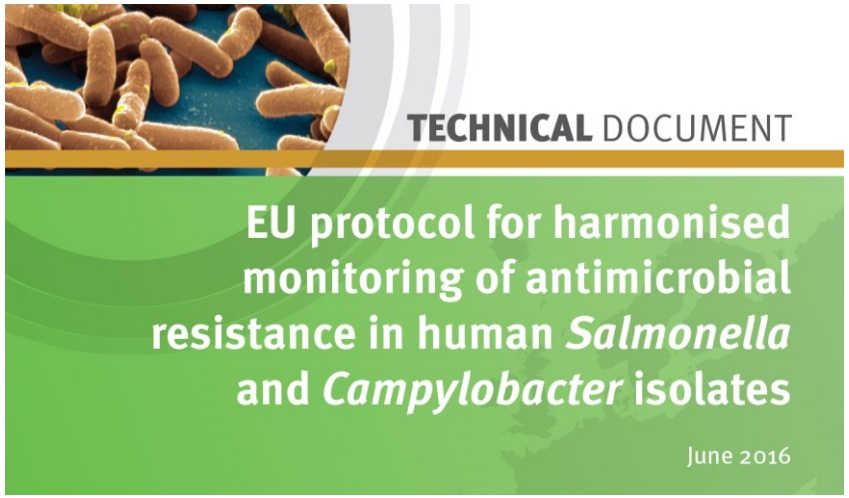
Egle Kudirkiene, DVM, PhD
Foodborne Infections (FBI)
Statens Serum Institut (SSI)

Midterm Network meeting, 2023
Copenhagen

Background

Since 2005, all EU Member states are obliged to collect **relevant and comparable data** on Salmonella and Campylobacter infections in humans, food-related outbreaks, and the occurrence of resistance to antimicrobials *(Directive 2003/99/EC)*

- Monitoring of antimicrobial resistance should be carried out on a **representative subset of isolates** tested according to the **harmonized EU protocol**
- The data should be **reported to ECDC**



Proposed national model protocol

Proposed model protocol covers the procedures beginning **from when isolates are obtained at the primary diagnostic laboratories to the actual AMR testing**

- The proposed model protocol **does not tell how to do surveillance** but gives an input on aspects for consideration

- **Serves as a guide** for the development of national AMR surveillance protocol in each country

Main aspects for consideration

Surveillance objectives

- Preferably in line with EU surveillance objectives

National network of laboratories

- Clinical laboratories
- National reference laboratory in Public Health

Isolates for AMR testing

- A substantial and representative proportion of the laboratory-confirmed cases in the country

AMR testing and reporting

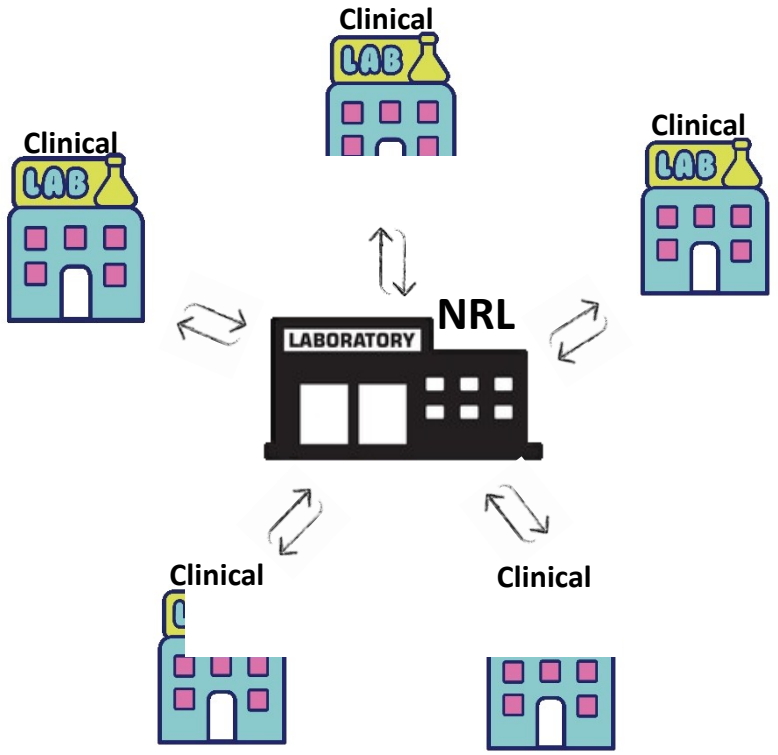
- According to minimal and optimal requirements for reference diagnostics and characterisation
- A national system for capturing and analysing the AMR data

National network of laboratories

Clinical laboratories

- primary diagnostic testing
- characterisation
- antimicrobial susceptibility testing

Focus on patient management and preventive services



The NRL

Support a national (sentinel) network of laboratories for the national AMR surveillance

- **National capacity for isolation and further characterization** for required quality of surveillance
- Agreements on **isolate/sample/data selection and frequency of referral from clinical laboratories to the NRL**

Minimal and optimal requirements for reference testing

Table 1. Recommended minimum and optimal requirements for reference diagnostics and characterisation of Salmonella

Requirements	Serotyping	Antimicrobial resistance	Cluster detection
Minimum	Phenotypic or genotypic: common serovars	Phenotypic AST or genotypic AMR prediction	Not applicable*
Optimal	Phenotypic or genotypic: all serovars	Phenotypic AST and WGS-based AMR prediction**	WGS-based (e.g. cgMLST, wgMLST, SNP***)

* if the NRL has not yet implemented any method for cluster detection, we recommend implementation of WGS-based cluster detection

** a defined proportion of isolates or selected isolates are periodically tested phenotypically to ensure detection of novel resistance mechanisms

*** cgMLST – core genome Multilocus Sequence Typing, wgMLST whole genome Multilocus Sequence Typing, SNP – Single Nucleotide Polymorphism

Table 2. Recommended minimum and optimal requirements for reference diagnostics and characterisation of Campylobacter

Requirements	Species	Antimicrobial resistance	Cluster detection
Minimum	Phenotypic or genotypic: *C. jejuni, C. coli*	Phenotypic AST or genotypic AMR prediction	Not applicable*
Optimal	Phenotypic or genotypic: all species	Phenotypic AST and WGS-based AMR prediction**	WGS-based (e.g., cgMLST, wgMLST, SNP***)

* if the NRL has not yet implemented any method for cluster detection, we recommend implementation of WGS-based cluster detection

** a defined proportion of isolates or selected isolates are periodically tested phenotypically to ensure detection of novel resistance mechanisms

*** cgMLST – core genome Multilocus Sequence Typing, wgMLST whole genome Multilocus Sequence Typing, SNP – Single Nucleotide Polymorphism

Gaps in AMR testing was the basis for Priority countries selection

Priority countries team

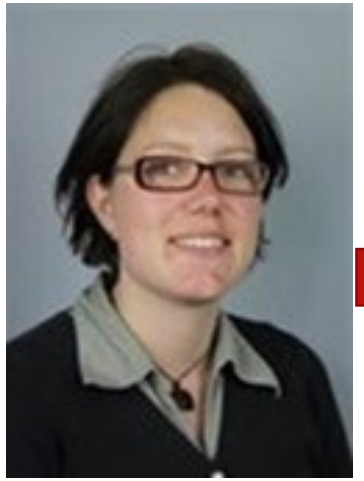
- 2-3 persons/per country with different expertises
- Regular meetings to share experience in the team

Rene S. Hendriksen (DTU)

Egle Kudirkiene (SSI)

Susanne Schjørring (SSI)

Ana Rita Rebelo (DTU)



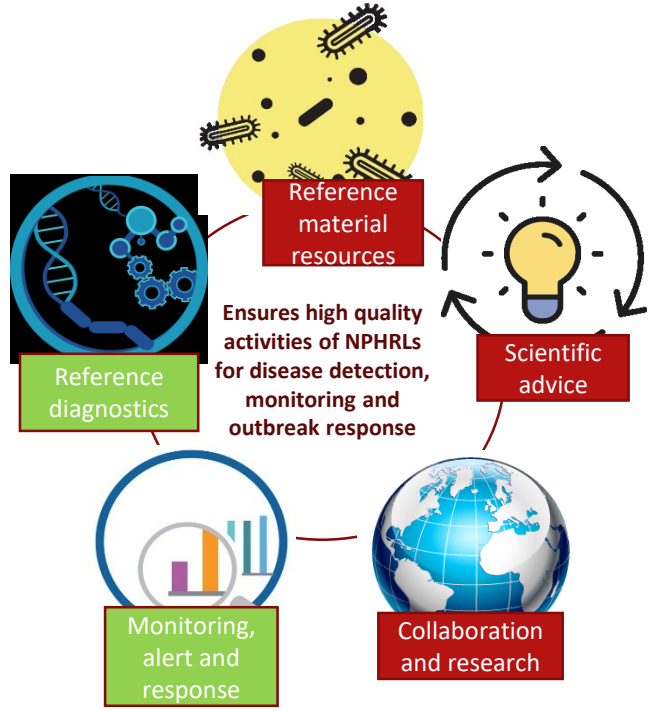
Susanne Pedersen (DTU)

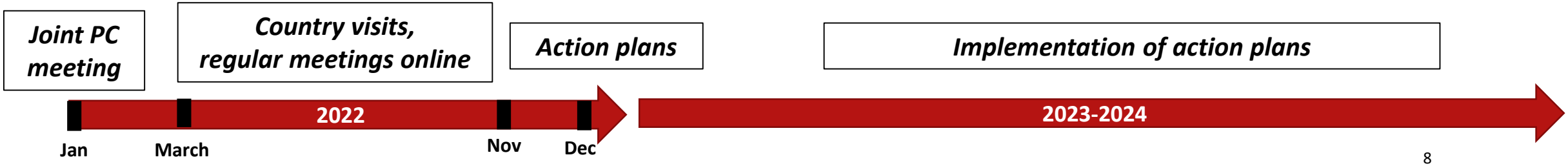
Jeppe Boel (SSI)

Jette Sejer Kjeldgaard (DTU)

Tailored priority countries support for capacity building for AMR surveillance 1/2

- **Action plan for capacity building in NRL development and implementation**
  - Based on five core functions of reference microbiology laboratory with the main focus on **reference diagnostics** and **monitoring, alert and response**

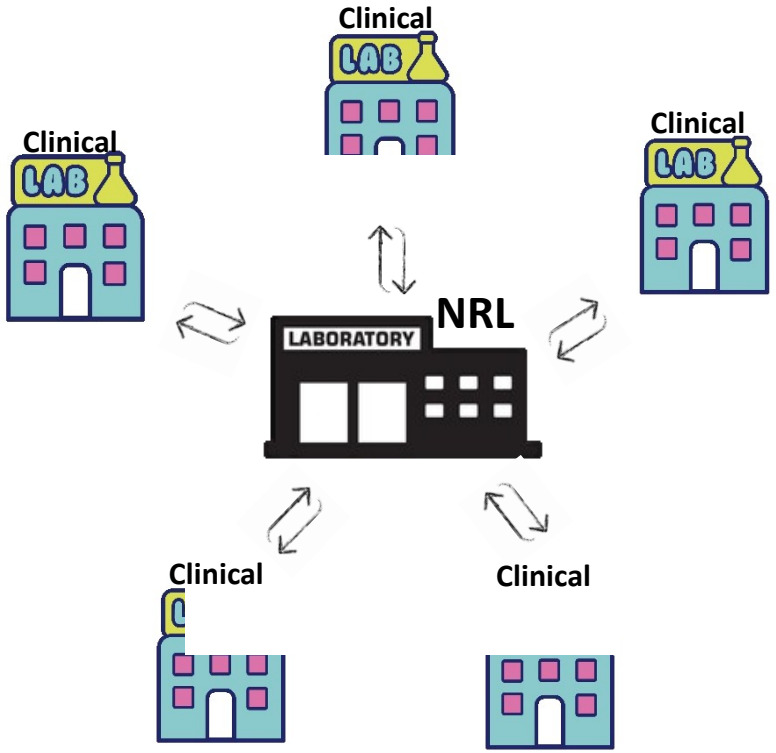


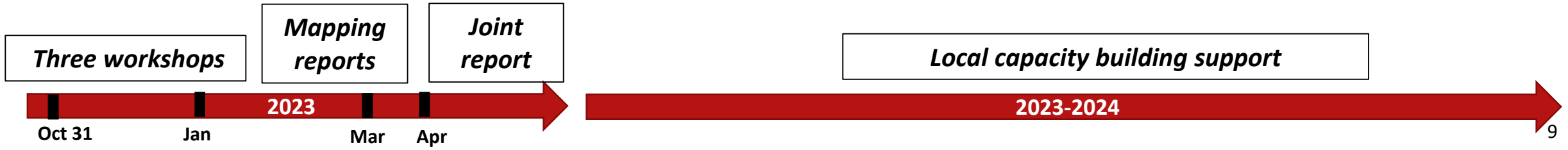


Tailored priority countries support for capacity building for AMR surveillance 2/2

FWD AMR· RefLabCap

- **Support to NRLs for capacity building in clinical labs**
  - State-of-play reports on the capacity for *Salmonella* and *Campylobacter* detection and characterization in local/regional clinical laboratories





9

Main achievements and challenges in Priority countries

Group A	AST	National surveillance network/ capacity building	Pilot WGS study	Routine use of WGS for surveillance
Country 1				
Country 2				
Country 3				
Country 4				
Country 5				
Country 6				

Main challenges:

- Representative sample
- Sample selection for WGS
- Bioinformatics infrastructure
- Bioinformatics skills
- Sustainability of WGS activities

Group B	AST	National surveillance network/ capacity building	Pilot WGS study	Routine use of WGS for surveillance
Country 7				
Country 8				
Country 9				
Country 10				
Country 11				
Country 12				

Main challenges:

- Prioritisation at the national level
- Funding
- Representative sample
- Access to WGS