



REPUBLIC OF ESTONIA  
HEALTH BOARD

# The impact of FWD AMR RefLabCap project support to Estonia as a priority country

Action plan development and implementation to improve NRLs functions for AMR

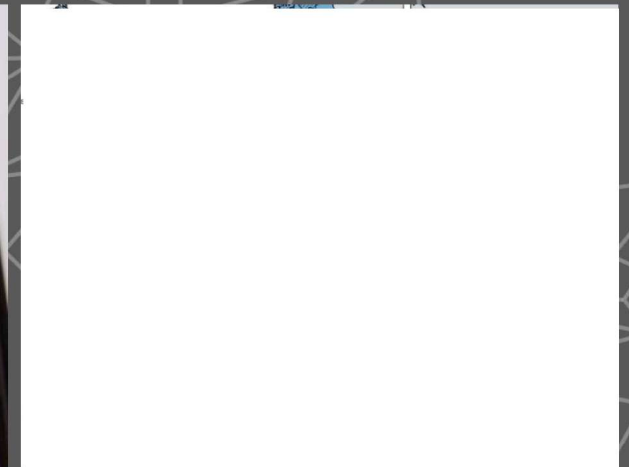
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29.10.2024 FWD AMR RefLabCap network meeting in Copenhagen, Denmark

# Health Board, Laboratory of Communicable Diseases (NRL)



National reference laboratory (ISO 15189) in many areas of research  
(NETS § 19, 41)

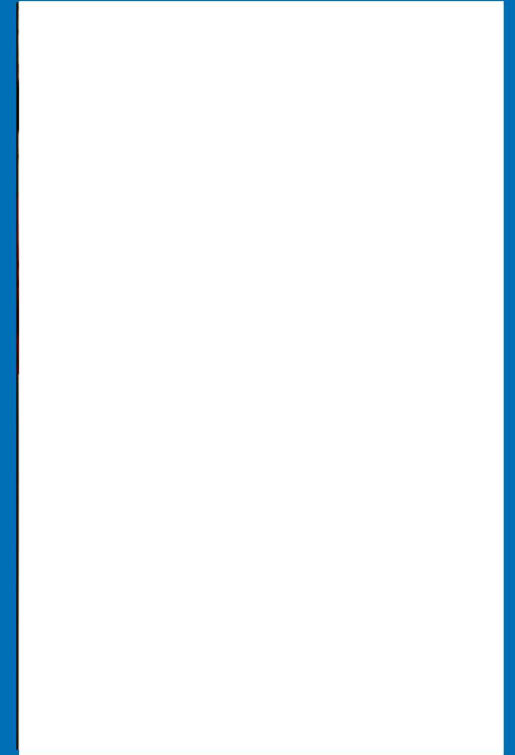
Determination of salmonella, campylobacter, (sero)typing and antimicrobial sensitivity,  
confirmation/determination of resistance mechanisms, outbreak investigation.

# Salmonella and campylobacter surveillance in Estonia

## NRL

- Referral of clinical samples / positive isolates
- Confirmation, serotyping, AST of salmonella and campylobacter
- Long-term storage of isolates
- Additional characterisation (WGS)
- Comparison of sequences (human vs veterinary/food) at HB NRL
  - *Separate NRL for veterinary and food samples (LABRIS)*

HB NHEO department – monitoring and surveillance on national (international) level by epidemiologists.



## 1. Number of isolates analysed at NRL

	2021	2022	2023	2024 (Sept)
<i>Salmonella</i> isolates	145	163	209	115
<i>Campylobacter</i> isolates	225	266	325	232

## 2. Number of isolates sequenced

	2023	2024 (sept)	2024 (planned)
<i>Salmonella</i> isolates	100* + 38	32	35
<i>Campylobacter</i> isolates	50*	0	-

\* Sequenced with ECDC sequencing support 1st round 2023



# Action Plan

## CORE FUNCTION 1 - Reference diagnostics

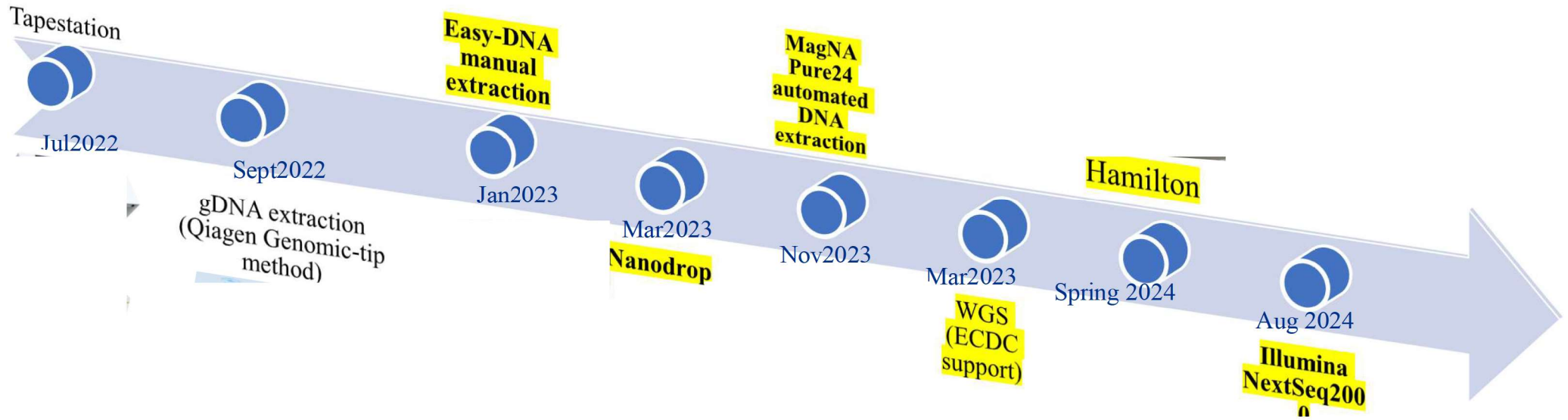
*Overall aim:* 1) **WGS is performed for *Salmonella* and *Campylobacter* spp**

- Objectives:*
- \* *Setup a suitable method and workflow for gDNA extraction*
  - \* *Setup laboratory rooms with appropriate devices*
  - \* *SOP-s for methods and devices*
  - \* *Participation in EQA-s*

# Action Plan

## CORE FUNCTION 1 - Reference diagnostics

Overall aim: WGS is performed for *Salmonella* and *Campylobacter*



## **Action Plan**

### **CORE FUNCTION 1 - Reference diagnostics**

*Overall aim: WGS is performed for *Salmonella* and *Campylobacter**

## Action Plan - CORE FUNCTION 1 - Reference diagnostics

### Overall aim: Bioinformatics analysis of WGS data

Objectives	Deliverables
<i>Hiring and training of bioinformaticians</i>	2-3 bioinformaticians were hired (since 2022) and trained.
<i>Setup of computers and network</i>	Computers with specific technical requirements were procured <ul style="list-style-type: none"><li>• <i>computing power</i></li><li>• <i>sufficient space for data analysis</i></li><li>• <i>sufficient space for retainment (server)</i></li><li>• <i>capability to perform analysis on bioinformatician's personal work computer; Virtual Machine installation (Linux).</i></li></ul> Suitable software/programs installed (TEHIK)
<i>Development of bioinformatic analysis</i>	Development of automated data analysis pipeline Parameters for bioinformatics tools were set according to WGS protocols ( <i>FWD AMR RefLabCap</i> ) e.g. <i>list of quality parameters used for QC testing (e.g. number of reads, PHRED scores, average read depth, etc.)</i>
<i>Participation in EQA-s</i>	Participation in EQA in 2023 and 2024 <i>Editing the bioinformatics pipeline according to the self-evaluation and reviewed report</i>
<i>Collaboration with food and vet laboratory</i>	Sequence and data exchange between two facilities, collaboration



# Action Plan

## CORE FUNCTION 2 - Reference material

### **Overall aim:**

*The NRL has and hosts a collection of reference materials / bio-bank  
The NRL provides reference material to clinical laboratories.*

### **Objectives:**

*To review and update the collection of reference strains  
To review documentation about stored reference materials and bio-bank*

Strains are reviewed and systematically reordered.

Strains are issued to clinical microbiology laboratories upon request

*\* a list on reference materials is provided*

*\* documentation (MTA-s) are in place to exchange strains*

National bio-bank is updated.

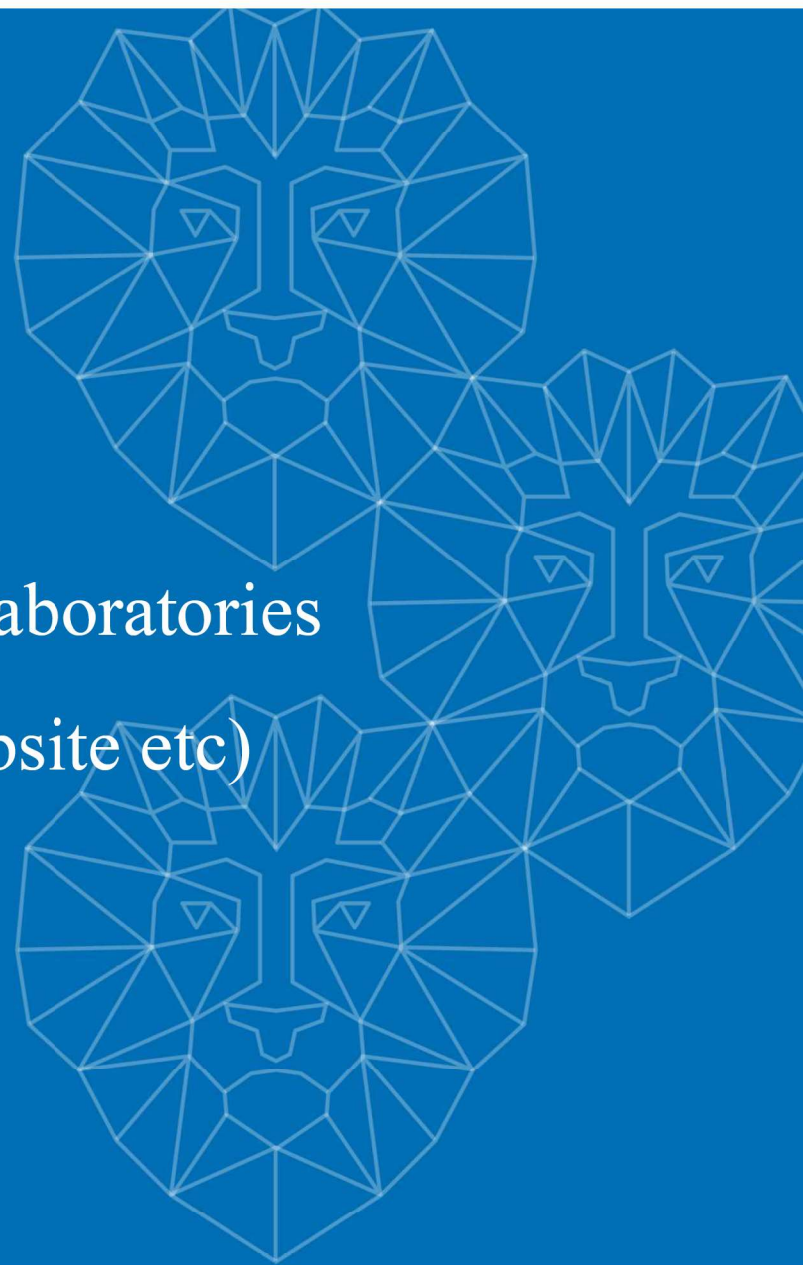
## Action Plan

### CORE FUNCTION 5 - Monitoring, alert and response

- All laboratories to send their materials to NRL for culturing and AMR detection.
  
- Collaboration with universities for internships for bioinformatics and bioanalytics
  
- WGS results are shared.
  - WGS findings shared with epidemiologists
  - EpiPulse items are compared with local sequences.
  
- Active monitoring of epidemiological situation
  - Improved communication between NRL and epidemiologists
  - Rapid sequencing of isolates related to possible outbreaks

# Plans for actions

- Cooperation with epidemiologists
- Cooperation with clinical microbiology laboratories
- Develop reporting system (to labs, at website etc)
- Routine sequencing
- Reporting to EpiPulse





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Thank you for listening !

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