EULabCap country profile

CZECH REPUBLIC

Report on 2014 data

Version 2, 27 May 2016

Executive summary for Czech Republic

What are the key questions of EULabCap survey?

Does the EU/EEA public health microbiology system possess the critical capabilities and adequate level of core capacity to provide timely and reliable information on pathogen detection and characterisation for effective infectious disease prevention, alert and control at Member State and EU/EEA level and how does it progress over time?

How well was your country performing in 2014?

Overall, Czech Republic provided data for 98% of the indicators as for 2014. With an overall EULabCap index of 8.0/10, data provided by Czech Republic indicated a high level of capability/capacity for their public health microbiology system.

On the positive side: Czech Republic showed a high overall performance, as compared with other EU/EEA countries, indicated by scores in the top quartile for the majority of the capacity indicators. For all key diseases surveyed, diagnostic testing guidelines were available at the national level and their clinical use was monitored except for antenatal screening of congenital infections and for diagnostic of *Clostridium difficile* infection. There was indication of excellent implementation of EU standards for antimicrobial susceptibility testing, and very good provision of reference diagnostic confirmation services, antimicrobial resistance monitoring and strong networking capacity for laboratory-based surveillance at national level.

For attention: There was suboptimal participation in EU disease networks and no participation in the European Gonococcal Antimicrobial Surveillance Programme (Euro-GASP).

How did your country progress compared to 2013?

Improvement: Capacity indicators for diagnostic testing utilisation improved in 2014. Molecular typing capacity increased for *Neisseria meningitidis* and HIV antiretroviral resistance surveillance. A national plan was established for near-term integration of whole genome sequencing of human pathogens in disease surveillance. The reference laboratory contribution to outbreak preparedness and response support substantially improved in 2014.

Country profile report on EU Laboratory Capability Monitoring System (EULabCap) 2014 data

What is the EULabCap?

The ECDC strategic multi-annual programme (2014–2020) aims to strengthen the capability and capacity of the EU public health microbiology system to provide the timely and reliable information that underpins infectious threat detection, assessment and surveillance at Member State and EU level for effective prevention and control of infectious diseases [1,2]. To ascertain how well this is delivered, ECDC, in close collaboration with the National Microbiology Focal Points (NMFP) and the Advisory Forum (AF), has developed a system (EULabCap) for monitoring key public health microbiology capabilities and capacity for EU surveillance and epidemic preparedness on an annual basis. This assessment aims to help policymakers identify possible areas for action and to evaluate the impact of capacity strengthening activities and health system reforms. The results of the first survey of EU/EEA country capabilities and capacities were published in February 2016 [3].

What is this report about?

The second EULabCap "Report on 2014 survey of EU/EEA country capabilities and capacities" (ECDC technical report in preparation) analysed data on 95% of indicators in 2014 for 30 EU/EEA countries. The findings indicated a strong overall EU laboratory system capability with a slightly increased average EULabCap index of 7.2/10 in 2014 versus 6.8/10 in 2013. In comparison to 2013, EU average scores improved slightly for several targets in 2014. The biggest improvement was in the areas of national outbreak response support and antimicrobial drug susceptibility testing.

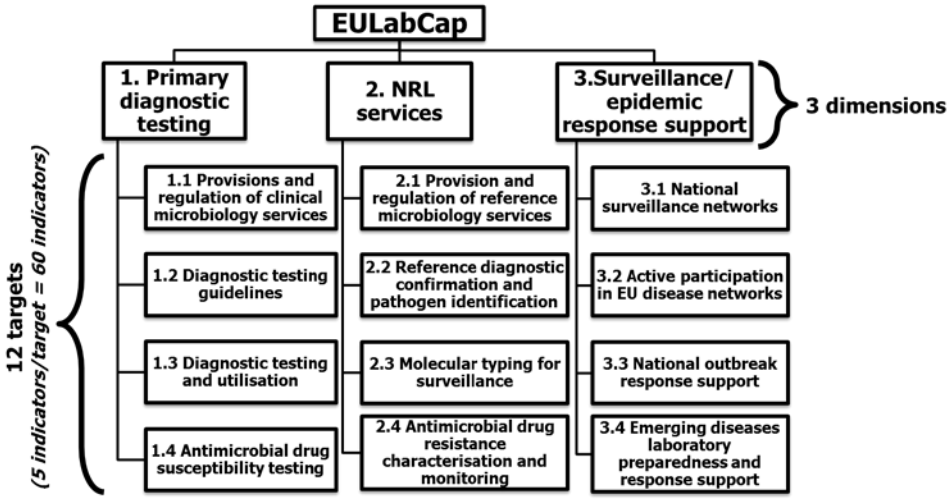
In addition to the EU report, this country profile report allows you the comparison between your 2014 indicator data scores and the indicator data scores in 2013 and your scorings in comparison to the distribution for the EU/EEA countries. In addition, for the first time you will find a tentative comparison of your score changes by indicator and target between 2013 and 2014. It is meant to inform national authorities competent for laboratory services and help identify possible areas for action as well as evaluate the impact in the coming years of capacity strengthening activities and health system reforms.

EULabCap survey methodology

Survey tool

The EULabCap monitoring tool combines 60 technical indicators to assess the capability and capacity of microbiology laboratories to provide essential public health functions, as defined in EU policies and action plans, international health regulations and technical standards. The indicators are grouped into 12 targets which are distributed across the following three public health microbiology system dimensions: primary diagnostic testing, national microbiology reference laboratory (NRL) services and laboratory-based surveillance and epidemic response support.

Figure 1. Structural overview of the EULabCap indicators as grouped by dimension and target.



The EULabCap indicators are of a composite nature in terms of which element (structure or process) of the public health microbiology system they measure and how they measure it (functional capability or capacity). They comprise 24 structure and 36 process indicators. They are divided into 38 indicators

of laboratory capability and 22 of service capacity. About 3/4 of the indicators are based on EU policy targets or international technical standards, while the remainder assess EU surveillance and alert system contributions. A mixed method was used for data collection and scoring. To minimise the data reporting burden for the Member States, information for 20 indicators was retrieved by ECDC from data sets accessible in The European Surveillance System (TESSy) and EU disease network reports. The NMFP used a questionnaire to collect information from their country for the remaining 40 indicators.

The data collected for the second data call on 2014 data were two times validated by the NMFP, before and after the joint consultation of the NMFP and Advisory Forum in May 2016.

Scoring system

Each indicator can be scored at three levels: low, intermediate and high capability or capacity. Aggregated indices have been calculated for each target and dimension as the average of component indicator scores, adjusting all index values on a scale of 0–10.

Table 1. Interpretation of score levels for laboratory capability and capacity.

Score	Interpretation	Level
0	No or limited capability/capacity	Low
1	Partial capability/capacity (e.g. below the EU target, or partial compliance)	Intermediate
2	Complete capability/capacity (e.g. EU target reached, or high compliance)	High
NA	Capability/capacity not known or indicator not applicable to country	Not scored

Due to different reasons some countries were not able to provide data for all indicators. As NA values were not included in the calculation of the specific target, this performance estimate of these countries might have been biased. As a consequence, there might have been an under- or over-estimation of performance within that target. For indicator modifications in the second survey on 2014 data, see footnotes on tables 3-5.

Data analysis and interpretation

Data completeness was calculated as a percentage of missing data for each indicator across the EU/EEA and overall for each country. Aggregated performance indices were calculated for each target and dimension as the average of component indicator scores per country, adjusting values on a scale of 0–10. Descriptive data analysis including measures of central tendency (mean and median) and dispersion (standard deviation and inter-quartile range) of indicator scores and aggregated indices across the EU/EEA were calculated using Excel 2010. Overall EULabCap index scores per country were graded qualitatively at three performance levels: low (0 to 5.9), intermediate (6.0 to 7.9) and high (8.0 to 10). The data for 2014 were compared with the data for 2013 by indicator, target and dimension as well as by country, keeping in mind that 2013 survey data represent the piloting of the indicator survey system.

Data reporting

Results from the 2014 EULabCap survey are reported as follows:

1. EU/EEA technical report and country maps published on ECDC web portal on results in 30 participating EU/EEA countries (expected publication October 2016);
2. Confidential country report to each participating country, including detailed information on the country's profile, shared with the respective NMFP, for dissemination within and use by the national Coordinating Competent Bodies (this report).

References

1. European Centre for Disease Prevention and Control. Updated public Health Microbiology Strategy and Work Plan 2012-2016. Stockholm: ECDC, 2011.
2. European Centre for Disease Prevention and Control. Coordination Competent Bodies: structures, interactions and terms of references. Stockholm ECDC, 2012.
3. European Center for Disease Prevention and Control. EU Laboratory Capability Monitoring System (EULabCap) – Report on 2013 survey of EU/EEA country capabilities and capacities. Stockholm: ECDC, 2016.

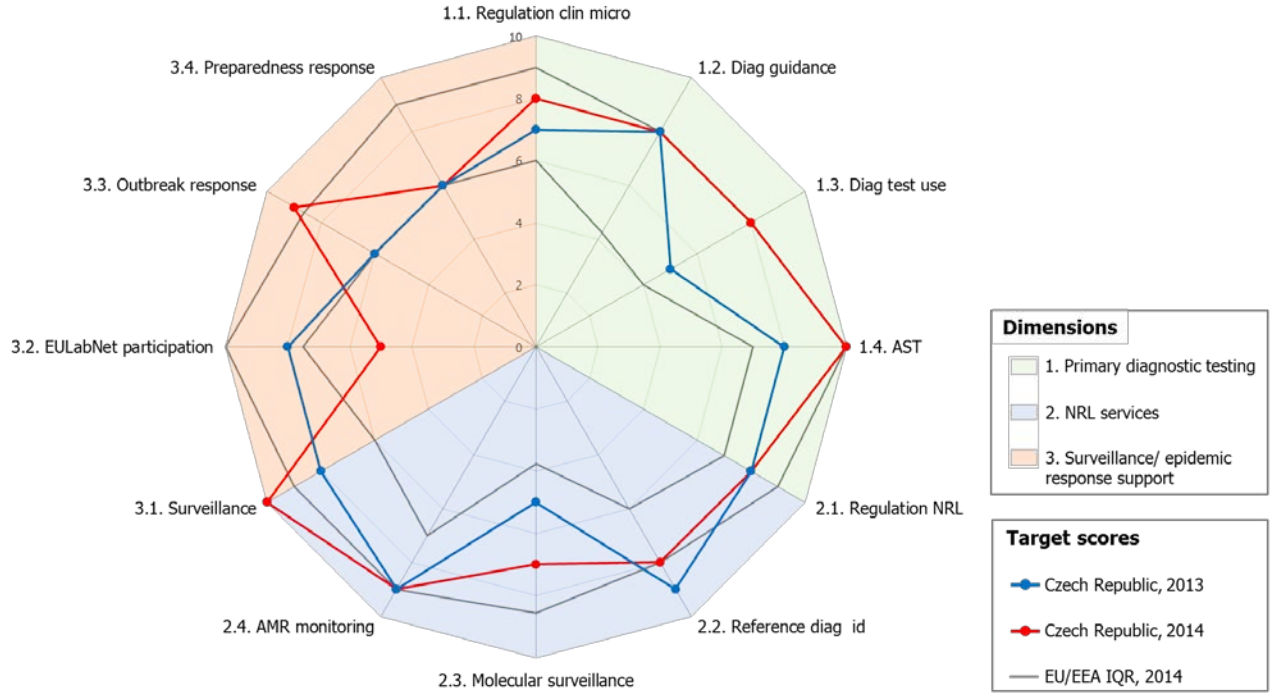
For more information

Visit our website: http://ecdc.europa.eu/en/healthtopics/microbiology/microbiology-activities/laboratory-capability/Pages/default.aspx, or contact us at: EU.LabCap@ecdc.europa.eu.

Results

Figure 2. Target country scores for 2013 and 2014 as compared to EU/EEA. The radar graph shows the scores for Czech Republic (in blue for 2013 and in red for 2014) and the EU/EEA interquartile range of scores for 2014 (grey) for each of the 12 targets within the 3 dimensions.

Figure 2. 2013 and 2014 target scores for Czech Republic mapped against the 2014 EU/EEA interquartile range (IQR).



Figures 3-5. Your indicator scores for 2014 and distribution of indicator scores for EU/EEA countries in 2014, by system dimension. The three figures show the scores for Czech Republic for 2014 in comparison with the EU/EEA scoring results for each indicator by dimension (Figure 3, “Primary diagnostic testing”, Figure 4, “National Reference Laboratory Services”, and Figure 5, “Surveillance and epidemic response support”). Each bar graph displays the total number of countries by indicator score. The scores for Czech Republic for the 12 targets and 60 indicators are displayed in the adjacent column.

Tables 3-5. Your target and indicator scores for 2013 and 2014, by system dimension. The three tables show the mean scores for Czech Republic for 2013 and for 2014 for targets and indicators. To facilitate comparison with the EU/EEA mean, country indicators values were rescaled to a maximum of 10 (i.e. score 0=0, score 1=5, and score 2=10).

Figure 3. Dimension "Primary diagnostic testing" – scoring distribution for EU/EEA countries and for Czech Republic, 2014.

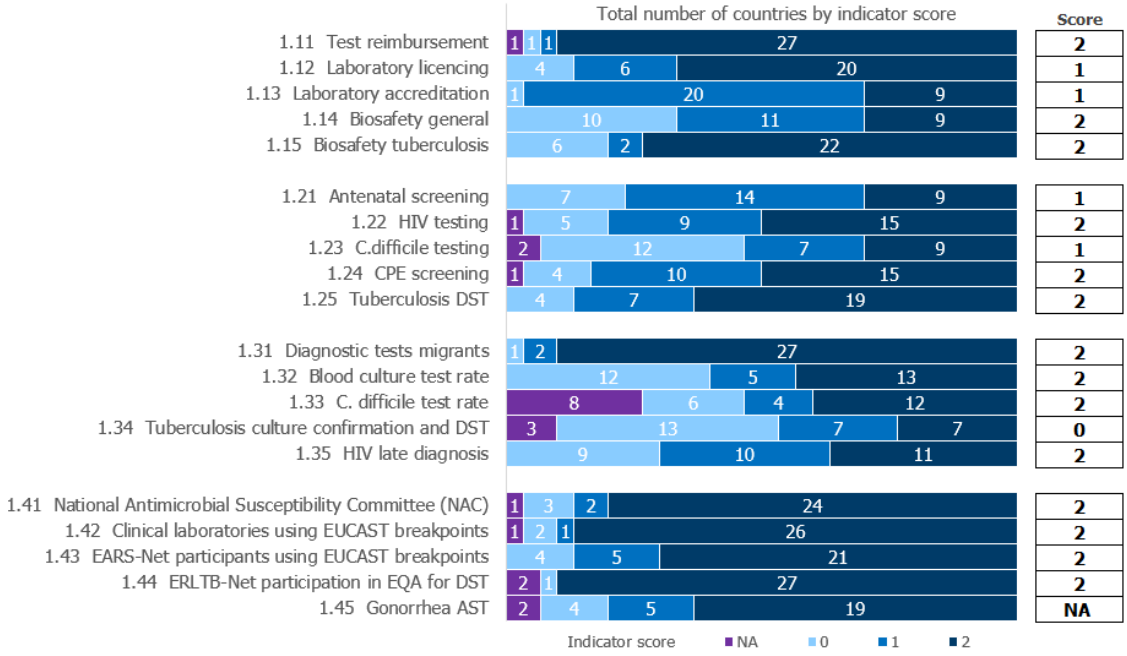


Table 3. Dimension "Primary diagnostic testing" - mean scores for Czech Republic by target and indicator, 2013 and 2014.

Dimension 1 - Primary diagnostic testing	Mean 2013	Mean 2014
Target 1.1 Provision and regulation of clinical microbiology services	**7.0**	**8.0**
1.11 Test reimbursement	10.0	10.0
1.12 Laboratory licencing	5.0	5.0
1.13 Laboratory accreditation	5.0	5.0
1.14 Biosafety general	10.0	10.0
1.15 Biosafety tuberculosis	5.0	10.0
Target 1.2 Diagnostic testing guidelines	**8.0**	**8.0**
1.21 Antenatal screening	5.0	5.0
1.22 HIV testing	10.0	10.0
1.23 *C. difficile* testing	5.0	5.0
1.24 CPE screening	10.0	10.0
1.25 Tuberculosis DST	10.0	10.0
Target 1.3 Diagnostic testing utilisation	**5.0**	**8.0**
1.31 Diagnostic tests migrants	10.0	10.0
1.32 Blood culture test rate	5.0	10.0
1.33 *C. difficile* test rate	0.0	10.0
1.34 Tuberculosis culture confirmation and DST	0.0	0.0
1.35 HIV late diagnosis	10.0	10.0
Target 1.4 Antimicrobial drug susceptibility testing	**8.0**	**10.0**
1.41 National Antimicrobial Susceptibility Committee (NAC)	10.0	10.0
1.42 Clinical laboratories using EUCAST breakpoints	10.0	10.0
1.43 EARS-Net participants using EUCAST breakpoints	10.0	10.0
1.44 ERLTB-Net participation in EQA for DST	10.0	10.0
1.45 Gonorrhea AST	0.0	NA

Note of caution for interpretation

Indicator 1.33. The score calculation was performed in 2014 by ECDC based on raw data, instead of self-scoring in 2013.

Figure 4. Dimension "National Reference Laboratory Services" – scoring distribution for EU/EEA countries and for Czech Republic, 2014.

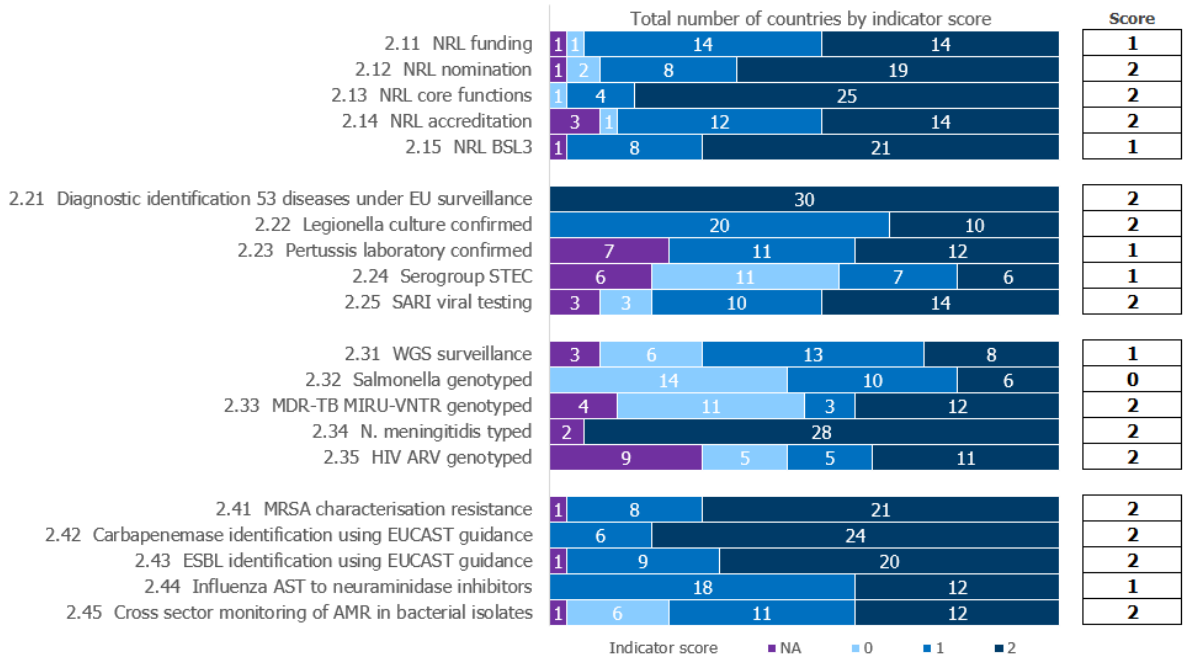


Table 4. Dimension "National Reference Laboratory services" - mean scores for Czech Republic by target and indicator, 2013 and 2014.

Dimension 2 - National Reference Laboratory services	Mean 2013	Mean 2014
Target 2.1 Provision and regulation of NRL microbiology services	**8.0**	**8.0**
2.11 NRL funding	5.0	5.0
2.12 NRL nomination	10.0	10.0
2.13 NRL core functions	10.0	10.0
2.14 NRL accreditation	10.0	10.0
2.15 NRL BSL3	5.0	5.0
Target 2.2 Reference diagnostic confirmation and pathogen identification	**9.0**	**8.0**
2.21 Diagnostic identification 53 diseases under EU surveillance	5.0	10.0
2.22 *Legionella* culture confirmed	10.0	10.0
2.23 Pertussis laboratory confirmed	10.0	5.0
2.24 Serogroup STEC	10.0	5.0
2.25 SARI viral testing	10.0	10.0
Target 2.3 Molecular typing for surveillance	**5.0**	**7.0**
2.31 WGS surveillance	0.0	5.0
2.32 *Salmonella* genotyped	NA	0.0
2.33 MDR-TB MIRU-VNTR genotyped	NA	10.0
2.34 *N. meningitidis* typed	10.0	10.0
2.35 HIV ARV genotyped	5.0	10.0
Target 2.4 Antimicrobial drug resistance characterisation and monitoring	**9.0**	**9.0**
2.41 MRSA characterisation resistance	10.0	10.0
2.42 Carbapenemase identification using EUCAST guidance	10.0	10.0
2.43 ESBL identification using EUCAST guidance	10.0	10.0
2.44 Influenza AST to neuraminidase inhibitors	5.0	5.0
2.45 Cross sector monitoring of AMR in human and animal bacterial isolates	10.0	10.0

Note of caution for interpretation

Indicator 2.13. The score calculation was performed in 2014 by ECDC based on raw data, instead of self-scoring in 2013.
Indicator 2.22. Indicator scores were retrospectively corrected for 2013 data.
Indicator 2.24. The scoring was modified to include non-typeable STEC strains in the numerator in 2014.
Indicator 2.34. The scoring was modified to include partial typing results in the numerator in 2014.
Indicator 2.35. The score calculation was performed in 2014 by ECDC based on raw data, instead of self-scoring in 2013.

Figure 5. Dimension "Surveillance / epidemic response support" – scoring distribution for EU / EEA countries and for Czech Republic, 2014.

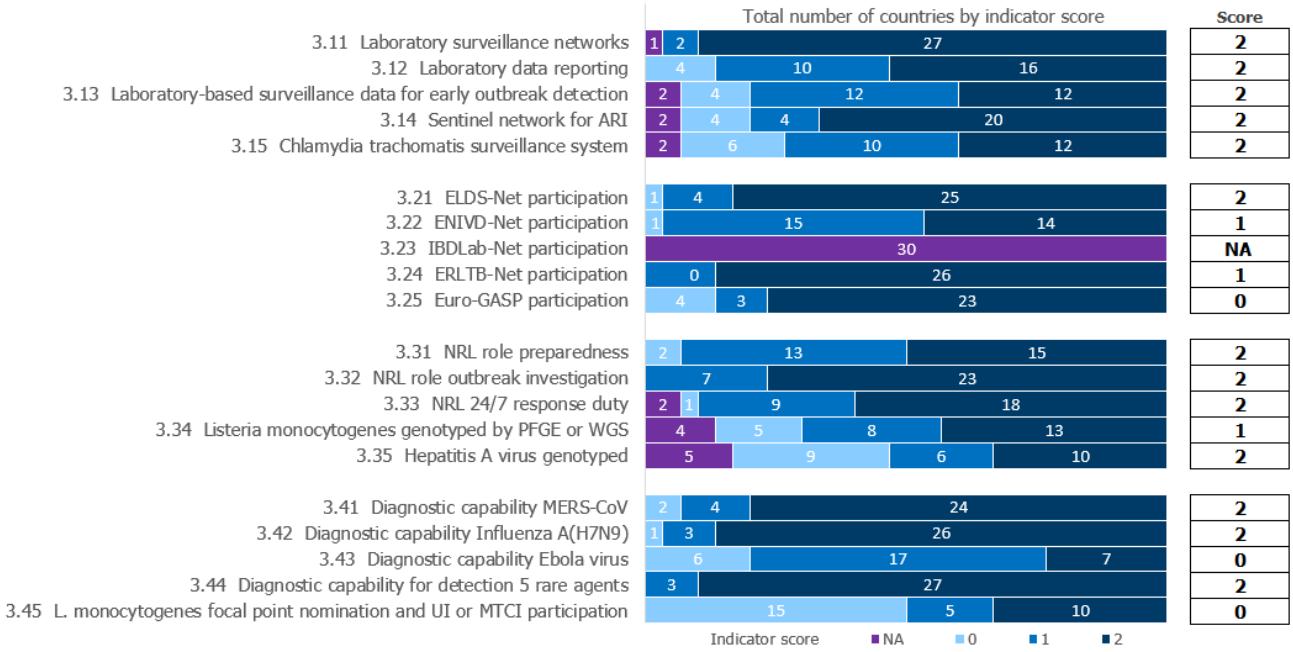


Table 5. Dimension "Surveillance / epidemic response support" – mean scores for Czech Republic by target and indicator, 2013 and 2014.

Dimension 3 - Surveillance / epidemic and response support	Mean 2013	Mean 2014
Target 3.1 National surveillance networks	**8.0**	**10.0**
3.11 Laboratory surveillance networks	10.0	10.0
3.12 Laboratory data reporting	5.0	10.0
3.13 Laboratory-based surveillance data for early outbreak detection	10.0	10.0
3.14 Sentinel network for ARI	10.0	10.0
3.15 *Chlamydia trachomatis* surveillance system	5.0	10.0
Target 3.2 Active participation in EU/EEA disease networks	**8.0**	**5.0**
3.21 ELDS-Net participation	10.0	10.0
3.22 ENIVD-Net participation	10.0	5.0
3.23 IBDLab-Net participation	10.0	NA
3.24 ERLTB-Net participation	10.0	5.0
3.25 Euro-GASP participation	0.0	0.0
Target 3.3 National outbreak response support	**6.0**	**9.0**
3.31 NRL role preparedness	5.0	10.0
3.32 NRL role outbreak investigation	10.0	10.0
3.33 NRL 24/7 response duty	5.0	10.0
3.34 *Listeria monocytogenes* genotyped by PFGE or WGS	0.0	5.0
3.35 Hepatitis A virus genotyped	10.0	10.0
Target 3.4 (Re)-emerging diseases laboratory preparedness and response support	**6.0**	**6.0**
3.41 Diagnostic capability MERS-CoV	10.0	10.0
3.42 Diagnostic capability Influenza A(H7N9)	10.0	10.0
3.43 Diagnostic capability Ebola virus	0.0	0.0
3.44 Diagnostic capability for detection 5 rare agents	10.0	10.0
3.45 *Listeria monocytogenes* focal point nomination and UI or MTCI participation	0.0	0.0

Note of caution for interpretation

Indicator 3.23. This indicator was not applicable in 2014 due to interruption of part of the scored activities.

Indicator 3.34. The scoring was modified to include the higher resolution typing method (WGS).