LABQUALITY

External Quality Assessment Scheme

Surveillance for multidrug resistant bacteria Round 1, 2023

5071: MRSA (Methicillin resistant *Staphylococcus aureus*)
5072: VRE (Vancomycin resistant Enterococci)
5073: Multidrug resistant gramnegative rods

Specimens
Please find enclosed 1-3 lyophilized samples (according to your order) S001, S002 and S003, and vials of rehydration fluid, each 0.5 mL.

Caution
The specimens simulate patient samples and should be handled with the same care as patient samples, i.e., as potential transmitters of serious diseases.

Examinations
S001 MRSA culture and/or direct detection from sample
S002 VRE culture and/or direct detection from sample
S003 Culture and/or direct detection from sample of multidrug resistant gramnegative rods

Storage and use
After arrival, the samples should be stored at +2…8 °C.

1. Let the samples and the rehydration fluids warm up to room temperature.
2. Cut the foil packet open at the end where you can feel the thicker part of the loop.
3. Remove the plastic sheath from the loop. Break the loop shaft off from handle directly into the tube containing rehydration fluid (blue cap).
4. Incubate the tube for 30 minutes in +35…37 °C incubator.
5. Check that the black film inside the loop (containing the lyophilized specimen) has dissolved completely.
6. Mix well the contents of the tube and proceed immediately with the examination similar to a patient specimen.

Result reporting
Please enter the results via LabScala (www.labscala.com). If you cannot find your test in the dropdown menu, please contact the EQA coordinator.

Report to the clinician (this section is scored):
For sample S001 (MRSA) the screening result is scored.

For sample S002 (VRE) the screening result, species identification and the reported resistance mechanism are scored. If your test selection does not include the identification of species and/or determination of resistance mechanism, then choose the option “Species identification not in test selection” and/or “Resistance mechanism determination not in test selection” (no loss of scores). When reporting a negative screening result the sections *Species identification* and *Resistance mechanism* will not open on the result form and the scoring is merely based on the screening result.

For sample S003 (multidrug resistant gramnegative rods) the screening result (including the resistance mechanism) and the species identification are scored. If your routine procedure does not include culture/species identification, then kindly choose “Species identification not in test selection” (no loss of scores). When reporting a negative screening result the sections *Species identification* and *Susceptibility tests* will not open on the result form.

2023-02-28

INSTRUCTIONS

Product no. 5071, 5072, 5073
LQ762023011-013/US
UN3373

Subcontracting: Sample pretesting

If the kit is incomplete or contains damaged specimens, please report immediately to info@labquality.fi

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The results should be reported no later than **March 27, 2023**.

The expected results of the round are published in LabScala in the View reports section by March 29, 2023.

Inquiries
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Susceptibility testing:
Report which guideline is followed in your laboratory for susceptibility testing procedures. As the NORDIC AST breakpoint values are based on the corresponding values published in the EUCAST guideline, the laboratories following NORDIC AST should select EUCAST as their reference group.

For the disk diffusion method, report the inhibitory zone diameter (mm). The value should be between 5 and 55 mm for the result to be accepted in the result processing. For samples S001 and S002 also report the antimicrobial disk content (µg). For the MIC method, report the MIC value as mg/L. Note, that a rounded MIC result is to be reported in addition to the actual MIC result. Only the rounded values are included in the report. Guidance for correct rounding can be found below and is also available in LabScala (click the *i*-button in column "MIC result, rounded"). The rounded MIC value should always be selected from the list on the result form, also when it is the same as the actual obtained MIC result (see examples below guidance table). In the last column report the corresponding SIR interpretation (Sensitive/Intermediate/Resistant). The interpretation should be reported by taking into consideration possible resistance mechanisms of the microbe.

Guidance for the rounding of MIC values

E-test or other MIC test result (mg/L)	Rounded value (mg/L)
<0.002, <0.003, 0.002	0.002
<0.004, <0.006, 0.003, 0.004	0.004
<0.008, <0.012, 0.006, 0.008	0.008
<0.015, <0.016, <0.023, 0.012, 0.015, 0.016	0.016
<0.03, <0.032, <0.047, 0.023, 0.03, 0.032	0.032
<0.06, <0.064, <0.094, 0.047, 0.06, 0.064	0.064
<0.12, <0.125, <0.19, 0.094, 0.12, 0.125	0.125
<0.25, <0.38, 0.19, 0.25	0.25
<0.5, <0.75, 0.38, 0.5	0.5
<1, <1.5, >0.5, 0.75, 1	1
<2, <3, >1, >1.5, 1.5, 2	2
<4, <6, >2, >3, 3, 4	4
<12, <8, >4, >6, 6, 8	8
<16, <24, >12, >8, 12, 16	16
<32, <48, >16, >24, 24, 32	32
<64, <96, >32, >48, 48, 64	64
<128, <192, >64, >96, 128, 96	128
<256, <384, >128, >192, 192, 256	256
<512, <768, >256, >384, 384, 512	512
<1024, <1536, >512, >768, 1024, 768	1024
<2048, >1024, >1536, 1536, 2048	2048

Example 1: Obtained test result is 0.002 mg/L, rounded value is 0.002 mg/L
Example 2: Obtained test result is 0.003 mg/L, rounded value is 0.004 mg/L
Example 1: Obtained test result is >16 mg/L, rounded value is 32 mg/L

For combination antibiotics note the following:
When the used MIC method gives the result of trimethoprim-sulfamethoxazole (used in ratio 1:19) as a common value of both components and not merely as a value of the trimethoprim component (which is 1/20 of the total), you should divide the result with 20 and thereafter round the value according to the table above. Example: the MIC method gives the result >320 mg/L, which is divided by 20 and yields the result >16 mg/L. After the rounding (see table above) the result is reported as 32 mg/L.

When the result for a combination antibiotic (e.g. piperacillin-tazobactam) includes the value of both components, report the MIC value of the actual antibiotic component (in this case piperacillin) merely. Example: Obtained test result is >128/4 mg/L, the non-rounded MIC value is reported as >128 mg/L and the rounded MIC value is 256 mg/L.

We kindly ask the participants to report their growth media (name and manufacturer) in the comment section of the result form. We collect data for the future background registry and dropdown menu, where the laboratory may choose the appropriate option. Thank you for your co-operation!

Surveillance for multidrug resistant bacteria, round 1, 2023.

S001

S002

S003

Surveillance for multidrug resistant bacteria, VRE, February, 1-2023

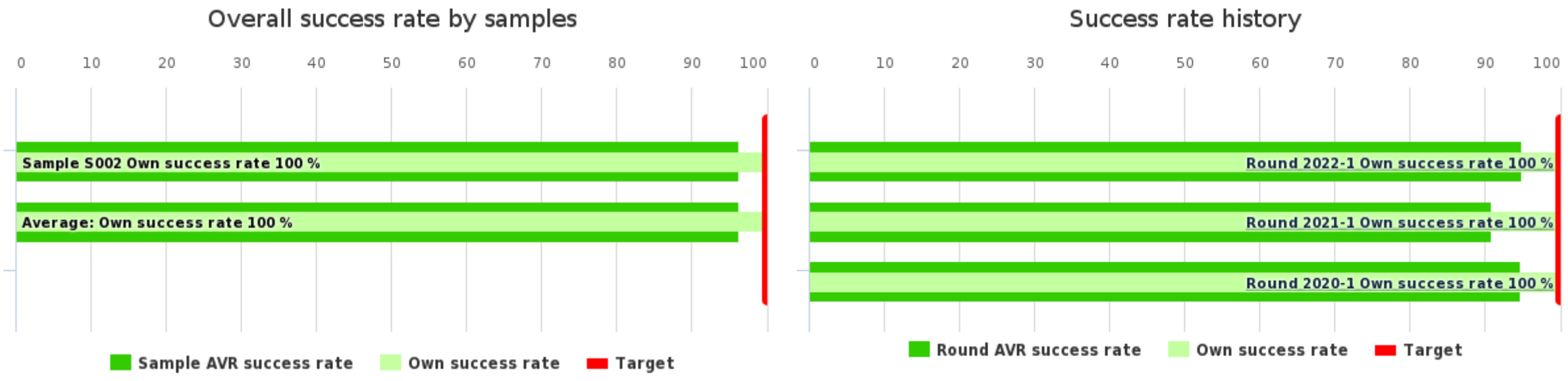
Report to the clinician and identification test results

XXXX

Client report

	No of participants	No of responded participants	Response percentage
Surveillance for multidrug resistant bacteria, VRE, February, 1-2023	117	111	94.9 %

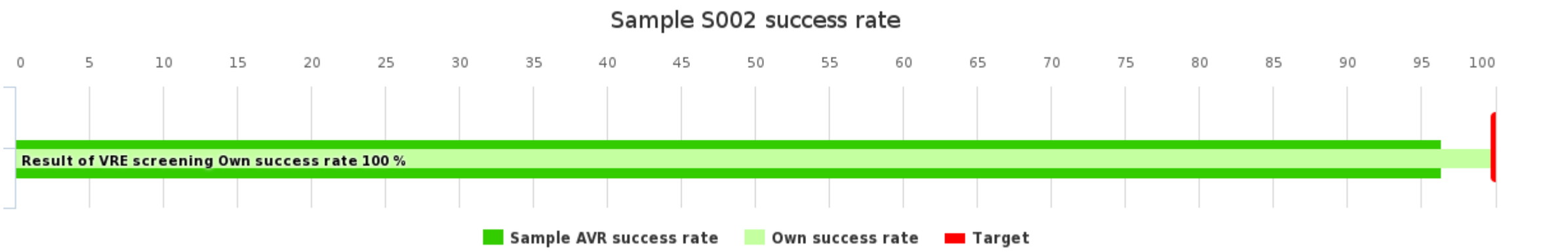
Summary



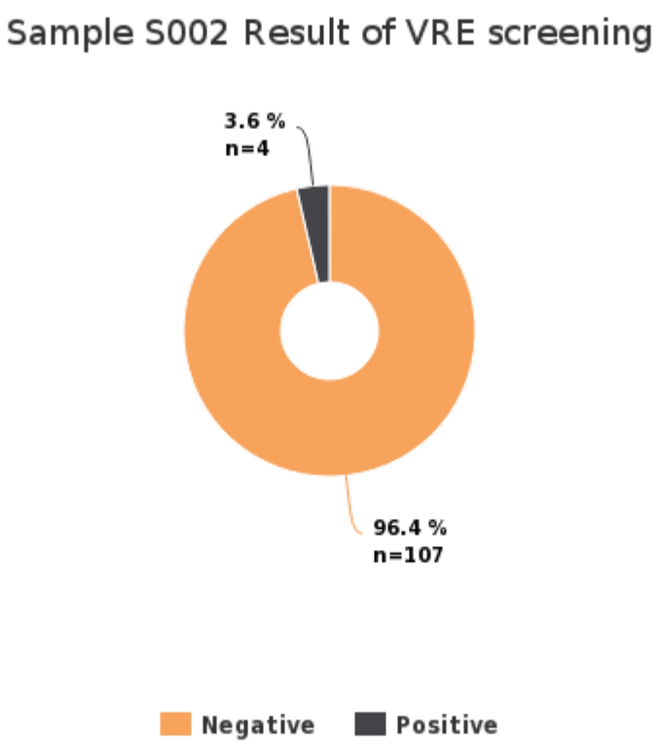
Summary	Own score	Max score	Own success rate	Difference	AVR success rate
Sample S002	2	2	100 %	3.6 %	96.4 %
Average:			100 %	3.6 %	96.4 %

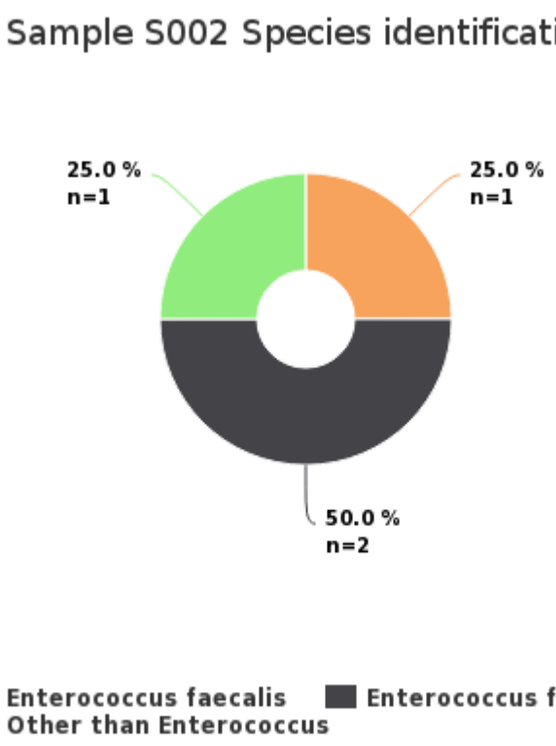
History	Test nr.	Own success rate	Difference	AVR success rate
Round 2022-1	1	100 %	5 %	95 %
Round 2021-1	1	100 %	9.2 %	90.8 %
Round 2020-1	1	100 %	5.3 %	94.7 %

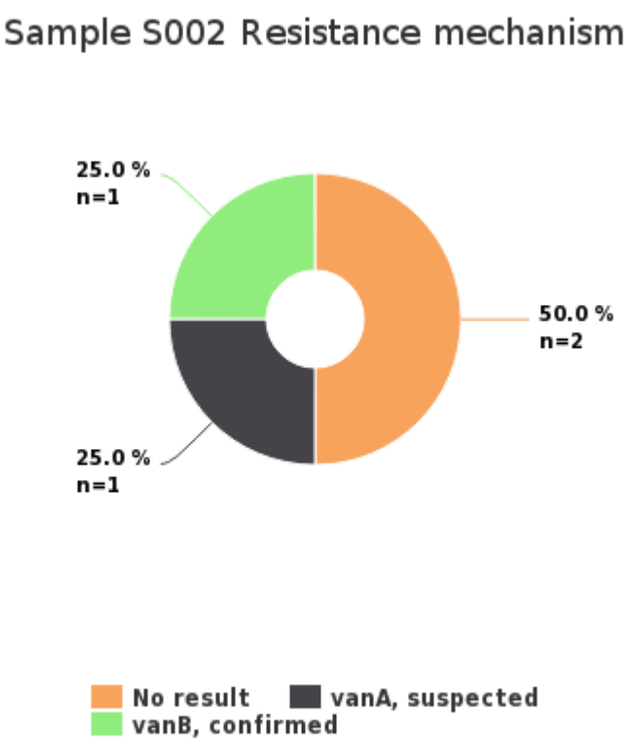
Sample S002 | VRE screening: negative



Sample S002 results	Responded	AVR success rate	Count
	Result of VRE screening	96.4 %	111
	Species identification	-	4
	Resistance mechanism	-	4
	Plate culture	-	135
	Molecular confirmation test (from culture)	-	11
	Direct detection by molecular method (from sample)	-	38







RESULT OF VRE SCREENING

Result	Result count	Referred	Not referred	Own score	Max score	Own success rate	Difference	AVR success rate
Negative	107	2	105	2	2	100 %	0 %	100 %
Positive	4	1	3	-				0 %
Total:	111			2	2	100 %	3.6 %	96.4 %

SPECIES IDENTIFICATION

Result	Result count	Own score	Max score	Own success rate	Difference	AVR success rate
Enterococcus faecalis	1	-				-
Enterococcus faecium	2	-				-
Other than Enterococcus	1	-				-
Total:	4	-	-	-	-	

RESISTANCE MECHANISM

Result	Result count	Own score	Max score	Own success rate	Difference	AVR success rate
No result	2	-				-
vanA, suspected	1	-				-
vanB, confirmed	1	-				-
Total:	4	-	-	-	-	

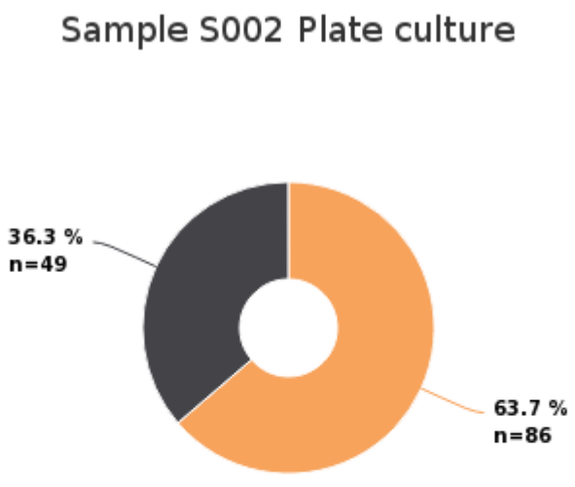


PLATE CULTURE

Method	Method count
◉ Chromogenic medium	86
Selective medium	49
Total:	135

MOLECULAR CONFIRMATION TEST (FROM CULTURE)

Test	vanA-	vanB-	Total:
Allplex Entero-DR Assay (Seegene)	1	1	2
Eazyplex VRE (Amplex)	1	1	2
Xpert vanA/vanB (Cepheid)	3	4	7
Total:	5	6	11

DIRECT DETECTION BY MOLECULAR METHOD (FROM SAMPLE)

Test	vanA-	vanB-	Total:
BioGX Vancomycin Resistance for BDMAX System (BioGX)	2	2	4
PCR (In-house)	1	1	2
Xpert vanA/vanB (Cepheid)	16	16	32
Total:	19	19	38

Report Info

PARTICIPANTS

Altogether 117 laboratories from 16 countries participated in this EQA round.

REPORT INFO

On the front page you can see the sample specific success rate which have been calculated from the scores. The reported results and the scores are presented in separate tables.
The results are presented in tables as counts and in the pie diagrams as percentages. In general, the expected results are marked with green color. Accepted results may also be indicated with yellow color. Laboratory's own results are indicated with a black radio button ◉. The participant's own success is shown both as scores and as success rates (%) generated from the score values.
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SCORING

The scoring consists of three parts; the final report of the screening that gives a maximum of 2 points, the species identification that gives a maximum of 1 point and the definition of the resistance mechanism that also gives a maximum of 1 point. There will be no loss of scores if species identification and/or definition of the resistance mechanism is not included in the test selection of the laboratory. For a negative specimen, the maximum score is 2 points (screening result). Also, when reporting a false negative screening result, only the screening result is scored (0/2 points).
The results can be scored when at least 60% of the participants have reported the correct/expected result and when there are at least three reported results.
Laboratory's scores have been converted to percentage (own success rate, % from maximum scores) with a target at 100%. Own success rate is compared with the success rate of all results.

The scoring range is 0-2 points, and the following general rules are followed:
full scores (1 or 2 points, see description above) is reached by reporting the expected correct result
0 point is given for an incorrect/false result

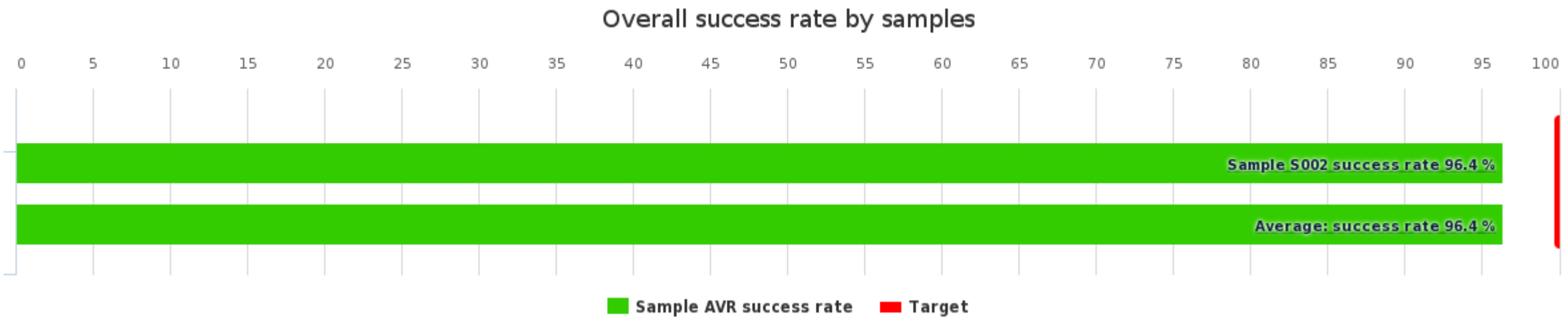
Surveillance for multidrug resistant bacteria, VRE, February, 1-2023

Report to the clinician and identification test results

GLOBAL REPORT

	No of participants	No of responded participants	Response percentage
Surveillance for multidrug resistant bacteria, VRE, February, 1-2023	117	111	94.9 %

Summary



Summary	AVR success rate
Sample S002	96.4 %
Average:	96.4 %

Surveillance for multidrug resistant bacteria, VRE, February, 1-2023

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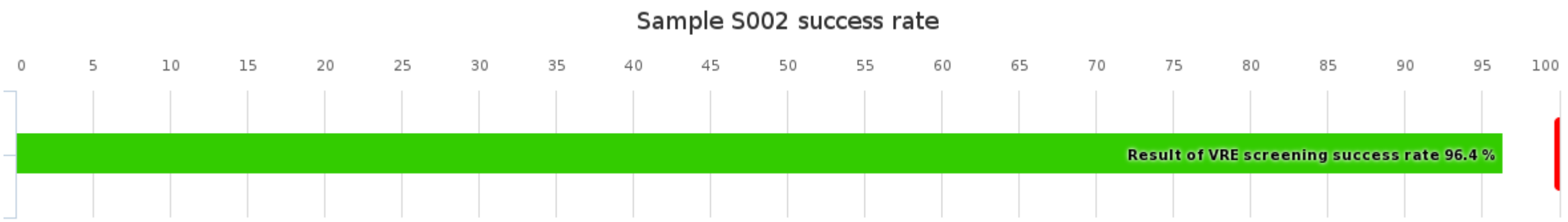
Sample S002 | VRE screening: negative



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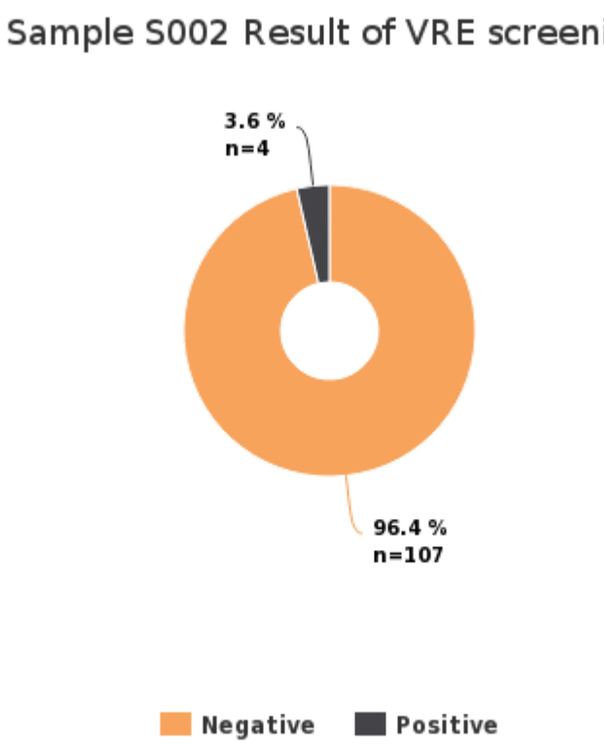

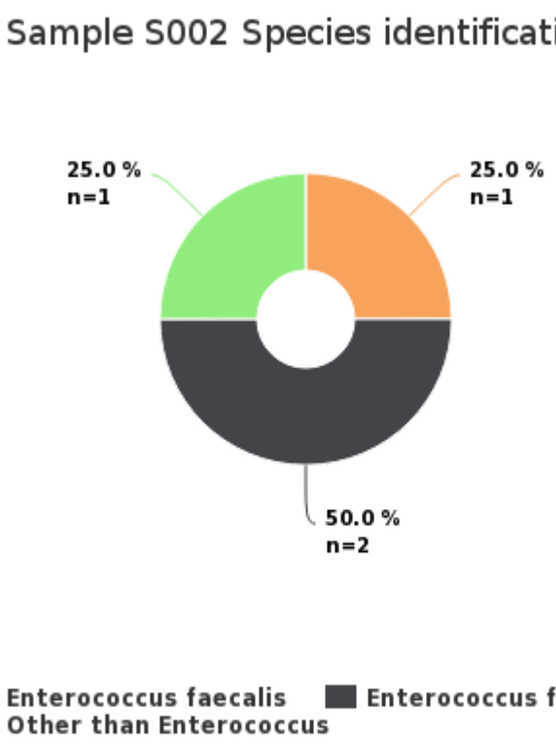

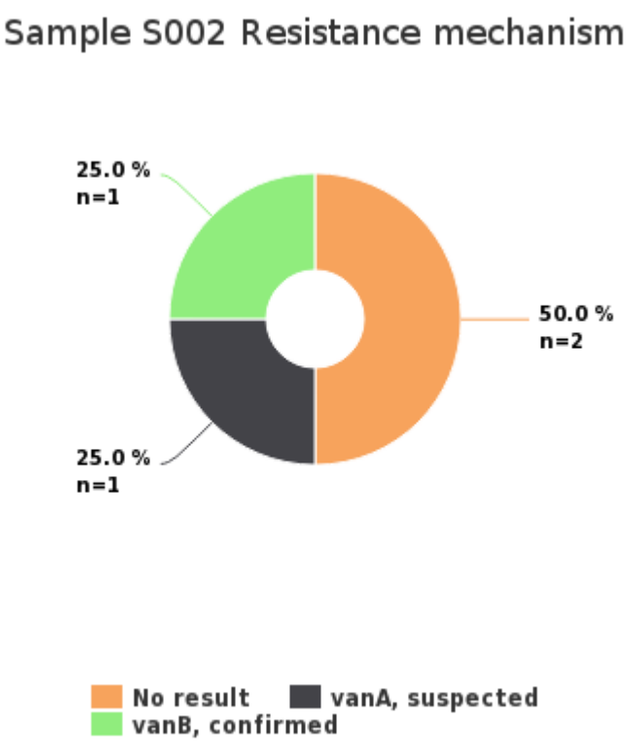

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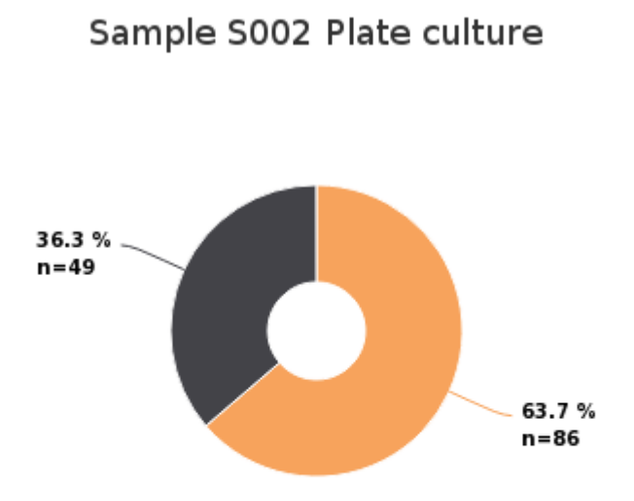

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LABQUALITY

External Quality Assessment Scheme

Surveillance for multidrug resistant bacteria, VRE
Round 1, 2023

Specimens
The round included one lyophilized sample. The sample lot was tested in an accredited Finnish reference laboratory and the results were consistent with the certificate provided by the sample manufacturer. Based on the quality controls conducted by the sample material manufacturer, pre-testing and the results obtained in the round, the sample lot is to be considered as homogeneous, stable and suitable for external quality assessment. The material was sent without temperature control packaging.

The use of samples only for external quality assessment. The consent of Labquality must be requested for the use of the microbial strains contained in the samples for other purposes.

The sample included the following microbes:

Sample S002 (LQ762023012):
Weissella confusa Tyks-33977
Escherichia coli ATCC® 25922™
Klebsiella aerogenes C090620

Expected result: VRE screening negative

Report info
Please see the description of the data analysis on the last page of the laboratory-specific reports and global reports. It is important to read the Final report first, because it contains important information of the samples and results in each round.

Comments – Expert
The sample contained *Weissella confusa*, which – being resistant to vancomycin – is able to grow on some VRE screening agars. *Weissella* is a genus of gram-positive bacteria placed within the family *Lactobacillaceae*, formerly considered species of the *Leuconostoc paramesenteroides* group. *Weissella* is present in many fermented food and has been considered as a potential probiotic. However, also severe clinical infections have been described. If modern methods for identification of growth on a VRE agar are available, the finding is easy to differentiate from VRE. Out of 111 laboratories returning their report, 107 (96.4%) reported the expected negative result for VRE screening.

Exceptions in scoring
No exceptions.

End of report

2023-04-13

FINAL REPORT

Product no. 5072

Subcontracting: Sample pretesting

Samples sent	2023-02-28
Round closed	2023-03-27
Expected results	2023-03-29
Final report	2023-04-13

Request for correction
Typing errors in laboratory's result forms are on laboratory's responsibility. Labquality accepts responsibility only for result processing. Requests must be notified by writing within three weeks from the date of this letter.

Authorized by
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