FEPTU
Food & Environmental Proficiency Testing Unit
Operated by UK Health Security Agency

Summary of Results
Mycobacterium spp. Scheme

External Quality Assessment for Water Microbiology

Distribution Number: **MY022**
Sample Numbers: **MY022A and MY022B**

Distribution Date:	**6 January 2025**
Results due:	**14 March 2025**
Report Date:	**19 March 2025**
Samples prepared and quality control tested by:	**Divya George** **Afifa Halim** **Nafeesa Hussain** **Sabine Naujokat** **Zak Prior** **Jake Videlefsky**
Data analysed by:	**Joanna Donn** **Nita Patel**
Report compiled by:	**Joanna Donn** **Nita Patel**
Authorised by:	**Nita Patel**

UK Health Security Agency
Food and Environmental Proficiency Testing Unit (FEPTU)
61 Colindale Avenue
London
NW9 5EQ
Tel: +44 (0) 20 8327 7119
Email: foodeqa@ukhsa.gov.uk

Overview:
This unique microbiology scheme provides proficiency testing (PT) samples to laboratories that examine heater cooler unit (HCU) waters for *Mycobacterium* spp. This scheme challenges the detection and identification of this organism from this hospital water sample.

HCUs are used during open heart surgeries to warm or cool a patient as part of their care. It has recently been recognised that there is the potential for *Mycobacterium chimaera* or other species to grow in a water tank in the HCU. When the water evaporates, the mycobacteria may become dispersed into the environment as aerosols and may infect a patient during certain types of open-heart surgery.

Procedures for examining samples of HCU waters for *Mycobacterium* spp. can be found in UKHSA document 'Protocol for Environmental Sampling, Processing and Culturing of Water and Air Samples for the Isolation of Slow-Growing Mycobacteria' which can be found on this link:
Mycobacteria HCU method

Guidelines and general advice:
If you experience difficulties with any of the examinations, please refer to section 17.0 of the Scheme Guide
Scheme Guide - Food and Environmental Proficiency Testing Unit

FEPTU Quality Control:
For homogeneity of the colony counts a minimum of 10 LENTICULE® discs, selected randomly from the batch, are examined for *Mycobacterium* spp. The FEPTU results are determined using the method in the above HTM-01-06 document.

To demonstrate homogeneity of the sample for enumeration values, a minimum of 10 LENTICULE® discs, selected randomly from a batch, are tested.

To demonstrate stability of the sample for enumeration values, a minimum of six LENTICULE discs, selected randomly from a batch, are examined throughout the distribution period.

The intended results letters provide guidance for participants regarding the assigned values.

Please contact FEPTU staff for advice and information:

Repeat samples	Carmen Gomes or Kermin Daruwalla	**Tel: +44 (0)20 8327 7119**
Data analysis	Nita Patel	
Microbiological advice	Zak Prior or Nita Patel	**E-mail: foodeqa@ukhsa.gov.uk**
General comments and complaints	Zak Prior or Nita Patel	
Scheme Co-ordinator	Nita Patel	
Scheme Consultant	Caroline Willis	

Accreditation: This scheme is accredited with the United Kingdom Accreditation Service (UKAS) to ISO/IEC 17043:2010.

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A total of 29 participants were sent this distribution, 28 examined the samples, one did not return a result.

Sample: MY022A

Sample type: Heater cooler waters

Request: Examine for the presence of *Mycobacterium* spp.

Contents:
Mycobacterium chimaera (98) (NCTC 13781)

All levels are presented as colony forming units (cfu) per 100mL

	Expected Result
Mycobacterium spp.	Detected

Number of participants correctly reporting a detected result	25/28 (89%)

Sample: MY022B

Sample type: Heater cooler waters

Request: Examine for the presence of *Mycobacterium* spp.

Contents:
Enterobacter amnigenus ($2.2x10^2$) (wild strain), *Pseudomonas luteola* ($2.8x10^2$) (wild strain) and *Micrococcus* sp. (3) (wild strain)

All levels are presented as colony forming units (cfu) per 100mL

	Expected Result
Mycobacterium spp.	Not detected

Number of participants correctly reporting a not detected result	26/28 (93%)

Comments

One laboratory reported an incorrect result for both samples suggesting they had been mixed up during the processing stage.

Your reported results and scores awarded are shown on page 4 of this report.

Table 1: Summary of all the participant's results for MY022 for detection of *Mycobacterium* spp.

Lab	Results MY022A	UKHSA score	Z-score	Results MY022B	UKHSA score	Z-score
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Non-return	0	4	Non-return	0	4
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Not detected	0	4	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Not detected	0	4	Detected	0	4
	Detected	2	0	Not detected	2	0
	Not detected	0	4	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Detected	0	4
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0
	Detected	2	0	Not detected	2	0

General comments

The results reported by participants have been scored using the following criteria:

Result	Score
Fully correct result for the intended result	2
False positive / false negative result	0

Participants who do not return a result by the specified date are allocated a UKHSA score of zero.

New website

We are pleased to announce the launch of our new website: https://www.feptu.org.uk/. Please refer to this website to obtain the latest information for your proficiency testing.

Information of importance

To understand more about the proficiency testing schemes, please use the following links for information on:

1. Report format explained: Annotated report

2. Performance rating: Performance-over-time and Scheme guide (section 16.0)

3. Scoring and statistics used: Scoring information and stats

4. Homogeneity and stability: Scheme guide (section 9.0)

5. Complaints and appeal process: Scheme guide (section 20.0 and 21.0)

For further information about the operation of the service including confidentiality and terms of participation, please refer to the Scheme Guide: Scheme guide

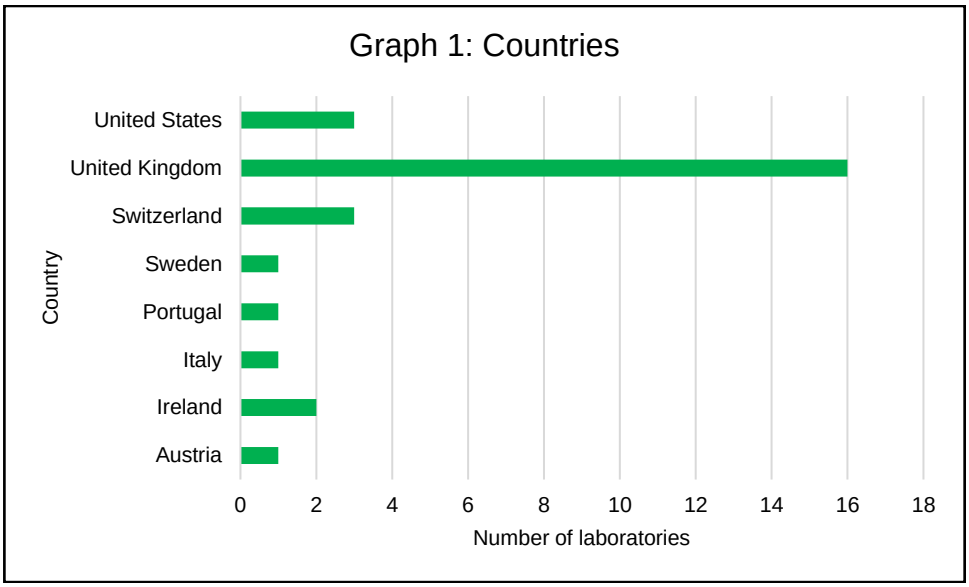
Questionnaire results:

Please note that not all participants provided the relevant information.

FEPTU are aware that processes are different and therefore have not attempted to categorise the information into specific groups for comparing data.

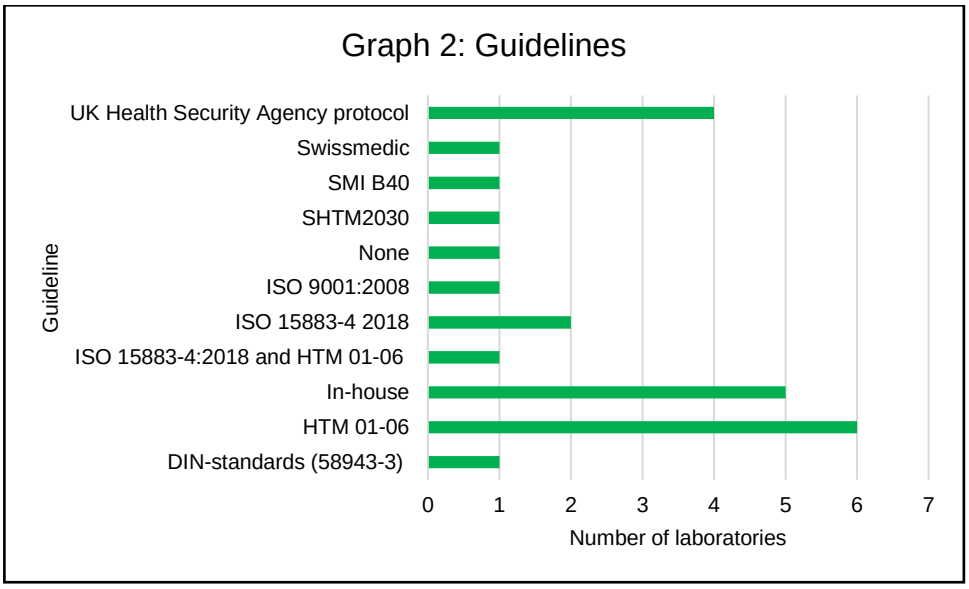
The data shown below is for information only and does not attempt to compare the performance of the various methods used by laboratories in this PT distribution. Not all laboratories provided information to all the questions.

A total 28 laboratories from eight countries participated in this distribution and returned a result (Graph 1), the majority of which were in the UK.



1. Standard and or guideline used for the sample examination – see links to some of these documents at the end of the report.

- Of the 24 responses received (Graph 2), some laboratories used multiple methods:
  - 7/24 (29%) used the Health Technical Memorandum 01-06 (HTM 01-06) 'Decontamination of flexible endoscopes, Part E: Testing methods and 3/24 (12.5%) use ISO 15883-4:2018 Requirements and tests for washer-disinfectors employing chemical disinfection for thermolabile endoscopes.



2. Examination process

- 18/27 (66.7%) of the laboratories examined the samples by membrane filtration followed by culture.
- 8/27 (29.6%) of the laboratories examined the samples by BD BACTEC™ MGIT™ automated mycobacterial detection system.
- 1/27 (3.7%) of the laboratories used a centrifugation process and then performed culture.

Details of the chemicals, neutralisation reagents used, length of period for decontamination and volume used to inoculate the BD BACTEC™ MGIT™ tubes are shown in the table below (n=5).

Chemical used	Decontamination time (minutes)	Neutralisation reagents used	Volume
BD BBL Myco Prep (NALC-NAOH)	20	Phosphate Buffer Saline (PBS)	0.5ml
N-acetyl-cysteine-sodium hydroxide (NALC-NaOH)	15	Phosphate Buffer Saline (PBS)	0.5 mL
3% SDS	30	Solution with sulfuric acid and phenol red	0.5 mL
NaOH 4%	15	Water	0.5 mL
N-acetyl-cysteine-sodium hydroxide (NALC-NaOH)	15	Phosphate Buffer Saline (PBS) pH 6.8	0.5 mL

3. Temperature

7/8 laboratories provided the temperature used to incubate the BD BACTEC™ MGIT™ tubes, this ranged between 35ºC – 37ºC. The period of incubation time varied from 42 days to 84 days.

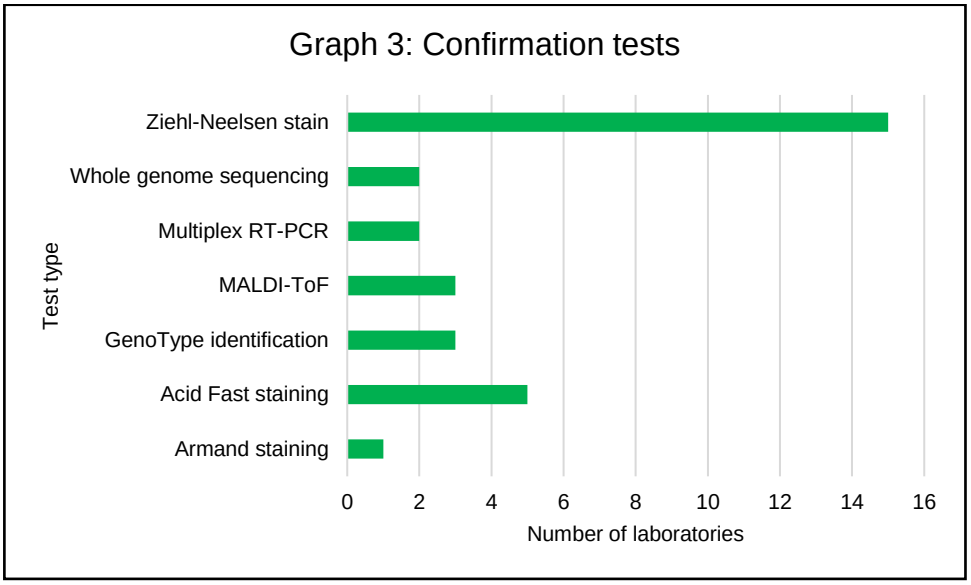
18 laboratories provided details about their membrane culture processes; this is shown in the table below:

Volume examined (mL)	Culture medium	Incubation temp (ºC)	Incubation time (days)
100	Middlebrook 7H11	30	28
100	Middlebrook	30	49
100	BD BACTEC™ MGIT™ tubes and Middlebrook agar	30 for plate 37 for MGIT tube	28 days. MGIT tubes 42 days
1000	NTM Elite Agar, Middlebrook 7H10 Agar	30	42
200 uL	Lowenstein-Jensen and Lowenstein-Jensen with pyruvate	30ºC, 37ºC and 42ºC	30
200	Middlebrook 7H10	30	28
200	Middlebrook 7H10	30	28
100	Middlebrook 7H10	30	28
100	Middlebrook 7H11	35	42 - 56
100	Middlebrook 7H10	30	28
1000	Middlebrook 7H10	35	69
100	Middlebrook	30	28
100	Middlebrook 7H10	30	28
100	Middlebrook 7H10	30	28
100	Middlebrook 7H10	35	42

500	BD BACTEC™ MGIT™ tubes and Lowenstein-Jensen	30 and 37	54
1000	NTM Elite and Middlebrook 7H11	30	28
100	Middlebrook 7H10	30	28

4. Confirmation tests

- 25/28 (89%) of the laboratories would perform a confirmation test on presumptive *Mycobacterium* spp. isolates grown. The type of tests done are shown in graph 3, some laboratories do multiple confirmation tests.



5. Reference laboratory

- 13/28 (46%) of the laboratories would send the isolate off to a reference laboratory.

Some useful links:

ECDC Technical document:
https://www.ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/EU-protocol-for-M-chimaera.pdf

Health Technical Memorandum 01-06: Health Technical Memorandum 01-06: Decontamination of flexible endoscopes. Part E: Testing methods (england.nhs.uk)

UK Health Security Agency procedure for heater cooler units:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540325/Air_water_environmental_sampling_SOP_V2.pdf

End of report.