

# A Look Back of 50 Years of External Quality Assessment in Microbiology

Authors, J. Henderson<sup>1</sup>, P. Patel<sup>1</sup><sup>1</sup> UK NEQAS for Microbiology

London, UK

## INTRODUCTION

Since 1969 the United Kingdom National External Quality Assessment Service (UK NEQAS) consortium have provided External Quality Assessment (EQA) to laboratories. In May 1971, the first microbiology specific distribution was dispatched from the Public Health Laboratory, Sunderland, by Dr. Crone with analysis carried out by the Epidemiological Research Laboratory, Colindale. Since the launch of this first scheme, UK NEQAS for Microbiology now provide over 50 schemes covering bacteriology, mycology, virology, molecular and parasitology disciplines. Programmes offered range from qualitative, quantitative and interpretive analysis and are designed to meet accreditation requirements for laboratories, with an emphasis on quality improvement and being educational.

## METHOD

A timeline from 1971 to 2021 was constructed displaying the introduction of schemes in chronological order.

The first participant report from May 1971 was compared to that of the same scheme, general bacteriology, 50 years later.

## RESULTS

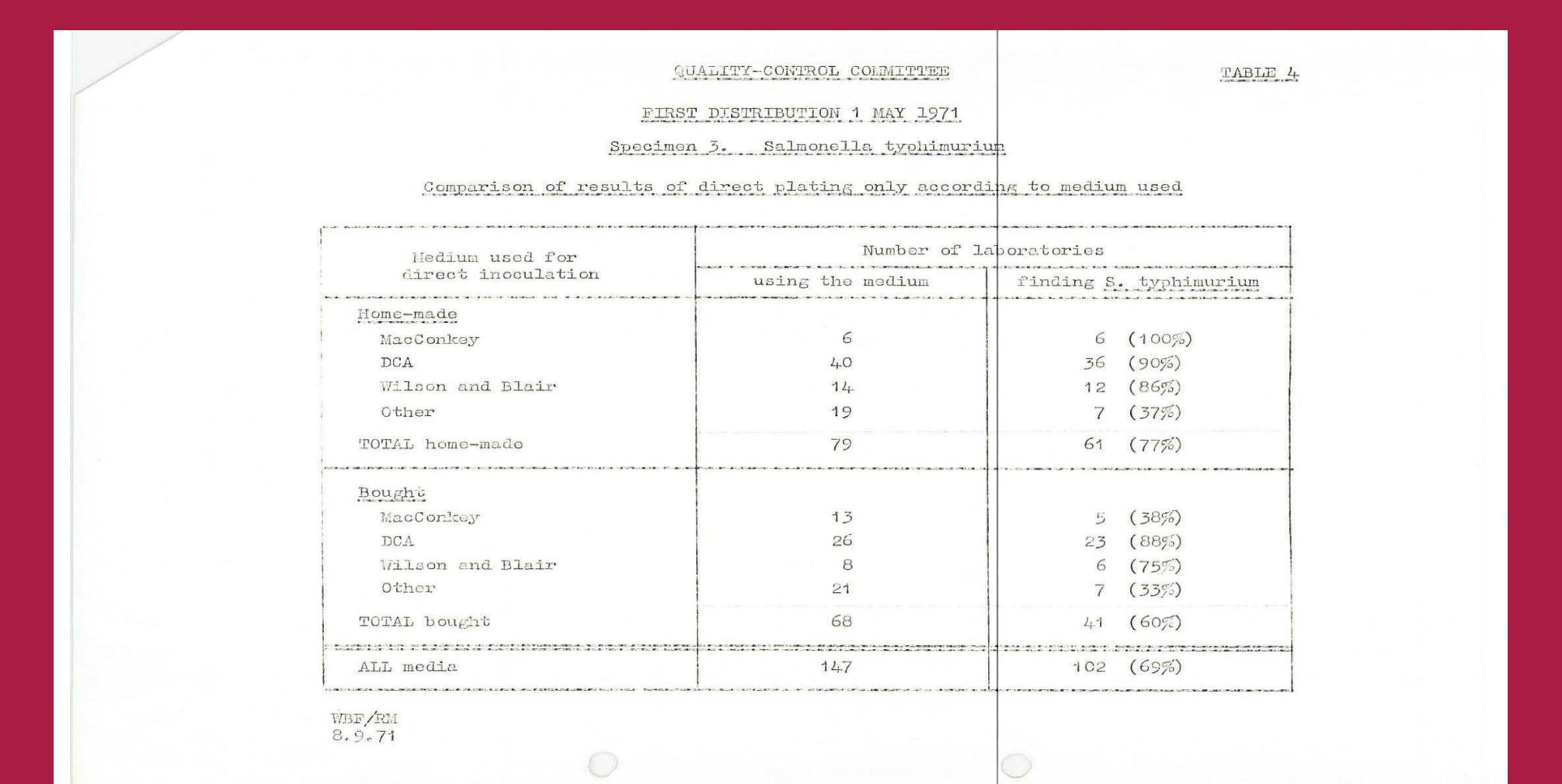
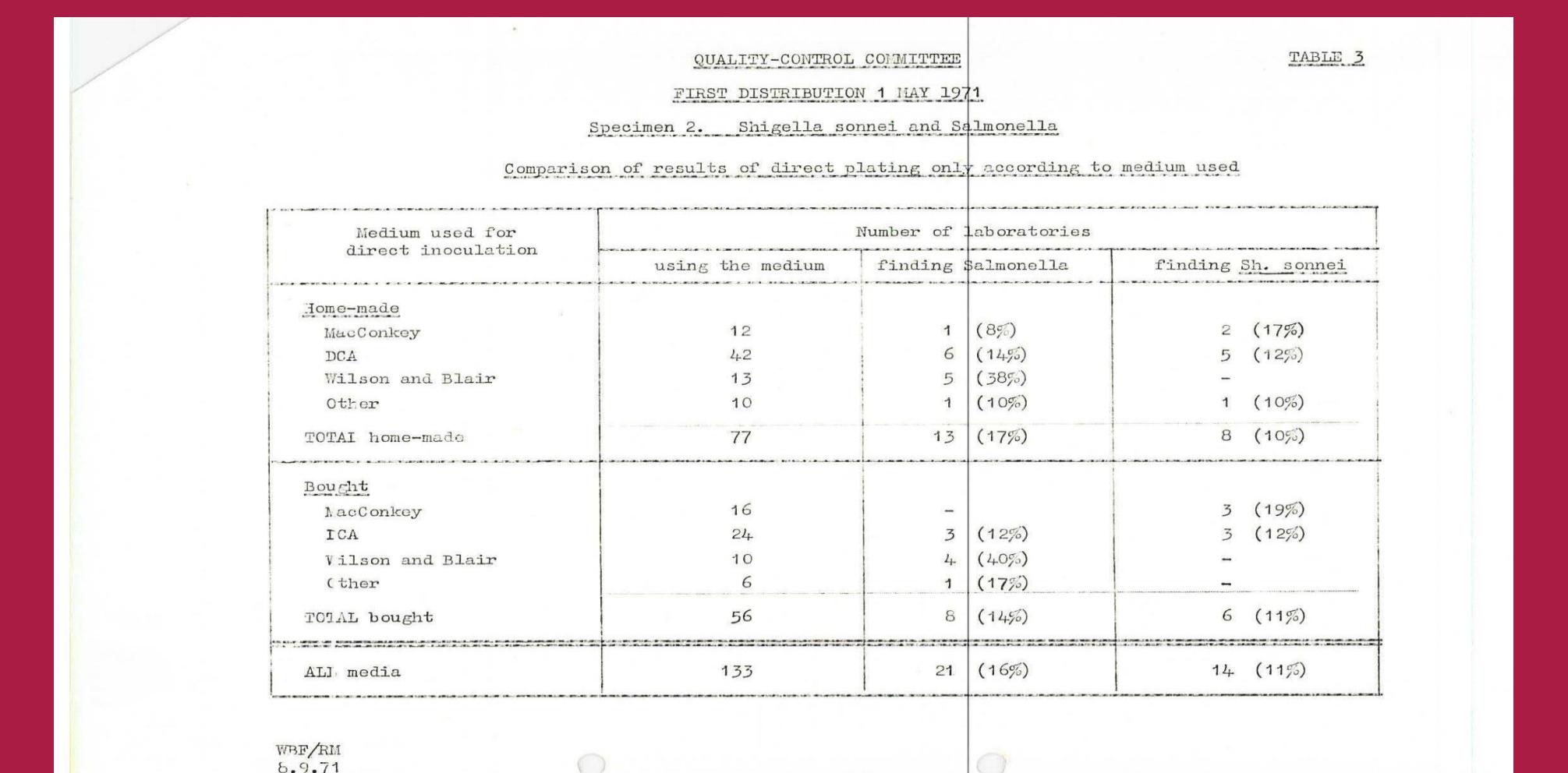
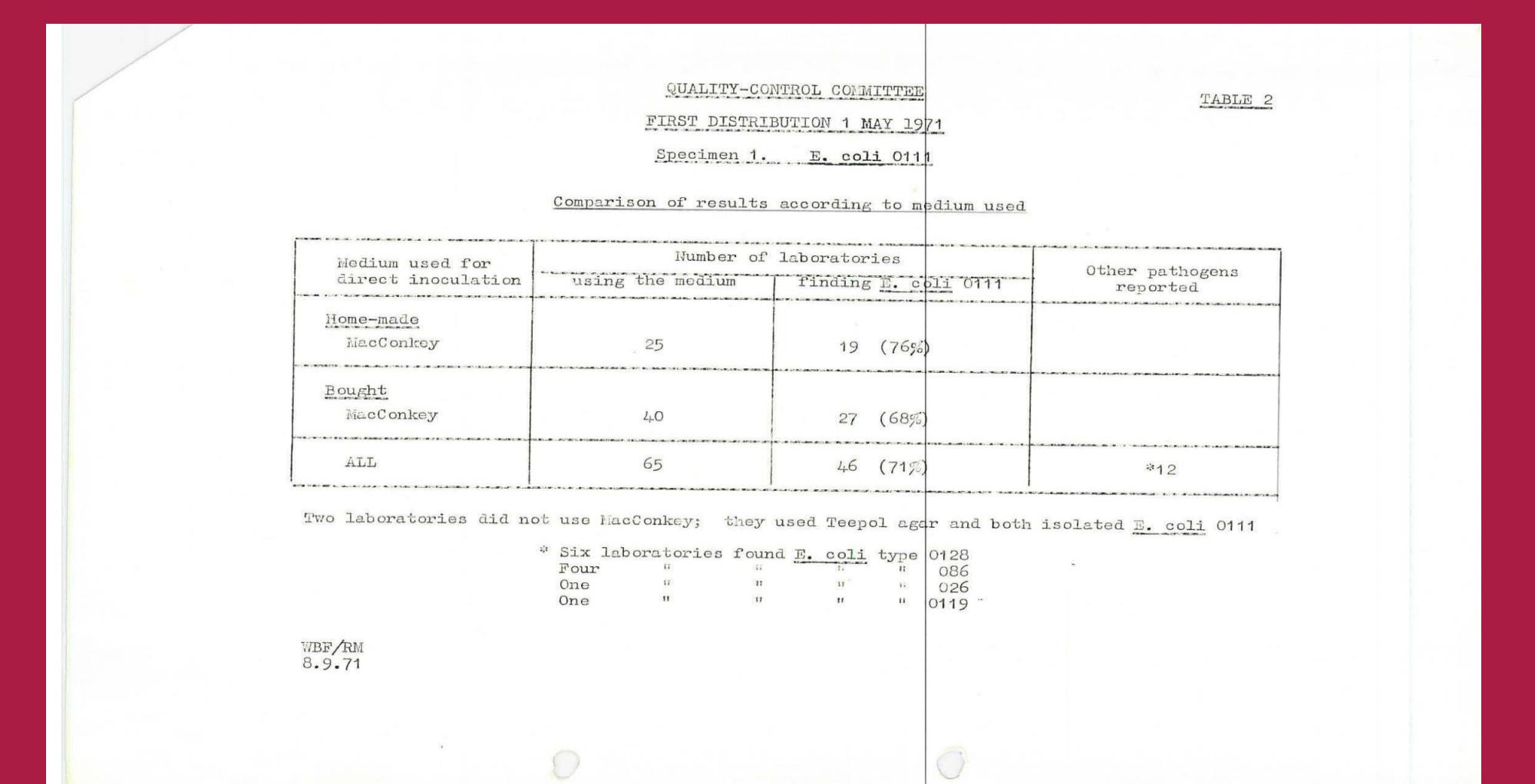
The introduction of new EQA schemes was steady between 1971-2000. From 2000 onwards a greater rate of schemes were introduced due to emergence of molecular technologies.

The first distribution of EQA specimens from UK NEQAS for Microbiology were dispatched on 1 May 1971. The panel comprised of three specimens, E. coli 0111, a dual pathogen of S. sonnei and Salmonella typhimurium and a Salmonella typhimurium. A total of 67 participants reported results for this first distribution. A report for the same EQA scheme 50 years later maintains the same number of specimens, however, participant numbers have now increased to 599.

In 1971 analysis of reported participant data included comparison of results according only to the media type used. In 2021 histograms display the most commonly used method to identify an organism, together with statistics to compare performance between participating laboratories.

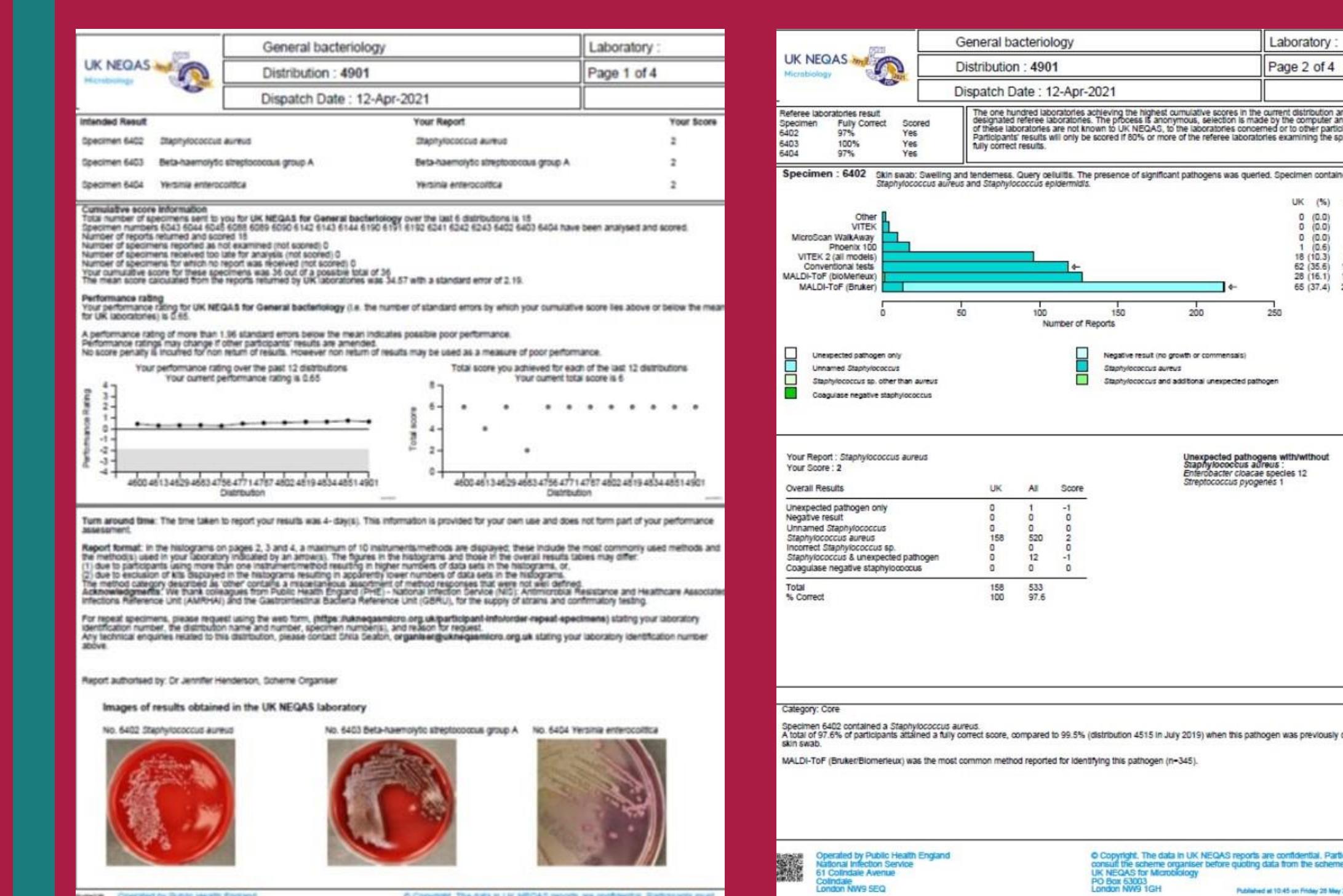
## 1971

- Three faecal pathogens were selected for the first distribution in May 1971
- Media used for direct inoculation was tabulated within the report
- There was a combination of media made in-house and purchased media reported by participants
- Specimen 1: Isolation of E. coli 0111, medium of choice was MacConkey, with two laboratories using Teepol agar
- Specimen 2 & 3: Isolation of Salmonella species and Shigella sonnei, medium of choice MacConkey, DCA and Wilson and Blair
- Reporting of results was completed by either phone or post
- Time to report ranged from 1-5 days
- Most likely UK participants only



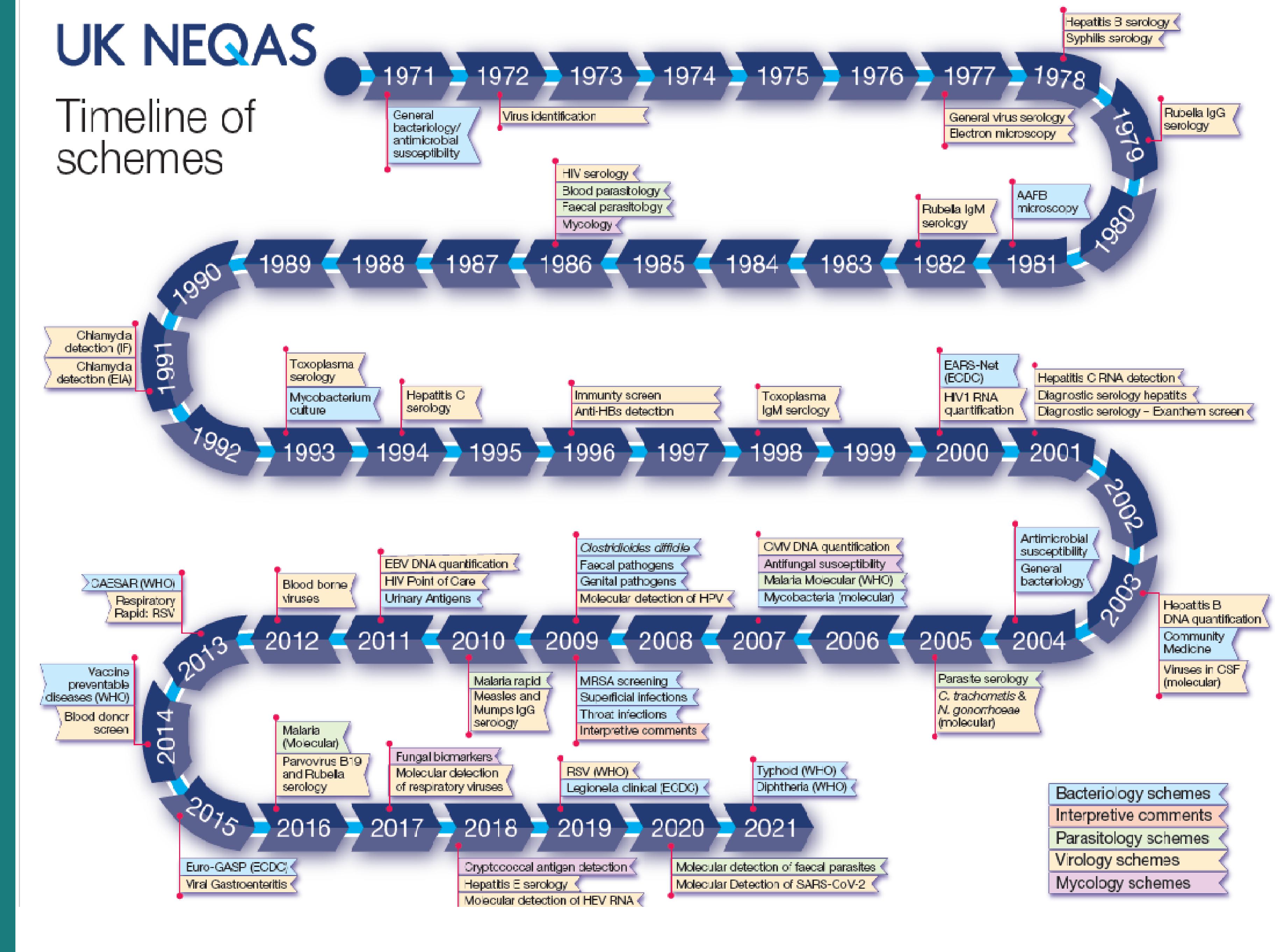
## 2021

- Over 50 schemes within the UK NEQAS for Microbiology repertoire
- Three specimens dispatched within the General Bacteriology scheme
- Two specimens are from various body sites, including but not limited to skin swab, CSF, sputum and urine samples
- Third specimen includes a faecal specimen
- Reporting of results performed using an online secure platform
- Each specimen is scored, with a maximum of 2 points for a fully correct result
- Cumulative score and performance rating calculated over a 12-month period
- Turnaround time for each individual laboratory stated within the report
- Report includes images of strains
- Histograms display instruments/methods; these include the most commonly used methods and the method(s) used in the laboratory indicated by an arrow(s)
- Clinical details accompany each specimen
- Specimens include typical normal flora, depending on the clinical site
- Tabulated overall results reported by all participants, along with the associated score
- Unexpected pathogens reported by participants listed
- A comparison of concordance with the current distribution, compared to the last time the isolate was distributed
- UK and overseas laboratories/organisations participating (UK 28.6%, overseas 71.4%)



## UK NEQAS

### Timeline of schemes



## CONCLUSIONS

The first microbiology distribution was the general bacteriology EQA, a scheme running to this day attracting large participation numbers within Microbiology in the UK and worldwide. UK NEQAS for Microbiology continually review processes to ensure services remain appropriate to clinical laboratories, responsive to laboratory needs and distribute schemes which are ISO 17043 accredited. Over the next 50 years it is our aim to continue providing fit for purpose and innovative EQA schemes ensuring continued and expanded access worldwide.

## CONTACT

For any questions please contact: [Jennifer.Henderson@phe.gov.uk](mailto:Jennifer.Henderson@phe.gov.uk)

[Twitter @UKNEQASMicro](https://twitter.com/UKNEQASMicro) #UKNEQASGold

[www.uknegasmicro.org.uk](http://www.uknegasmicro.org.uk)