

Audit report: 16s PCR turnaround time at Addenbrooke's Hospital

The College's Clinical Effectiveness Department wishes to encourage high-quality clinical audit. We therefore periodically publish interesting examples of audits that have been successfully evaluated through our clinical audit certification scheme.

Introduction

Since 2004 the Microbiology Department at Cambridge University Hospital (CUH) has sent samples for 16s PCR processing to the Great Ormond Street Hospital (GOSH) molecular service when there is a high suspicion of infection and routine bacterial cultures are negative. This is usually because organisms are fastidious, difficult to culture or prior antibiotics use has reduced the sensitivity of culture.

Previous evaluations (two poster publications: ICAAC, ECCMID) of this service have demonstrated its clinical usefulness. An introduction of selection criteria following the first evaluation led to an increase in the yield of positive results.

Final results are now sent electronically using an nhs.net address and this has led to a laboratory report receipt on the day of final result validation at GOSH.

The aim of this audit was to review operational issues related to the current service including turnaround times (TAT) in order to make an informed judgement regarding future decisions relating to use of this service.

Objectives

To ensure that 16S PCR service provided by GOSH is in line with the TAT published in the service handbook in order to enable timely decisions to be taken regarding patient management.

Sample

All consecutive samples sent to GOSH for 16s PCR during a three-month period 1 July and 30 September 2014.

Exclusions

None.

Method

GOSH molecular service provided their handbook with its repertoire of tests and TAT (see Figure 2).

All consecutive samples sent to GOSH between 1 July and 30 September 2014 were identified from the laboratory computer system. The sample numbers were sent to GOSH and dates of sample receipt at GOSH were supplied.

The following data were collected, including definitions used.

- 1) CUH send date: the date when the sample was sent to GOSH from CUH; this was recorded on the laboratory computer system.
- 2) GOSH sample receipt date: the date when the sample was received by GOSH and recorded on their system; this date was provided by Kathryn Harris of GOSH.
- 3) GOSH report date: the date the result was reported and sent via the nhs.net e-mail; this was accessed on the email system and corresponded to the date on the report.

The TAT was calculated as the number of days from GOSH sample receipt date to sample report date. The TAT was reported including and excluding weekend days, because GOSH do not provide a weekend service.

Standards

100% of tests sent for broad-range 16s PCR (bacteria) are within the service provider's TAT of 48 hours – 7 days.

Results

- 1) Total number of tests sent was 20 and four of 20 samples were PCR positive (20%). Number of tests per month were:
 - July: 11
 - August: 2
 - September: 7.
- 2) Compliance with the standard:
 - 100% of samples were tested within the published TAT excluding weekend days
 - compliance was 95% (19 out of 20 samples) if weekend days were included in the TAT calculation.
- 3) Turnaround times:
 - mean TAT was 3.95 days including weekends (range 1–9 days)

Figure 1: 16s PCR TAT: time from CUH send date to GOSH report date

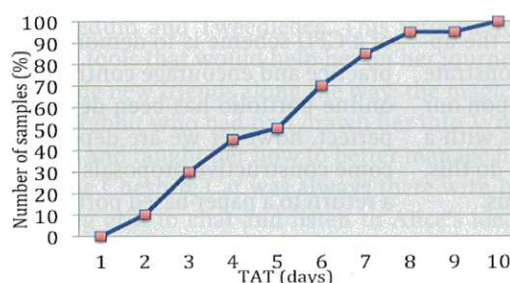


Figure 2: From the GOSH handbook

Molecular Microbiology Service at GOSH	
Assays available	
Assay	Turnaround time
Broad-range 16S rDNA PCR (Bacteria)	48 hours – 7 days
Broad-range fungal PCR	48 hours – 7 days
<i>Streptococcus pneumoniae</i> real-time PCR	24 hours
<i>Neisseria meningitidis</i> real-time PCR	24 hours
<i>Staphylococcus aureus</i> real-time PCR	24 hours
<i>Streptococcus pyogenes</i> real-time PCR	24 hours
<i>Streptococcus agalactiae</i> real-time PCR	24 hours
<i>Kingella kingae</i> real-time PCR	24 hours
<i>Mycobacterium tuberculosis</i> real-time PCR	24 hours
<i>Mycobacterium species</i> real-time PCR	24 hours
<i>Tropheryma whipplei</i> real-time PCR	24 hours

- mean TAT was 2.5 days excluding weekends (range 1–7 days)
- 15 specimens or 75% were within a three day TAT (excluding weekends)
- mean TAT from CUH send date to GOSH report date was 5.2 (range 2–10 days) including week-

ends (Figure 1).
 4) Samples with a TAT of >5 days (including weekends) were observed within a two-week period 22/07/14–01/08/14, due to annual leave of the report authoriser.

Conclusions

GOSH delivers its service within their published standards (TAT 48 hours – 7 working days). 75% samples had a TAT of ≤3 working days.

Recommendations

This audit will be presented to the Bacteriology Technical Committee of CUH and the results should inform discussions regarding provision of this service.

References

GOS user handbook.

Dr Olly Allen
Dr Jumoke Sule
 Cambridge University Hospitals NHSFT

Dr John Hartley
Dr Kathryn Harris
 Great Ormond Street Hospital



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A3 thinking for problem solving – Review of the ‘flow’ in urines

What is an A3? Simply described, an A3 document comprises of a single piece of paper which is A3 in size (although other sizes can be used). The A3 document forms a template and a record for problem solving. It can be hand drawn or computer generated. In general, the ‘flow’ of the A3 starts at the top left and works down the left-hand column, followed by navigation from top to bottom down the right-hand column. The left column can be described as ‘*the way things happen now*’ and the right column as ‘*the better way to work*’.

The rationale behind the A3 problem-solving format is to create a quick and common understanding of the current condition. It is a visual way of displaying and highlighting a set of circumstances that complicate a current work flow and directly associating the proposed solutions. This format has the advantage of being used by either groups of individuals within or out with a specialty or by a single worker.

Beginning with a consensus on the problem or issue you are trying to solve is of crucial importance and it is worth spending time discussing and identifying the ‘true’ problem statement. From this, describing the entire associated process or processes requires accurate information. Only information

of relevance to the problem should be included and will not only be efficient but will ensure that those involved have a good understanding of the current and future states. Moreover, this format prevents having to provide large reports, supports effective communication and reduces misinterpretations and thus incorrect conclusions.

Eventually, a completed A3 represents an improvement process that is transparent and inclusive so that each staff member knows when a process is working well and can immediately identify when the ‘ideal’ doesn’t happen. Ultimately, a successful measure of any A3 is acknowledging that your future state has become your new current state.

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