

WHAT IS THE EVIDENCE FOR MINIMUM RETESTING INTERVALS

IN MICROBIOLOGY TESTS?

THE ISSUE



Laboratory test over-use is a known contributor to unnecessary interventions & patient harm

MINIMUM RETESTING INTERVALS

The minimum time before a test should be repeated, based on test properties and clinical situation



"Defining appropriate use of clinical microbiology tests remains an elusive goal"
Wilson 2002

BEST EVIDENCE FOR MICROBIOLOGY



"If no evidence-based guidance existed ... recommendations were based on consensus"

"All recommendations in this area of pathology were based on consensus expert peer opinion."

Royal College of Pathologists 2015

THE WAY FORWARD

- Studies indicate implementing computerised alert systems based on retesting intervals can save ~12.8% test cost
- Cleveland Clinic's **"Hard Stop"** method prevents same-day testing for 1200+ tests (at 2013)

✓ saved US\$300,000+

✓ prevented 18,000+ duplicate tests

EXPERT OPINION

We need a stronger evidence base!



What is the evidence for minimum retesting intervals in microbiology tests?

“In the majority of cases, a minimum retesting interval should be introduced. The availability of effective computerized order entry systems is relevant in ensuring appropriate test requests and in providing an aid by automated rules that may stop inappropriate requests before they reach the laboratory.”

Source: [*Clinical Biochemistry* 2017; 50:555-561](#)

At the request of the Austin Health Choosing Wisely Steering Committee, this report provides an overview of the evidence for minimum retesting intervals in microbiology tests. Given the evidence for microbiology is sparse, this report also briefly outlines the evidence for the appropriate use of laboratory testing more broadly.

Current best evidence

2015

National minimum retesting intervals in pathology. A final report detailing consensus recommendations for minimum retesting intervals for use in pathology:

- a minimal retesting interval is “the minimum time before a test should be repeated, based on the properties of the test and the clinical situation in which it is used.”
- frequency of repeat testing requires consideration of:
the physiological properties; biological half-life; analytical aspects; treatment and monitoring requirements; and established guidance.
- where no evidence-based guidance exists “recommendations were prepared based on the consensus opinion of the working group.”
- the microbiology recommendations are all based on consensus expert peer opinion and can be found in section 6.1.

Source: [**Royal College of Pathologists & The Association for Clinical Biochemistry and Laboratory Medicine**](#) 2015

Demand optimisation

2017

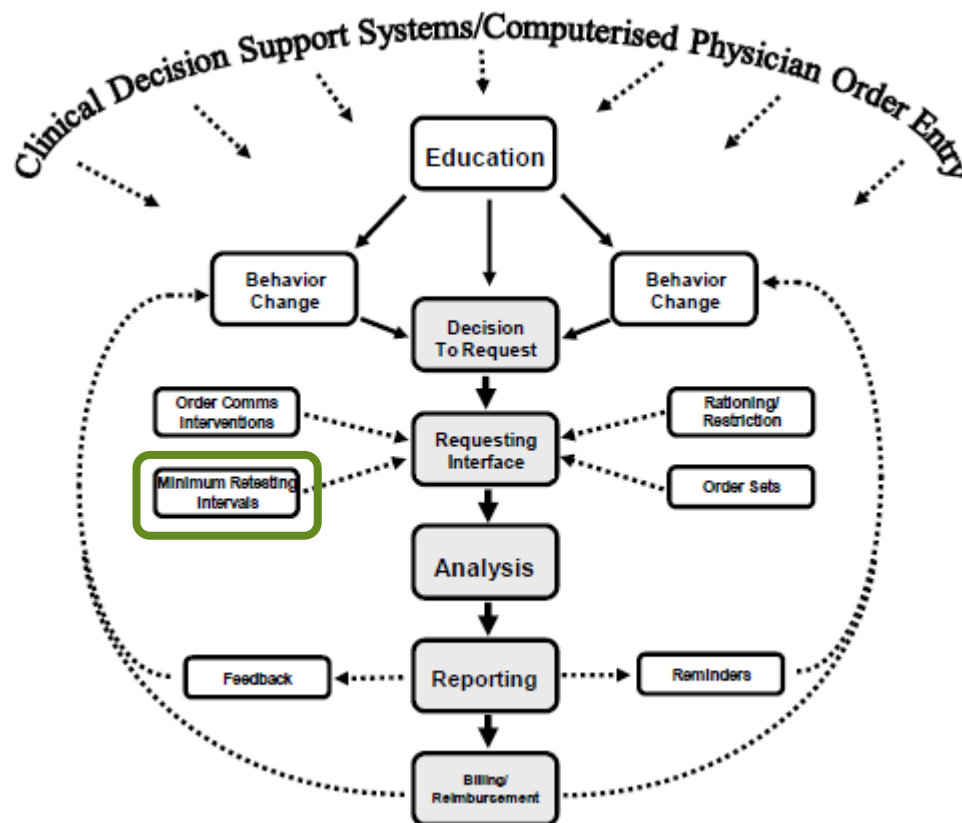
A report by the Scottish Government acknowledges The Royal College of Pathologists (RCPATH) guidance on minimum retesting intervals suggesting it “serves as a baseline for laboratory services to define, in conjunction with their users, a strategy for limiting unnecessary repeat testing within their domain.”

The report recognizes:

- minimum test intervals have not so far been implemented for microbiology and virology
- the RCPATH guidelines are based on expert opinion and are not widely used
- there is the opportunity to formally validate the RCPATH guidelines in the future

- solutions need to focus on the point of request (e.g. the order communications module) so unnecessary test requests can be avoided before an order is made
- the early adoption of automated IT systems may assist with this process

'There are many areas across the diagnostic test end-to-end pathway where *Demand Optimisation Interventions* can be implemented':



Source: [Demand optimization in diagnostics: best test, best care](#) by Common Services Agency for the Scottish Health Service, Scotland. Scottish Government, 2017

2014

Utilisation management in microbiology

- “the published literature on utilization management in microbiology is relatively limited when compared to reports on managing utilization of routine automated testing in the chemistry and hematology laboratories”
- “it is important to consider not only the cost of testing within the microbiology laboratory but also the downstream costs resulting from clinical decisions based on the test results”
- authors note the importance of collaborative and interdepartmental teams to succeed with clinical microbiology testing changes
- authors highlight the need for guided test selection, appropriate gatekeeper functions, application of evidence-based medicine, and screening algorithms.

Source: [Clinica Chimica Acta](#) 2014; 427: 173 ([Full text request](#))

Clinical decision support initiatives to reduce inappropriate laboratory test use

2017

Implementation of a clinical decision support tool for stool cultures and parasitological studies in hospitalised patients:

- substantial evidence exists that stool culture and parasitological examinations are of minimal to no value after 3 days of hospitalisation
- studied the impact of implementing a clinical decision support tool (CDST) to decrease the number of unnecessary stool cultures, ova/parasite examinations, and Giardia/Cryptosporidium enzyme immunoassay screens performed for patients hospitalised >3 days
- the intervention corresponded to a custom-programmed hard-stop alert tool in the Epic hospital information system at the Cleveland Clinic and allowed providers to override the intervention by calling the laboratory, if testing was deemed medically necessary
- the intervention decreased the percentage of orders placed and demonstrated the safe and effective use of a CDST

Source: [Journal of Clinical Microbiology](#) 2017; 55(12): 3350-3354

2017

Rates of inappropriate laboratory test utilisation in Ontario

- Ontario provincial data was used to evaluate inappropriate repeat laboratory tests
- nine laboratory tests with minimum time intervals demonstrate 6–20% inappropriate orders
- between 60 and 85% of tests ordered too soon were ordered by the same physician
- there is an opportunity to improve test ordering practice through systemic, technology based approaches

Source: [Clinical Biochemistry](#) 2017; 50: 822- 827 ([Full text request](#))

2015

Effectiveness of a computerised alert system based on re-testing intervals for limiting the inappropriateness of laboratory test requests

- University Hospital of Parma implemented a computerized alert system specifically designed to limit the number of potentially inappropriate laboratory test requests for hospitalised patients
- study results showed “a computerized alert system based on re-testing intervals not only may be effective for limiting the inappropriateness of laboratory test requests, but may also generate significant economic saving and educate physicians to a more efficient use of laboratory resources”

Source: [Clinical Biochemistry](#) 2015; 48: 1174-1176 ([Full text request](#))

2014

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2013

Strategies for appropriate test utilisation: The right test, for the right patient, at the right time

- Cleveland Clinic implemented a same-day duplicate test reduction initiative known as the “Hard Stop”
- identified 10 tests initially, then “progressively activated the hard stop clinical decision support tool for all test that the Test Utilization Committee deemed to be appropriate”
- initial use of this CDST “resulted in the discontinuation of 7,243 unnecessary duplicate orders. The total laboratory cost avoidance (i.e. materials plus labor) was US\$115,590.”
- Cleveland extended the initiative to genetic testing and achieved further cost savings and significant improvements in best practice care

Source: [Strategies for appropriate test utilization: the right test, for the right patient, at the right time](#) by G Procop, Cleveland, OH: The Cleveland Clinic Foundation; 2013.

Further commentary: Shutting down orders for duplicate tests [Today's Hospitalist](#) 2014

“As of December 2013, the hard-stop system [Cleveland Clinic] prevented more than 18,000 duplicate tests totaling nearly US\$300,000 in savings in lab costs. Doctors have exercised the workaround to order a duplicate for only 3% of their orders.”

Further reading

- Systematic review of non-ASCP Choosing Wisely recommendations relevant to pathology and laboratory medicine
[American Journal of Clinical Pathology](#) 2018; Volume 149 (3): 267–274
- The role of the laboratory in ensuring appropriate test requests
[Clinical Biochemistry](#) 2017; 50: 555-561
- [Choosing Wisely Canada – Pathology](#) 2017
- Reducing duplicate testing: a comparison of two clinical decision support tools
[American Journal of Clinical Pathology](#) 2015; 143(5): 623-626
- A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2013 recommendations by the Infectious Diseases Society of America (IDSA) and the American Society for Microbiology (ASM)
[Clinical Infectious Diseases](#) 2013; 57(4): e22-e121
- Appropriate use of clinical microbiology tests
[Clinics in Laboratory Medicine](#) 2002; 22: 491-503 (print held in Library)