

Journal of Pharma and Pharmaceutical Sciences

The Compelling Need for Optimal Laboratory Utilization

Renu Nagar

Head of Biochemistry & Point of care testing, in a SEHA Hospital, UAE

***Corresponding author:** Dr. Renu Nagar, MBBS, MD (Biochemistry), Head of Biochemistry and POCT, UAE, Tel: 00971557112853; Email: dr.renunagar@yahoo.com

Article Type: Short Communication, **Submission Date:** 27 April 2015, **Accepted Date:** 8 June 2015, **Published Date:** 26 June 2015.

Citation: Renu Nagar (2015) The Compelling Need for Optimal Laboratory Utilization. J.Pharm Pharm Scien 1(2): 1-3. doi: <https://doi.org/10.24218/vjpps.2015.06>.

Copyright: © 2015 Dana-Lynn Koomoa, Ph.D. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Background: With ever increasing pressure on hospitals to provide quality medicine cost effectively, clinicians and laboratorians must team up to ensure that the most appropriate laboratory investigations are ordered at the most appropriate time and frequency to significantly reduce length of stay, improve patient outcomes, improve hospital and laboratory efficiencies, reduce hospital costs and minimize insurance claim denials.

Objective: Ever increasing reliance on laboratory investigations combined with availability of several newer, and usually costlier, testing options have significantly increased treatment costs; and rejection of these insurance claims amounts to hospital losses. In today's atmosphere of managed care, hospitals must revisit test ordering practices to remain competitive.

Methods: The current literature was reviewed for prevalent test ordering practices & to suggest the most appropriate laboratory utilization.

Results: Laboratory medicine has failed to receive due attention in curricula of most medical schools and in hospital plans. The physician is, therefore, often unaware of the more cost effective investigations, performance indices of various tests and the most effective testing options for the clinical condition of a patient. Collaborative care is still a budding idea in most healthcare facilities. Unnecessary or inappropriate testing delays diagnosis affects patient outcome, patient satisfaction and hospital efficiency; and often results in denial of insurance claims.

Discussions: While newer laboratory tests get introduced every day, a clinician is not always aware of its performance indices, hidden lab costs or availability of more cost effective alternatives. Frequency of repeat testing must be regulated to depict a meaningful change in the levels of analyte. Clinicians should consult Laboratorians regarding all these issues. Adoption of Diagnostic Testing algorithms ensures uniformity of care, optimal lab utilization & improvement in efficiency of Clinicians. Insurance claim denials can be minimized by avoiding the traps of unnecessary; or too frequent lab testing. Medical curriculum should lay more emphasis on laboratory medicine.

Conclusions: Pathologists can play a more active role in spreading awareness about appropriate lab investigations. It is desirable for hospitals to adopt diagnostic testing algorithms

to optimize utilization of laboratory resources and to minimize insurance claim denials.

Keywords: Optimal Laboratory utilization, Claim denials, Patient pay, Medical algorithms, Targeted approach to test order, Rational Lab tests, Test order frequency, Appropriate Test frequency, Over ordering.

Introduction

Optimal laboratory utilization may be described as ordering tests appropriate for a clinical condition at an appropriate frequency to achieve good patient outcomes at an affordable cost to the patient and the laboratory. The issue of optimal laboratory utilization is very pertinent in the current health sector scenario where myriad clinical laboratory tests are just a click away from the ordering physician. The importance of selecting & ordering the most rational laboratory tests for a specific patient is heightened in the current age of managed care, medical necessity, outcome-oriented medicine and consumer courts. [1-3]

Objective

Hospitals face a unique paradox today, ever increasing reliance on laboratory results with an easy availability of umpteen testing options vis. a vis. increasing pressure to minimize laboratory costs. It is time to revisit our test ordering practices to ensure most appropriate & cost effective utilization of laboratory services.

Methods

A review of current literature was undertaken to identify the most appropriate laboratory test utilization practices.

Results and Discussions

It is ironic that a practicing physician relies every day on "Laboratory medicine" although most medical schools provide no more than a few scattered lectures on this subject throughout the entire curriculum. More often than not, this education is provided to a practicing clinician by companies introducing novel tests. While ordering investigations, it is vital that clinicians adopt a targeted approach based on an understanding of the major indications, diagnostic performance, the costs involved, the other viable alternatives, the appropriate time and appropriate frequency of ordering a laboratory test. Such an understanding is critical to good laboratory practice and patient outcomes. Appropriate laboratory test ordering is an essential

part of continuous quality improvement [3].

The use of clinical laboratory test results in diagnostic decision making is an integral part of clinical medicine. The menu of laboratory tests available to clinicians constitutes an impressive array that has expanded exponentially since 1920 when Folin and Wu devised the test for quantification of blood glucose concentration [4]. The current list of tests offered by some reference laboratories includes upto 3,000 analytes. Despite this ever-expanding plethora of useful and reliable clinical laboratory tests for diagnosing and monitoring the myriad of diseases effecting mankind, the recent emphasis on reducing health care costs and the emergence of managed care organizations has led to efforts to reduce the abuse (over-ordering) and misuse (eg, ordering the right test for the wrong purpose or vice versa) of these tests.

As government and health insurance companies seek to provide quality medicine cost effectively, they are increasingly focusing on reduction of “unnecessary” laboratory tests. The critical question facing physicians, however, is: what constitutes an unnecessary laboratory test? In the current business model of hospitals, the most common answer would be: any test for which reimbursement by a payer is likely to be denied. The correct answer, however, is: any test for which the results are *not* likely to be “medically necessary” in the appropriate management of the patient’s medical condition. Thus, it is incumbent upon physicians and laboratorians to understand which laboratory tests are appropriate to order in the diagnosis and follow up of a patient’s medical condition [3].

The answers to the following questions are critical to the optimal selection and cost-effective use of laboratory tests likely to benefit patient management:

- Is the test appropriate for clinical presentation of the patient?
- How will the test results influence patient management and outcome?
- Is there a more cost effective alternative?
- What are the consequences of not ordering the test?[5]

The judicious and logical approach to ordering laboratory tests relates to ordering specific laboratory tests based on an assessment of their diagnostic accuracy and predictive value in identifying a particular disease instead of indiscriminate ordering of a large number of laboratory tests that may or may not have adequate diagnostic accuracy and predictive value in identifying a particular disease.

Laboratory testing algorithms or “decision trees” [Figure 1] are particularly useful in establishing a diagnosis based, in part, on information obtained from ordering the most appropriate laboratory tests. Such algorithms are advantageous because they:

- are logical and sequential;
- suitable for reflex testing in laboratory;
- can be automated using a computer to achieve rapid turnaround time of results for tests included in the algorithm;
- maximize a clinician’s efficiency;
- minimize the ordering of unnecessary laboratory tests;

- can be used by ancillary medical personnel (eg, physician assistants and nurse practitioners) assisting physicians;
- can be easily updated with improved strategies for diagnostic decision making as new and better tests become available; and
- are incorporated into software programs that are relatively inexpensive to purchase and use [3, 6, 7].

Since the clinical performance characteristics of all laboratory tests differ with respect to their diagnostic accuracy (i.e., sensitivity and specificity), the selection of the appropriate laboratory test to order will vary depending on whether the test result would be used for diagnosing, monitoring or screening for a disease [5, 8].

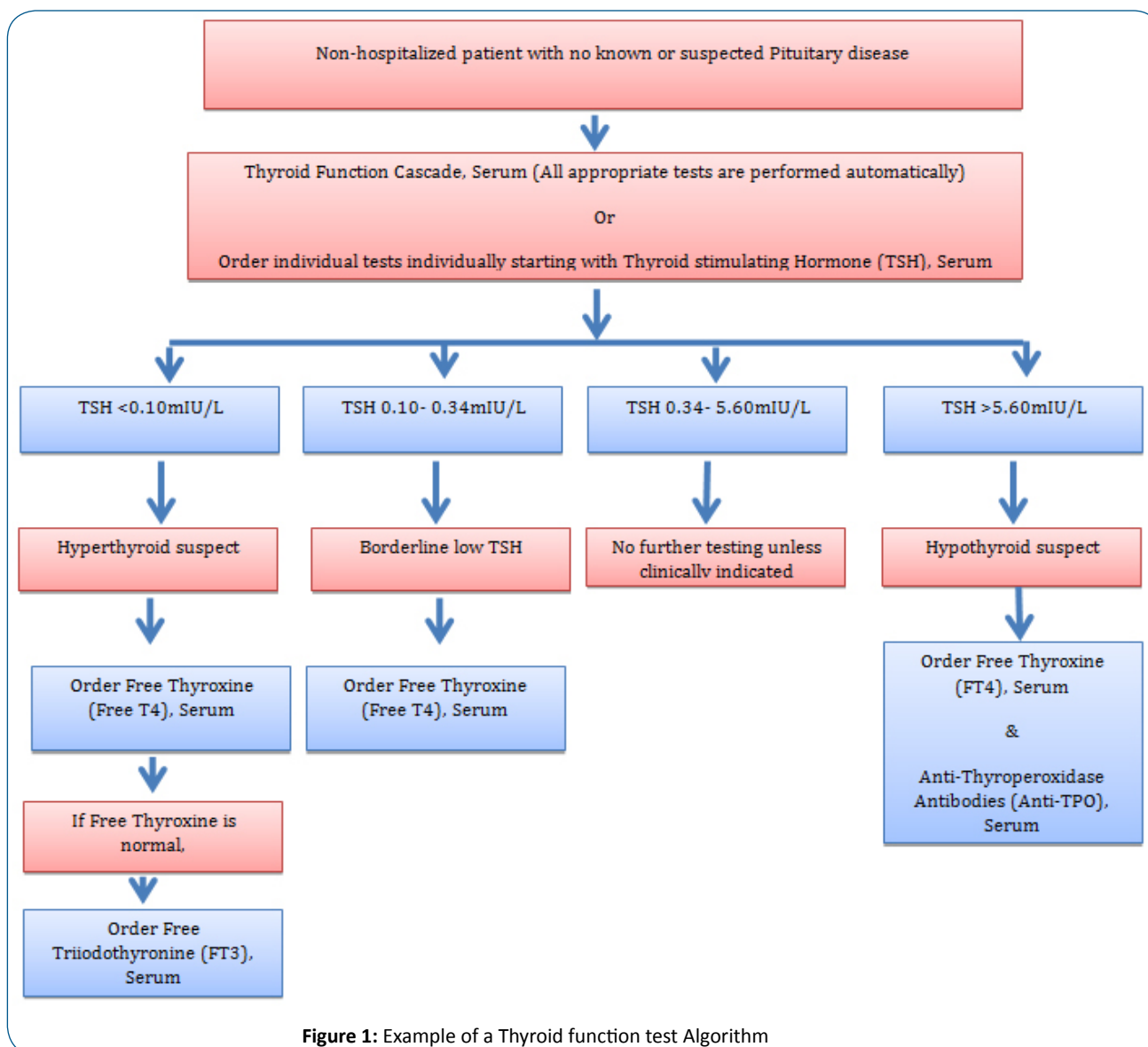
In a situation where patient pays directly for his investigation and treatment, Laboratory is the cash cow of the hospital and more tests result in more income. Yet, in the long run, this practice may result in loss of clientage for the hospital. In the olden times of Patient-pay scenario, a trainee doctor was often encouraged to judge whether it was worth ordering a lowly urine routine examination for a patient taken up for an urgent appendectomy. In managed care setting, in order to avoid claim denials, a clinician must limit investigations to meet Insurance provider’s definition of “reasonable and necessary;” for the patient’s Diagnosis Code [9].

It is also desirable to regulate the frequency of ordering certain laboratory tests. This should include analytes that change slowly physiologically, such that there is rarely a clinical need to monitor them daily or more frequently. Studies of test ordering patterns reveal a significant over-utilization of testing which can cause iatrogenic blood loss, excess labor, and time spent in reviewing the test results. Insurance companies such as Medicare do not cover some laboratory tests if ordered too frequently: glycosylated hemoglobin and lipid profile are common examples [2, 9-11].

When asking the laboratory to introduce a new test, it would be worthwhile knowing that each sample run is accompanied by significant additional lab costs such as cost of quality and full time equivalents (FTEs). Most laboratory reagents come in bulk packages with limited shelf lives. The new test, thus, becomes economically non-viable if there are insufficient test orders.

Here is, thus, a strong case for laboratorians to take up a more active role in suggesting to Clinicians the most appropriate lab investigations for a patient. This may be achieved via combined hospital rounds; clinico-pathological meetings; fruitful telephonic or electronic communication; Reflex testing; Continued professional education lectures; and by participating in formulation of Medical algorithms.

A major misconception among clinicians is the feeling that a laboratory test is more objective than a patient’s history and physical examination. The senior physicians would remember the adage “The physician’s eyes and hands are the best diagnostic tools and he should endeavor to treat the patient, not the laboratory results.” It is important for clinicians and laboratorians to recognize that laboratory data, although potentially extremely useful in diagnostic decision making, should be used only as an adjunct to the constellation of findings (eg, history, physical exam, etc.) relevant to the patient. Laboratory data is never a substitute for a good physical exam and patient history.



Conclusions

Unnecessary and inappropriate laboratory testing delays diagnosis; prolongs hospital stay; decreases efficiency; wastes precious time of technicians, laboratorians and clinicians; leads to repeat sampling and iatrogenic blood loss; drains hospital resources; and can potentially result in loss of clientage.

References

1. Geoffrey B. The laboratory test utilization management toolbox. *Biochem Med (Zagreb)*. 2014; 24(2): 223–234. doi: 10.11613/BM.2014.025.
2. Curtis H Hanson. An introduction to Test Utilization. Mayo Clinic. Available from: <http://www.mayomedicallaboratories.com/articles/overview.html>
3. Frank H Wians Jr. Clinical Laboratory Tests: Which, Why, and What Do The Results Mean? *Lab. Med.* 2009; 40:105-113.
4. Wians FH Jr. Luminaries in laboratory medicine: Otto Folin. *Lab Med.* 2009; 40:1–2.
5. Wians FH Jr, Baskin LB. The Use of Clinical Laboratory Tests in Diagnostic Decision-Making. In: *Handbook of Clinical Pathology*. Chicago: ASCP Press: 2000. p. 9–24.
6. Alonso Cerezo MC, Martín JS, García Montes MA, de la Iglesia VM. Appropriate utilization of clinical laboratory tests. *Clin. Chem. Lab. Med.* 2009; 47:1461-1465. doi: 10.1515/CCLM.2009.335.
7. Yuzuru Takemura1, Haku Ishida, Yuji Inoue and J. Robert Beck. Yield and Cost of Individual Common Diagnostic Tests in New Primary Care Outpatients in Japan. *Clin. Chem.* 2002;48(1):42-54.
8. Lamb CR. Statistical briefing: Estimating the probability of disease. *Vet Radiol. Ultrasound.* 2007; 48(3):297-298.
9. Charles B. Root. Medicare coding and reimbursement for clinical laboratory services. *Clin. Chem.* 1998; 44 (8 Pt 1):1713-1727.
10. Physicians' current procedural terminology. 4th ed. Chicago: American Medical Association; 1998. 567 p.
11. The international classification of diseases. 9th rev. Clinical modification. Los Angeles, CA: Practice Management Information; 1998. 1700 p.