



INTERNATIONAL CONFERENCE ON CLINICAL LABORATORIES:
PRACTICE, MANAGEMENT AND USE

Brussels, Belgium, 25-28 November 1980

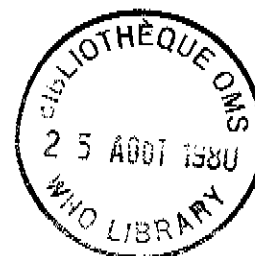
INDEXED

Agenda item I.B.b

IMPROPER USE OF LABORATORY SERVICES

by

Edward L. Cavanaugh, Dr P.H.
Director, Laboratory Management
Consultation Office
Bureau of Laboratories
Center for Disease Control
Atlanta, Georgia
United States of America



Improper use of laboratory services includes overuse and misuse. These services are improperly used "whenever superfluous or repetitious data are obtained or when pertinent data are obtained at inappropriate times in random or illogical sequences, or when the data are ignored or obtained with excessive time, effort, or money."¹ Under certain conditions, laboratory services are improperly used in the United States of America.

In the United States in the 1970's, use of laboratory services increased at an annual rate of about 15% to 18% - more than the annual rate of increase for population growth, inflation, legislative enactments, changes in disease patterns, or any other reasonably related factor.

Today, about 6 billion laboratory tests are being performed each year, at a cost of more than \$ 18 billion a year. Such extensive use, coupled with the annual rate of increase, suggests some improper use, and certainly the need to question whether such extensive use represents improper use.

Studies reported in the scientific literature deal with specific situations and few laboratories; they do, however, indicate that some improper use of laboratory services is occurring.

In a study on the use of laboratories by physicians in a large medical centre, researchers found "in a 60-day period ... inappropriate clinical laboratory use in the workup of patients with a low hemoglobin determination ... in at least 40% of the cases."²

Other researchers reported that during a 4-year period in one large medical centre the average laboratory expense per patient admission increased from \$ 185 to \$ 361, or about 95%, and that it was not unusual for laboratory charges to constitute 5% to 25% of the entire hospital bill.³

They introduced these and some related figures with this comment: "Compounding, intensifying, and focusing attention on the alleged problem of noneffective use of laboratories is the expense of this expanded testing to the patient in this age of economic instability and inflation."³

The issue of this document does not constitute formal publication. It should not be reviewed, abstracted or quoted without the agreement of the World Health Organization. Authors alone are responsible for views expressed in signed articles.

Ce document ne constitue pas une publication. Il ne doit faire l'objet d'aucun compte rendu ou résumé ni d'aucune citation sans l'autorisation de l'Organisation Mondiale de la Santé. Les opinions exprimées dans les articles signés n'engagent que leurs auteurs.

Additional information on increased use and increased costs is presented in another report. Between 1966 and 1970, Griner and Liptzin, at the University of Rochester Medical Center, found that the number of laboratory investigations increased by 95% and that the operating cost of performing those tests increased by 229%.⁴

In a fourth study, researchers found "a heavy reliance upon routine screening procedures, many of which fail to meet established criteria for routine use," and they noted that this confirmed "the opinions of others that multiphasic screening of asymptomatic patients may be overutilized."⁵

In the same study, the researchers found a "discrepancy ... between physician's knowledge of the efficacy of individual diagnostic procedures and the routine use of such procedures."⁵ Thus, physicians seemed to be using procedures which they knew were not of value in diagnosis or therapy. No explanation was given for these actions.

Many factors which contribute to the tremendous increase in the use and cost of laboratory services have been identified. The main ones can be divided into six groups: Medicolegal, Education and training of physicians, Better patient care, Prepaid plans, New/improved technology, and Financial rewards.

1. Medicolegal

In some cases tests are ordered to protect the physician in the event of a malpractice suit and not to help the physician do a better job of diagnosis, screening, or monitoring ... the three main reasons laboratory tests are ordered. One study which addressed the matter showed that physicians ordered only 1% of the tests for medicolegal reasons.⁶ Physicians were, however, asked to recall the reasons for ordering a selected sample of previously ordered tests, and this could have biased the results.

2. Education and training of physicians

During medical school, internship, and residency, the number of laboratory services available is almost unlimited. This accustomed easy availability of tests, the pressure to be "correct", and the lack of solid education in how to use a laboratory effectively cause physicians to make poor use of these expensive services.

Some of the literature related to whether education and training affects physician use of laboratories was reviewed.

Russe presented evidence that education and training in the selection of tests and the use of laboratories is inadequate. He stated: "Another abuse of the laboratory is the unreasonable habit many physicians have of ordering a serial repetition of tests as a routine and continuing the search after one or more of the initial values have been reported as positive."⁷ Russe further stated: "Frequently, when a battery of tests such as a liver profile or a hemogram is done, one value may be reported as abnormal. This observation could have significance and is therefore to be followed - but not with a repetition of the whole battery when repetition of the one test is all that is required."⁷

The reported research and personal observation indicate quite strongly that the efficient and effective use of laboratory services is not taught in medical schools or during internships and residencies. Although no definitive data are available, lack of knowledge in the correct use of laboratory testing does seem to contribute to the problem of improper use of laboratory services.

Continuing education can be expected to affect test ordering practices. Statements have been made, in publications and orally, that the problems of improper use of tests can be solved by continuing education to help change test ordering practices. Throughout the country courses have been developed and taught with the stated objective of providing physicians with newer and better knowledge about the proper use of laboratory tests.

One researcher tested the hypothesis that continuing education helps change test ordering practices and found that it did not. The rate of ordering a thyroid function panel of tests dropped significantly for the first three months of the study period but rose to the preintervention ordering level during the next three months.⁸

Another study examined differences in test ordering practices according to the institution in which the education or training was given. Results showed that the difficulty of a diagnosis had a far greater impact on test ordering practices than the source of education or training. The researcher found that older physicians tend to use fewer clinical and technical resources than younger physicians when there is no ambiguity about a diagnosis. However, when there is ambiguity, older physicians use more clinical, and especially technical services, than younger physicians.⁹

3. Better patient care

Another factor which bears on increased use, and possible improper use, of laboratory services is the assumption that extensive laboratory tests result in better diagnosis and management and, therefore, better patient care. Research shows, however, that, given the limitation of measuring the quality of medical care, extensive testing in the form of chemical batteries or profiles of tests does not improve hospital care nor shorten the time the patient stays in the hospital.¹⁰

4. Prepaid plans

This factor is based on the assumption that people do not get the care they need because of fiscal constraints, and that since prepaid plans free the physician from these constraints, more laboratory services are used. Results of a study in a Health Maintenance Organization (HMO), however, do not support this view. During the early period after enrolment in a prepaid plan, there were statistically significantly fewer contacts (both inpatient and outpatient) during the first three months of the plan than during the second three months. Further, most of the laboratory services were performed to develop baseline data and did not constitute excessive testing for patients who had not previously had easy access to services.¹¹

5. New/improved technology

This factor is based on the assumption that as new or improved technology is developed, physicians avail themselves of the services. Results of research support this view. One report contains this statement: "To improve service, clinical laboratories constantly evaluate new methods and measurements. It is important that the clinical relevance of a new or improved test (i.e., precision, specificity, sensitivity) be considered as well as the cost impact. Only if these considerations are favorable should the new tests or methods be instituted and older tests discarded."¹²

6. Financial rewards

There is some indication that some physicians may order laboratory services because they will profit financially from the work. Although no research, as such, has been reported which addresses this point, there is evidence that some physicians have a direct financial incentive in ordering excessive tests. Many schemes are used, such as kickbacks, exorbitant rental fees, silent ownership, and flat-rate fees for all tests performed. There are numerous exposés in the United States of America which suggest that at least some physicians order excessive tests for purely monetary reasons.

A logical question is "Where do we go from here?" There is a growing concern, in the United States at least, that laboratory services are improperly used. Since people do not agree on the factors which are responsible for improper use, a great deal of study is necessary as we begin to look at processes or methods for bringing the system of laboratory services under control.

Many observers recognize that some kind of control must and will be exercised. In the United States, either the profession will police itself, or the government, which pays a significant part of the total health care costs, will mandate controls. Government intervention may be very expensive, but in the face of the rapidly escalating costs of health care, this will not deter action.

Various approaches to controlling abuses of laboratory testing have been discussed but not fully acted upon. Some of these approaches are:

1. Restricting the tests a physician may order by listing the tests, by disease or condition, which an attending physician may order.
2. Restricting the tests that an inpatient facility may offer on the basis of the expected patient population and the kind of medical practice conducted in the facility.
3. Establishing a formal mechanism for evaluating each patient and reviewing the tests ordered for the particular episode of illness.
4. Developing a mechanism for peer review of tests ordered and their relevance to a patient's care. Such a mechanism would provide that, if the review warranted it, a physician's authority to order other than basic tests could be limited.
5. Eliminating requirements for a battery of admission tests and, instead, having the admitting physician order individual tests for a patient.
6. Changing hospital accreditation requirements so that they will more effectively control abuses of laboratory testing.

REFERENCES

1. Murphy, J. & Henry, J. B. "Effective Utilization of Clinical Laboratories." Human Pathology, Vol. 9, No. 6, November 1978, p. 626.
2. Wheeler, L. A., Brecher, G. & Sheiner, L. B. "Clinical Laboratory Use in the Evaluation of Anemia." Journal of the American Medical Association, Vol. 238, No 25, December 19, 1977, p. 2712.
3. Murphy & Henry, p. 626.
4. Hardwick, D. F., Vertinsky, P., Barth, R. T., Mitchell, V. F., Bernstein, M. & Vertinsky, I. "Clinical Styles and Motivation: A Study of Laboratory Test Use." Medical Care, Vol. XIII, No. 5, May 1975, p. 398.
5. Greenland, P., Mushlin, A. I., and Griner, P. F. "Discrepancies Between Knowledge and Use of Diagnostic Studies in Asymptomatic Patients." Journal of Medical Education, Vol. 54, November 1979, p. 867.
6. Wertman, B. G., Sostrin, S. V., Pavlova, Z., & Lundberg, G. D. "Why Do Physicians Order Laboratory Tests? A Study of Laboratory Test Request and Use Patterns." Journal of the American Medical Association, Vol. 243, No. 20, May 23/30 1980, p. 2080-2082.
7. Russe, H. P. "The Use and Abuse of Laboratory Tests." Medical Clinics of North America, Vol. 53, No. 1, January 1969, p. 230.
8. Rhyne, R. L. & Gehlbach, S. H. "Effects of an Educational Feedback Strategy on Physician Utilization of Thyroid Function Panels." The Journal of Family Practice, Vol. 8, No. 5, 1979, p. 1005.
9. Pineault, R. "The Effect of Medical Training Factors on Physician Utilization Behavior" Medical Care, Vol. XV, No. 1, January 1977, p. 64.
10. Murphy & Henry, p. 626.
11. Forthofer, R. N., and Glasser, J. H. "Utilization of Services of an HMO by New Enrollees." American Journal of Public Health, Vol. 69, No. 11, November 1979, p. 1127-1131.
12. Murphy & Henry, p. 627.

= = =