

# **Study Reducing Unnecessary Hospital Testing**

Report Prepared by the  
HM14 Committee

Convened by the  
New Mexico Department of Health



September 24, 2010

## **Introduction**

House Memorial 14 (HM14), passed during the 2010 Legislative Session, requested the Department of Health to:

- Study the feasibility of conducting a pilot project to reduce the utilization of unnecessary laboratory testing in hospitals;
- Consult with and utilize the services of a statewide clinical lab in developing the project and identifying standards for the reduction and elimination of unnecessary laboratory testing in hospitals; and
- Report to the Interim Legislative Health and Human Services Committee by September, 2010 on the feasibility of implementing such a pilot project.

The Department of Health appreciates the opportunity to review this important topic, cite effective interventions to reduce or eliminate unnecessary laboratory testing, and to estimate the cost to pilot such an intervention in New Mexico. While current Department resources cannot support a more robust analysis and planning process for such a pilot at this time, this report is a first step towards the goal of reducing and eliminating unnecessary laboratory testing in hospitals. Such cost-saving and quality improvement initiatives will be essential in implementing and sustaining affordable health care in the coming years.

## **Process**

The Department convened a committee consisting of experts in hospital laboratory testing, reference laboratory testing, clinical translational research, hospital-based clinical care, and epidemiological analysis of data. The committee met twice and drew upon the knowledge and experience of these experts, who included:

- Karen Armitage, MD, Chief Medical Officer, NMDOH, Convener
- Gary Overturf, MD, Medical Director, Infectious Disease, TriCore Reference Laboratory
- Michael Crossey, MD, Medical Director, Clinical Pathology, TriCore Reference Lab.
- Richard Larson, MD, PhD, Vice President for Research, University of New Mexico Health Sciences Center (UNM HSC)
- Tom Williams, MD, Chair, Department of Pathology, UNM HSC
- David Mills, PhD, Director, Scientific Laboratory Division, NMDOH
- Mack Sewell, PhD, MPH, Director, Epidemiology and Response Division (ERD), NMDOH
- Michael Landen, MD, MPH, Deputy Director, ERD, NMDOH
- David Selvage, PA-C, Clinician Epidemiologist, Region 2, Public Health Division, NMDOH

## **Background Information**

It has been estimated that up to one-third of all hospital laboratory testing is unnecessary<sup>i</sup>. The combined impact of duplicate, obsolete and inappropriate testing in New Mexico, based on the average cost derived from two separate methods of calculation, suggests that at least 18% of laboratory tests performed in New Mexico may be unnecessary<sup>ii</sup>. In a major New Mexico laboratory, data mining to identify inpatient tests that were repeated within one hour, or outpatient tests that were repeated within one day, revealed that an estimated 156,000 duplicate tests were performed in New Mexico at an annual cost of \$1,872,000<sup>iii</sup>. The potential savings from eliminating all unnecessary testing is close to \$60 million to New Mexico<sup>iv</sup>.

Unnecessary laboratory testing isn't just a cost issue – it is also a patient care issue. An estimated 70% of medical decisions are driven or monitored by laboratory test results<sup>v</sup>. It is estimated that a patient who gets 10 unnecessary lab tests during a hospitalization has a 40% chance of getting a false positive lab result, which can result in further testing and diagnostic procedures, delays in diagnosis, misdiagnosis, or inappropriate treatment<sup>vi</sup>. Most of the cost of unnecessary laboratory testing in hospitals arises from the ordering of routine tests, rather than highly specialized or unusual lab tests. The most common cause of unnecessary laboratory testing in hospitals is repeat orders for tests that have already been done<sup>vii</sup>.

## **Evidence-based Interventions**

Interventions to reduce unnecessary laboratory testing in hospitals over the past 25 years by educating providers or redesigning laboratory requisitions produced mixed or transitory results<sup>viii</sup>. More recently, unnecessary laboratory testing in hospitals has been successfully reduced via systemic changes in the way hospital laboratory tests are ordered and managed. Two examples of such system changes: 1) the elimination of standing orders for laboratory tests and 2) cancellation of duplicate, unnecessary or inappropriate laboratory tests ordered after orders are placed<sup>ix</sup>.

A New Mexico laboratory that made such systemic changes realized savings of \$75,000 over a six-month period. In addition, systemic changes made did not adversely affect the quality of care of patients, an important consideration in any intervention adopted to reduce unnecessary laboratory testing in hospitals<sup>x</sup>.

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<sup>i</sup> Gortmaker SL, Bickford AF, Mathewson HO, et al. A successful experiment to reduce unnecessary laboratory use in a community hospital. *Med Care* 1988; 26:631-642.

<sup>ii</sup> Brimhall, BB, Chief Medical Officer, TriCore Reference Laboratories, unpublished data.

<sup>iii</sup> *ibid*

<sup>iv</sup> *ibid*

<sup>v</sup> American Clinical Laboratory Association, [www.clinical-labs.org/issues/value/index.shtml](http://www.clinical-labs.org/issues/value/index.shtml), accessed August 27, 2010

<sup>vi</sup> May TA; Clancy M, Critchfield J, et al. Reducing Unnecessary Inpatient Laboratory Testing in a Teaching Hospital *American Journal of Clinical Pathology*. 2006;126(2):200-206

<sup>vii</sup> *ibid*

<sup>viii</sup> *ibid*

<sup>ix</sup> *ibid*

<sup>x</sup> Overturf, G. Medical Director, Infectious Diseases, TriCore Reference Laboratories, personal communication.

## **New Technology on the Horizon**

Ideally, orders for unnecessary laboratory tests would be *prevented* at the time providers attempt to order a test, with clear and immediate direction to the provider about why the test is unnecessary or inappropriate. New medical order systems being adopted by hospitals called computer-based clinician-physician order entry (CPOE) could provide a just-in-time alert to clinicians attempting to order unnecessary or inappropriate laboratory tests. CPOE systems that provide immediate feedback and direction are functioning as clinical decision support tools (CDS), which potentially could reduce costs and improve outcomes in many areas of health care delivery.

A CDS system recently implemented in a New Mexico hospital was shown to reduce unnecessary prescribing of antibiotics for four diagnostic categories, and to increase appropriate diagnostic studies for a fifth diagnostic category<sup>xi</sup>. A recent, concise summary of CDS systems noted that:

- CDS, when well-designed and implemented, holds great potential to improve health care quality, increase efficiency, and reduce health care costs.
- Failure to attend to CDS alerts and recommendations poses challenges for those developing, implementing, and using CDS.
- Researchers and vendors alike should address cognitive, informatic, structural, and workflow issues to optimize CDS design, implementation, and integration into clinical workflow<sup>xii</sup>.

## **Estimated Cost to Study Unnecessary Laboratory Testing in New Mexico:**

To study unnecessary laboratory testing, institute an intervention in a pilot hospital, and disseminate a successful model to all New Mexico hospitals would require three categories of resources<sup>xiii</sup>:

- Resources to compile baseline data on current laboratory testing in a pilot hospital laboratory: \$200,000 to compile baseline data for commonly ordered tests.
- Resources to design, implement, and evaluate an evidence-based intervention to reduce unnecessary laboratory testing by 15-20%: \$230,000 for 2.0 advanced practice nurse FTEs, 0.2 FTE clinical laboratory technologist and 0.2 FTE physician with laboratory expertise, and 0.10 IT specialist for one year.
- Resources to disseminate pilot results and offer technical training and support to other hospitals: \$70,000 for 0.33 FTE advanced practice nurse, 0.33 laboratory technologist, and 0.10 FTE IT specialist to train all New Mexico hospital laboratory directors and medical directors on the model in one year, using teleconferencing to reduce travel, and keep associated time and costs to a minimum.

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<sup>xi</sup> Selvage, WD, Region 2, PHD, Department of Health, Unpublished data, CDC-funded study

<sup>xii</sup> Berner ES, Clinical Decision Support Systems: State of the Art, Agency for Healthcare Research and Quality, AHRQ Publication No. 09-0069-EF, June 2009

<sup>xiii</sup> Armitage, KJ, estimates based on interviews with laboratory data-mining experts and mid-point salaries + benefits for selected health professionals