Cleveland Clinic
Laboratories

# Strategies for Appropriate Test Utilization

## The Right Test for the Right Patient at the Right Time

Gary W. Procop, MD

**Gary W. Procop, MD**

Medical Director, Enterprise Test Utilization & Pathology Consultative Services

Director, Molecular Microbiology, Parasitology and Mycology Laboratories

Professor of Pathology, Cleveland Clinic Lerner College of Medicine

The current healthcare climate is providing a great opportunity for pathologists and other laboratorians to take a leadership role in decreasing unnecessary laboratory testing. Decreasing unnecessary testing results in decreased phlebotomy and potentially iatrogenic anemia, increased patient satisfaction and reduced overall healthcare costs. Presented here are successful strategies we developed and/or implemented to reduce inappropriate laboratory testing.

Unnecessary testing presents patient satisfaction and safety issues. The more tests performed, the greater the potential for error (i.e., there is a false-positive rate associated with any test that has a specificity less than 100%). From a patient satisfaction standpoint, it stands to reason that fewer phlebotomies would be associated with greater satisfaction. From a patient safety standpoint, excessive phlebotomies may cause iatrogenic anemia, which is associated with poor wound healing and increased infection rates. Finally, overutilization of laboratory testing also creates unnecessary financial burdens for hospitals, patients and third-party payers in this ever-tightening era of healthcare reform.

Addressing this issue at Cleveland Clinic, a physician-led group practice, was a substantial challenge, given the sheer size of this tertiary care medical center, the volume of laboratory testing and the complexity of our patient population.

Our success was made possible through an open and transparent process, the support of leadership, the multi-disciplinary participation of individuals from throughout the organization, our willingness to learn and change, and the inclusion of high-level partners from Information Technology (IT).



The Test Utilization Committee at Cleveland Clinic is a multidisciplinary taskforce whose members are interested in defining best practices associated with laboratory testing. This group truly adheres to Cleveland Clinic's "Patients First" principle. We would never compromise the quality of care for cost savings. If an expensive test is needed to secure a diagnosis or guide therapy, then we support the use of such tests. However, we recognize there is substantial waste in the system and that better utilization of these resources could also contribute to enhanced patient care by bettering the system as a whole.

To enhance membership, diversity and expertise, we submitted invitations for participation to all Institute and Department Chairs in our institution. It is a committee open to anyone interested in defining best practices, optimizing test utilization and performing cost-effective medicine. We also partnered with high-level information technology officers to aid in the electronic implementation of our endeavors, largely through the computerized physician order entry system (CPOE). Both our Institute Chair and the Chief of Medical Operations, who in turn received support from the Chief of Staff and CEO, approved the entire process.

## The Same Day Duplicate Test Reduction Initiative

The advent of CPOE systems allows the opportunity to interact with physicians at the point-of-test entry, so as to assist with optimal ordering. Such methods can be used to guide physicians to the correct test, when the test selection is complex and it can be used to notify the physicians of duplicate test orders. It is important to be sensitive to the physician's perspective, since excessive alerts are intrusive and distracting and, therefore, often ignored.

We discovered in early pilot studies that the use of best practice alerts (BPA) had mixed results. The BPA designed was essentially a "pop-up" window that notified the physician that the test they were trying to order had already been ordered that day. The clinician then had to choose whether or not to proceed with the duplicate order. Clinicians with subspecialty expertise who were caring for a select patient population tended to do the right thing, which was not order the duplicate test. In contrast, when we introduced this same type of intervention for all providers for a commonly used laboratory test (e.g., *C. difficile* testing), then the alert was largely ignored. We have evidence that, when offered the opportunity to electronically bypass, these busy providers often just "clicked through" the alert. These studies provided evidence that a hard stop option should be explored to eliminate or drastically reduce this unnecessary, duplicate testing.

The test utilization committee, in partnership with information technology representatives and institutional leadership, embarked on what would come to commonly be known as the "Hard Stop" initiative. We first identified a dozen tests that were deemed never to be needed more than once per day in medical practice. These were vetted by the entire medical staff through notification on the institutional web page, which is the home page for all providers. Although we were allowed to initiate a full electronic stop on these duplicate orders, we were also required to build an alternative avenue for ordering, in the event the attending physician absolutely wanted the repeat test. We achieved this through the engagement of our Client Services Department, which would record the name of the ordering physician, their department, and the reason the duplicate test should be performed. Providers that demanded duplicates were few, but the information gathered was educational and provocative.

There were no provider complaints associated with this initiative, so we progressively activated the hard stop clinical decision support tool (CDST) for all tests the Test Utilization Committee deemed to be appropriate. In a conscious manner to achieve substantial success and avoid conflict and complaints, any tests for which there was any contention were not assigned to this list. This substantial implementation was associated with only minor unanticipated complications, which were rapidly resolved. The presence of an informational technologist, who was intimately engaged in this project and who could quickly remove tests from the hard stop list, was critical to responding rapidly to clinical needs and helping to maintain end-user confidence in the process.

In the first full year of implementation of the Same Day Duplicate Test Reduction Initiative, the 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 $115,590. Costs associated with providers either performing phlebotomies (i.e., nurse draws) or responding to duplicate test results was not captured, but may be equally significant. We reviewed patient safety data for the first year and there were no issues associated with this intervention. Since it began in January 2011, this initiative has resulted in stopping 18,160 unnecessary duplicate tests for a cumulative cost savings of $295,507 (Figure 1). This initiative is considered a success, since it is thought to have improved patient care and satisfaction by decreasing unnecessary phlebotomies, and decreased costs.



## Restricting the Ordering of Genetic Tests

Genetic testing has become extremely complex and very costly. We were concerned with test ordering patterns, since there were very few individuals who could adequately interpret these tests, yet any intern or resident could order the assay. Therefore, we undertook our second major initiative, which was limiting the individuals who could order complex molecular genetic tests, some of which cost thousands of dollars. We reasoned that since chemotherapy is only given by an oncologist and certain antimicrobials are limited to infectious disease clinicians, then some restrictions would be appropriate. We proposed that the best practice would be to limit the ordering of complex molecular genetic tests to those individuals who were knowledgeable about the diseases for which the tests were designed (i.e., they routinely cared for the select patient population that required testing).

With the support of institutional leadership, we offered "deemed status" to physicians who met the above criteria. These individuals could order molecular genetic tests on an outpatient basis, whereas inpatient testing required a consultation with Medical Genetics. Individuals who were not a "deemed user" could obtain the genetic testing, but only after consultation and approval of either Medical Genetics or another deemed user, or approval by the laboratory. Laboratory approval included a thorough review by a genetics counselor, as well as approval by the molecular genetic pathologist. Started in November 2011, this initiative has resulted in the avoidance of 273 tests for a cumulative cost savings of $711,026, as of December 2013 (Figure 2). This was both an inpatient and outpatient initiative. The outpatient component was associated with a loss of revenue, but this was considered acceptable by the institution since it was considered a best practice.

Significant credit is given to institutional leaders who will take a monetary shortfall to implement a best practice. Truly, a path less traveled.

### Genetics Testing Review and Triage

The presence of genetics counselors within the laboratory has proven to be highly successful in other reference laboratory settings. These highly knowledgeable individuals can participate in the sign-out of complex genetic test results (e.g., chromosomal microarray analysis) and provide great pre-analytic value through test selection guidance and triage. These individuals also contribute in the post-analytic setting by providing guidance with respect to the need for genetic counseling and follow-up testing. There are some instances wherein the genetics counselor needs the assistance of a pathologist trained in genetics and/or molecular genetic pathology (MGP). We have employed a genetics counselor and a molecular genetic pathologist to review testing requests and interact with clinicians to guide testing and help stop unnecessary testing.

The interventions and guidance from this team in 2013 resulted in the prevention of 151 unnecessary genetic tests and a cost avoidance of $340,966. The impact of all interventions of this team, which began in September 2011, has resulted in the prevention of 261 unnecessary orders for a total cost avoidance of $820,887 (Figure 3). Significantly, this approach does not just stop unnecessary testing, but also provides guidance to the appropriate test — that's World Class Care!

### Regional Smart Alerts

An initiative was undertaken to expand the best practices and cost-savings initiatives achieved with the Hard Stops to Cleveland Clinic's regional hospitals. Through discussions with all involved, it was decided the Hard Stop CDST would not be optimal for the regional hospitals for a variety of reasons, including provider mix and incomplete provider use of order entry. Therefore it was decided that a duplicate order notification (i.e., a Smart Alert) would be the best CDST to introduce.

Although providers are discouraged from proceeding with the duplicate test in the Smart Alert configuration and are provided the results from the previous test, if available, they have the ability to continue and place the duplicate order from their workstation. Although there is some benefit from this type of intervention, it is clearly not as effective as the Hard Stop CDST.



Begun in February 2013, this initiative has prevented 5,625 duplicate tests for a total cost savings of $46,031. However, the Smart Alert was activated 14,020 times, so the 5,625 times clinicians adhered to the alert represents only a 40.1% success rate for this intervention. When compared with the 93% success rate of the Hard Stop CDST, it suggests there are some missed cost-savings opportunities with this type of CDST (Figure 4).

### Expensive Test Notification

This initiative was undertaken to make providers aware of the costs of tests that exceed $1,000. The notifications were bracketed in $1,000 increments (i.e., >$1,000, >$2,000, etc.) (Figure 5). The project began in March 2013 and by December 2013, 66 expensive tests have been averted based on this notification (i.e., the provider began to place the order, the alert fired, and the provider did not continue to place the order). These resulted in a cost savings of $91,828.

Figure 1

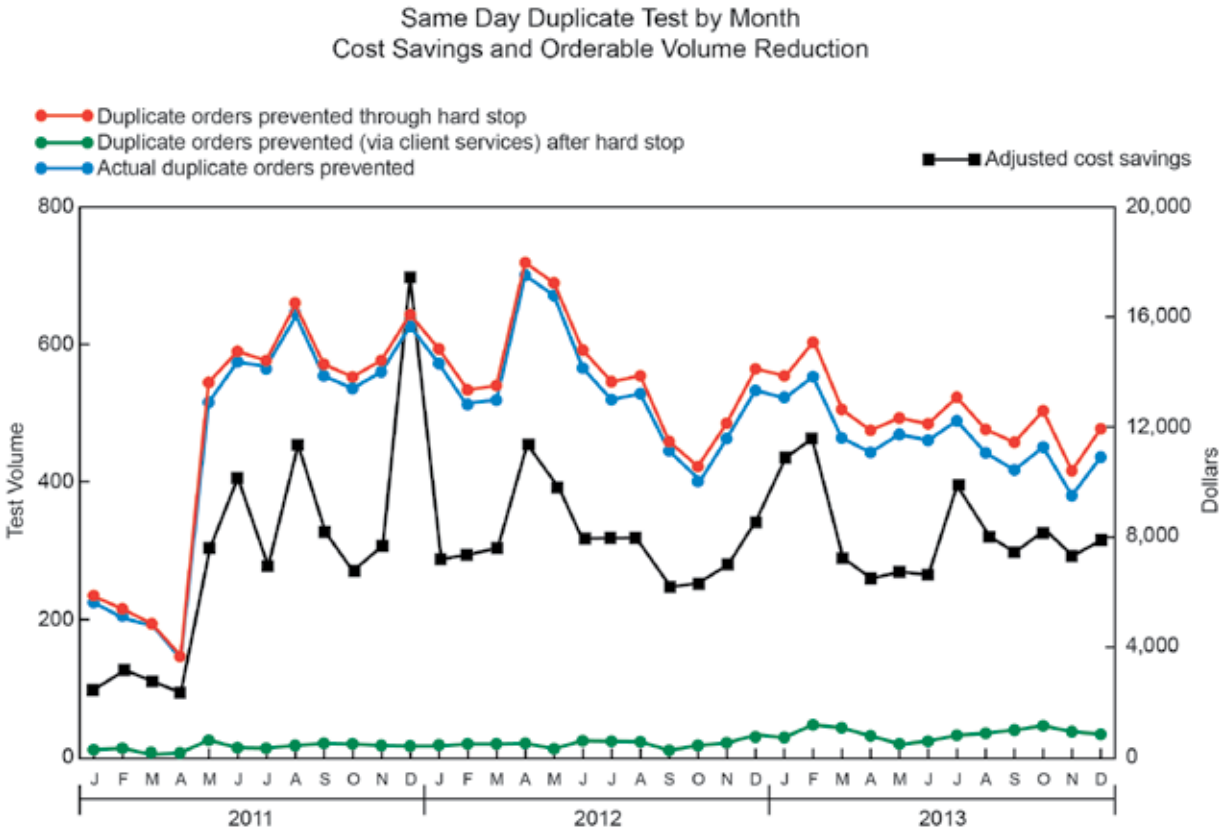


Figure 2

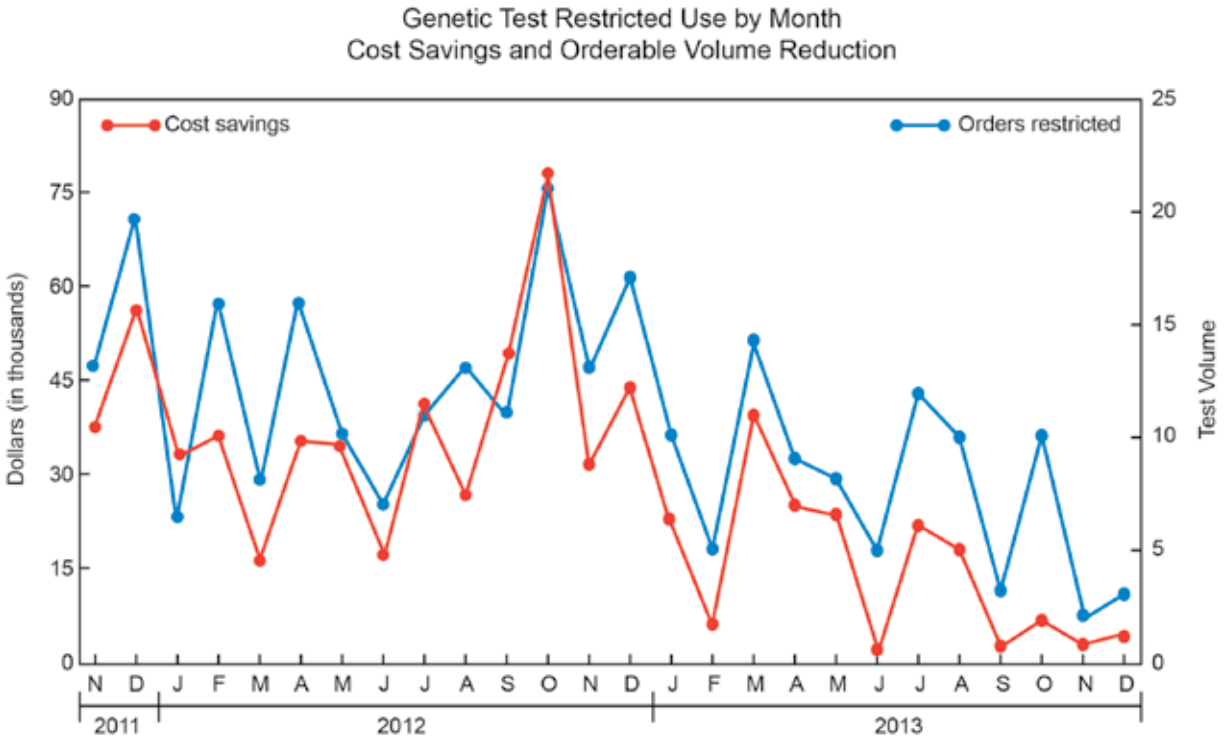

Figure 3


Figure 4

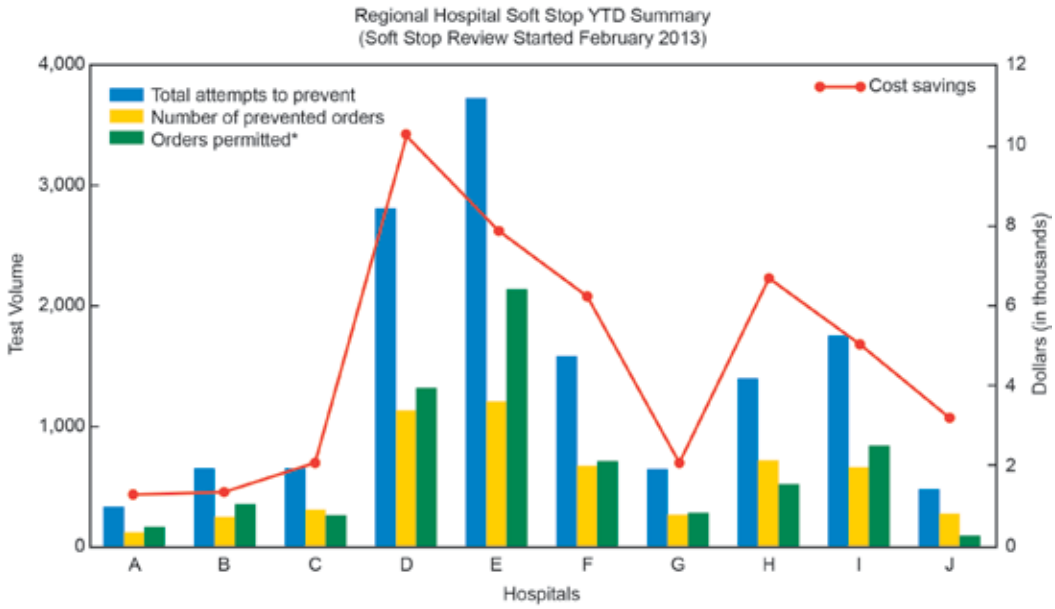


Figure 5

## Cumulative Cost Saving through December 2013

| | | | |
|---|---|---|---|
| 1. | Hard Stops | 18,160 | $295,507 |
| 2. | Restricted Use | 273 | $711,026 |
| 3. | Genetics Counselor/MGP | 261 | $820,887 |
| 4. | Regional Smart Alert | 5,625 | $ 46,031 |
| 5. | Expensive Test Notification | 66 | $ 91,828 |
| | **TOTAL** | **24,385** | **$1,965,279** |

## The Future

There are a number of new initiatives under way or planned. These include an "extended hard stop" project that will extend the time period during which a duplicate test will not be allowed. For example, a constitutional molecular genetic test never needs to be repeated in a patient's lifetime. Additionally, it is clear that there is no value to a repeat *C. difficile* PCR testing within seven days of having received a positive result and the value following a negative result within this time frame would be minimal at best. Finally, a CDST is being deployed to stop ova and parasite and stool culture order requests on patients hospitalized more than three days. These and other projects will occupy the time of Cleveland Clinic's Test Utilization Committee in the near future, as we continually strive to improve patient care and prepare for the challenges of health care reform.

## Conclusion

The Test Utilization Committee has raised the bar in asking for a quality assessment, "is this test really needed?" Multidisciplinary collaborations, institutional support, good project management and reporting, and great informational technology support led to results that no one group could have achieved alone. Most importantly, we believe we have improved the patient experience, decreased unnecessary phlebotomy for the commonly used tests, improved the use of molecular genetic tests and decreased healthcare costs.

Importantly, our initiatives never interrupted patient care. While we wanted to ensure there was considerable thought before a test was ordered, we have always provided an avenue for ordering if the physician really believed he or she needed a test. The entire process has been an enjoyable lesson in team building and enhancing practice within the system.

## Keys to Our Success

- A multidisciplinary group of individuals representing many areas of the organization
- An open, transparent and collaborative process.
- Team members focused on optimal patient care, improving the patient experience, decreasing phlebotomy and reducing costs
- Participants are more interested in improving patient care than reducing costs
- Collaborative meetings with mutual respect, acceptance, and healthy and collegial debate and innovation.
- Rational, evidence-based initiatives
- Good project management with regular results reporting with shared success.
- Leadership support
- Top-down support with bottom-up team building
- Inclusion of high-level partners from Information Technology
- The ability of IT to rapidly respond to change requests
- "Pre-selling" initiatives with the opportunity for feedback
- Anyone affected by a decision should be involved in the decision
- A willingness to learn and change
- Recognizing you do not have to win every battle to win the war

Pathologists and laboratorians are in a unique position, as individuals with oversight of many of these tests, to take a leadership role in test utilization and function at the systems level in their institution.

Build or participate in a Test Utilization Committee today!

**CONTACT INFORMATION:**

**Cleveland Clinic Laboratories**
**9500 Euclid Avenue**
**Cleveland, Ohio 44195**

**216.444.5755**

**800.628.6816**

**clevelandcliniclabs.com**

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9500 Euclid Avenue, Cleveland, OH 44195

Cleveland Clinic is an integrated healthcare delivery system with a main campus. 18 family health centers, eight community hospitals and locations in Ohio, Florida, Nevada, Toronto and Abu Dhabi. It is a not-for-profit group practice where nearly 3,000 staff physicians and scientists in 120 medical specialties collaborate to give every patient the best outcome and experience. Cleveland Clinic is ranked among America's top hospitals overall, and among the nation's leaders in every major medical specialty *(U.S.News & World Report).*
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