

# The Value of the Laboratory in the New Healthcare Model

Diagnostic Information: The New Currency  
in the Future of Healthcare

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## The 50 Million Dollar Question...

Dan Scully, CEO at Buffalo Medical in New York, calls it “the 50 million dollar question”: as healthcare reform necessitates a shift from a fee-for-service reimbursement model to a value-based model, does the laboratory offer enough value in service and speed of results to convince practice administrators that it needs to stay safely ensconced within the facility? “Right now,” Dan says, “I absolutely see the value of keeping the lab on-site for the service level it provides. But the question becomes, over time, for that convenient service, can we continue to make that a profitable part of our practice as market forces continue to change?”

This white paper will address this question, discuss why these changes are taking place, discuss the redefining of value that internal laboratories add, and outline potential ways that labs can contribute to patient care above and beyond test reimbursement. Perhaps if we try to understand why these changes in healthcare are taking place, we can begin to determine where the laboratory will fit in this new model and how the laboratory can best support the focus of a patient-centric, value-based healthcare model.

It is widely acknowledged that the lab plays an extremely valuable role in providing the clinical data that providers use to pinpoint an early and accurate diagnosis, that labs are instrumental in providing many of the screening tests needed for preventive care, and that lab results are vital in monitoring disease progression and treatment efficacy. Michael Ashanin, COO at Central Ohio Primary Care (COPC), agrees. “The lab plays a key role in providing physicians with essential data that is the footprint, the blueprint, for the planning process; it can be a periscope seeing what’s downstream to help physicians better manage and treat patients,” says Ashanin.

## Healthcare Conundrum

Although tremendous advances have been made in medical science and technology throughout the last decade, the healthcare delivery system in the U.S. has become increasingly fractured and incapable of providing consistent, high-quality care to all Americans.<sup>1</sup> Despite being able to map the entire human genome, perform robot-assisted surgeries, and monitor blood pressure and cardiac rhythm via smartphone apps, our nation’s healthcare delivery system remains grossly inefficient.

In March of 2001, the Institute of Medicine (IOM) published their report, *Crossing the Quality Chasm*, commenting that, “Healthcare today harms too frequently and routinely fails to deliver its potential benefits. Between the healthcare we have and the care we could have lies not just a gap, but a chasm.”

In response to this, pursuit of value-based healthcare has now become the focus of health policy in the U.S. As healthcare focuses on turning the current fee-for-service reimbursement models into



value-based models in an effort to repair the “fractured” system that is in place, and in response to the Patient Protection and Affordable Care Act (PPACA), how will this impact the pathologists and the laboratory? If the lab is no longer a profit center that determines their Return on Investment (ROI) based on a fee schedule, then how will the lab’s value be determined? What will the new structure look like? Where will the laboratories best serve the patients in a value-based system? What pluses can laboratories provide that will increase their value and enhance patient outcomes? Michael Ashanin summarizes the dilemma: “The real issue is, in risk value-based contracting, where you have a percentage of premiums allocated to you, if a national lab can provide testing for less, why wouldn’t an organization do their due diligence? That’s a challenging question and a challenging situation.”

### Triple Aim & the PPACA

Building on the 2001 IOM report that called for safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity in our health care performance, Don Berwick, former Center for Medicare and Medicaid Services (CMS) administrator and Institute for Healthcare Improvement (IHI) CEO, with coauthors, presented the Triple Aim vision. They suggested that reforming the American healthcare system could be achieved by engaging in three concurrent goals: improving the experience of care, improving the health of populations, and reducing per capita healthcare costs.<sup>2,3</sup> Berwick suggested that we focus on the front-end causes of poor health, such as poor nutrition, lack of physical activity, and substance abuse.

The Triple Aim concept is now at the center of U.S. healthcare delivery system reform efforts. The PPACA mandated that the Health and Human Services (HHS) Secretary establish a National Strategy for Quality Improvement in Health Care (the National Quality Strategy) that builds on the Triple Aim goals.<sup>4</sup> These are the broad goals that are being used to guide national efforts to improve the quality of healthcare in the U.S. Laboratory professionals will need to begin to look at the overall goals of patient-centered care and determine what changes need to be made to best support the Triple Aim goals.

### Molecular & Genetic Advances are Coevolving

As the healthcare arena transitions, we are simultaneously seeing tremendous growth in molecular testing that will influence the significance of laboratory testing in the new reimbursement model. It is well acknowledged and anticipated that gene mapping and molecular testing advances will transform the way diseases are diagnosed and treated. In fact, today, for only \$99, healthcare consumers can explore their DNA on websites such as <https://www.23andme.com/>, and the federal government is already preparing for a future in which all babies will have their genomes sequenced at birth.<sup>5</sup>



Additionally, genetic testing is predicted to grow 26% annually through 2015 according to the Global Genetic Testing Market Forecast to 2015. Much of the increase in the cost of laboratory testing is due to significant growth in molecular and genetic studies.<sup>5</sup>

Completion of the human genome project has expanded the possibilities for targeted personalized therapies, specifically in the area of oncology, where a tumor can be sequenced and specific treatments can be prescribed based on specific mutations. In oncology, there are currently a number of companion diagnostic markers that are already developed for targeted therapies. In addition, companion diagnostics are being used to predict toxicity, efficacy, and drug dosage to ensure best success of treatments.<sup>6</sup> Knowing the presence or absence of mutations in a certain gene can guide the treatment path for that patient more precisely.

Newly relevant biomarkers allow providers to proactively order molecular testing to improve patient outcomes. Oncologists are almost universally appreciative when they receive a pathology report with a definitive diagnosis accompanied by results for all clinically relevant biomarkers.<sup>7</sup> This growth in companion diagnostics and molecular testing coincides with the changes in the way our healthcare is being structured and reimbursed and will have an impact on the changes taking place in laboratory testing.

### Increase Efficiency—but not just for the Lab

Years ago, laboratories were evident as revenue centers, with providers ordering tests and payors willing to reimburse. Now, with ever-diminishing laboratory profit margins, many labs have become cost centers. As administrators begin to categorize laboratories as a cost concern, their best placement in healthcare comes into question. Why keep the laboratory in-house when you can outsource and not decrease the overall profit margin?

Being on the border between a profit center and a cost center should spur laboratories to seek out more creative ways to demonstrate value. Laboratories have to rethink and align their goals with the organizational goals and actively pursue ways to increase the success of the group that they serve. One element of similarity among labs is that they all have had to deal with cuts in reimbursements and miniscule budgets for many years. Laboratories of the future will continue to try and find the best ways to be as efficient as possible. The difference, however, will be that the focus will not be on individual reimbursements per CPT code, but on reducing overall costs to contribute to larger organization-wide savings and to provide value in ways that best support the clinician in daily encounters with the patients.



As difficult as it is to measure, the way to benefit the overall organization from a revenue standpoint is to reduce the cost of the overall patient interaction. Laboratories can impact this by increasing the speed and accuracy of correct diagnoses, monitoring patient health to prevent disease, providing rapid turnaround times that allow reduction in length of hospital stays, and promoting the most appropriate test selection options with applicable interpretations in order to help avoid adverse events and point to the most appropriate treatment protocol.

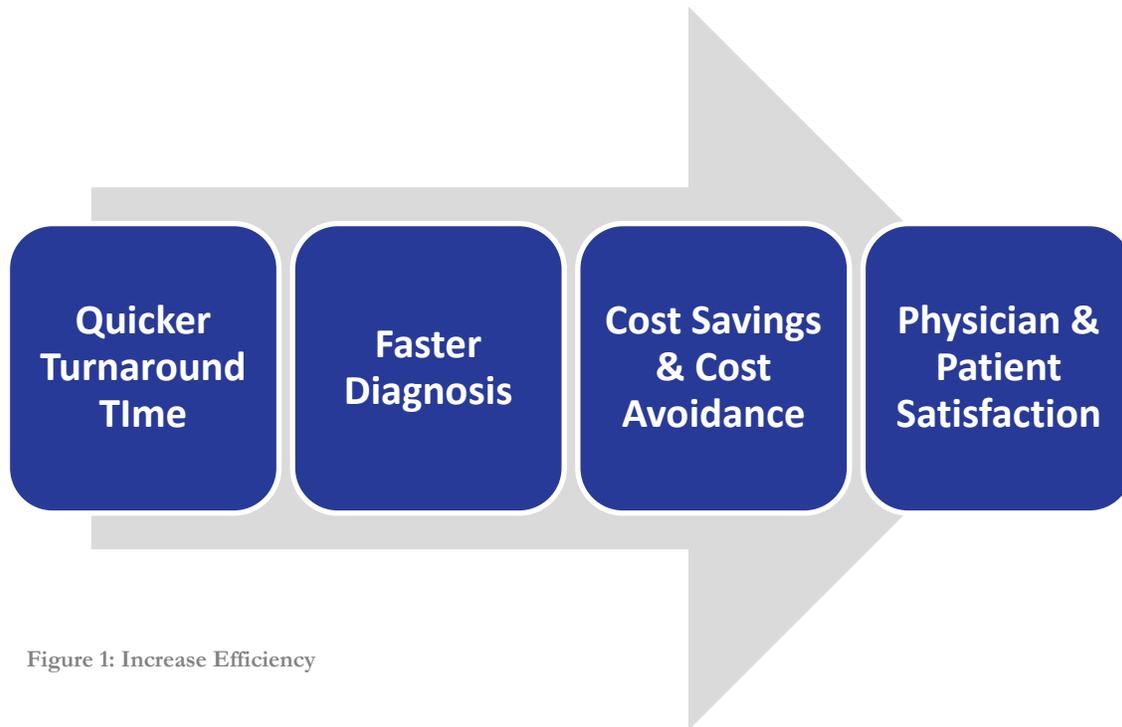


Figure 1: Increase Efficiency

## Eliminate Waste

The key to efficiency maximization is the elimination of waste. Waste in healthcare has been defined by the New England Healthcare Institute (NEHI) as “healthcare spending that can be eliminated without reducing the quality of care.”<sup>8</sup> Waste not only refers to cost, but also to unnecessary risk of complications. According to reports from NEHI and Dartmouth Medical School, the cost of potentially avoidable clinical care is estimated as 30% of total healthcare spending, leading to the conclusion that if the variations in care patterns that lead to waste can be eliminated, over \$700 billion could be saved annually.<sup>8</sup> According to the NEHI analysis, much of the waste in healthcare comes from failure to comply with established and accepted clinical practices.<sup>9</sup>



Because of our fragmented healthcare system, lab tests are often poorly utilized. Getting an accurate diagnosis as soon as possible can reduce waste by eliminating unintended negative consequences or inappropriate testing that may have occurred due to a delayed or inaccurate diagnosis. In order for success in a value-based system, waste needs to be eliminated, thus enabling greater efficiency. Laboratories need to guide providers to the minimum level of testing that creates maximum patient care value.

**Eliminate Waste To-do List**

- Determine scenarios that justify expensive tests.
- Eliminate obsolete testing, such as bleeding times.
- Reduce non-value added testing. Providers waste time explaining why a patient's Chloride is 99.
- Create testing formularies.
- Develop algorithms, sequential protocols.
- Provide peer-to-peer data.

Figure 2: Eliminate Waste

### Support Risk Stratification & Population Health Management

A large portion of the data necessary for clinical diagnosis (up to 70%) feeds into the EHR from the laboratory.<sup>10</sup> In a PCMH, ACO, or other value-based reimbursement model, the sharing of that data to support analytics needed for certification, and adding to the compilation of data for patient risk stratification and population health management becomes essential.

Michael Ashanin at COPC explains, “Lab data is key in nearly all of our contracts for shared savings, population management, and risk contracting. This clinical results data is our starting point for risk navigation. When you have the data in your own house, you’re not relying on payer claims data or other third party information; you have actual in-house data that no one can modify for a different gain. As you start to determine risk pools and bid amounts, knowing the acuity level and the subsequent risk level is imperative; this is the key in developing our contracts. Payors, employers, and health systems are thirsty for this data.”

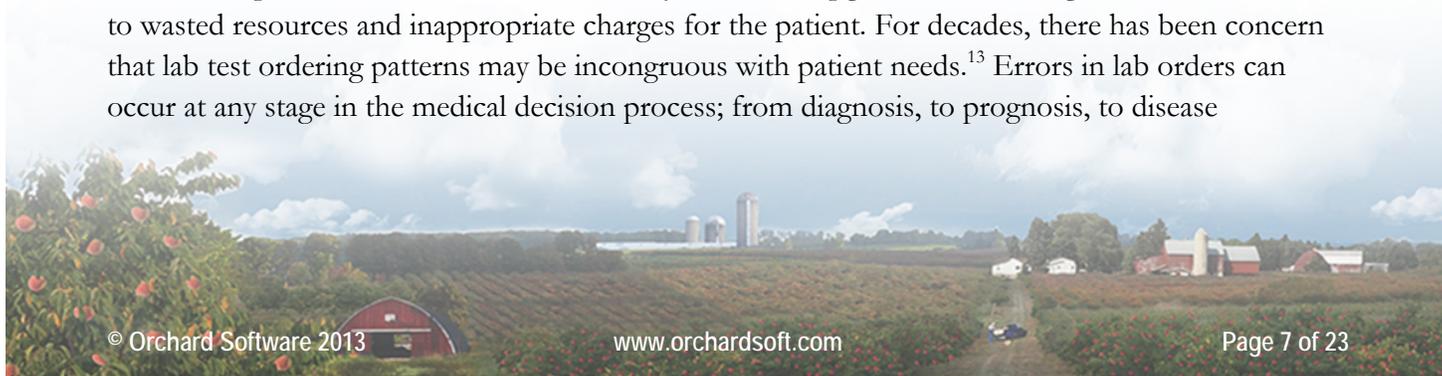
Physicians at WESTMED Medical Group in White Plains, New York, also realize the importance of seamless integration and data sharing. As WESTMED processes claims for population health management, they are able to share their lab data with United Health Care (UHC), in order to perform risk share analytics. Dr. Simeon Schwartz, President and CEO of WESTMED Medical Group, explains, “We have a cost-effective solution that is efficient for the providers and manages to move their ACO agenda forward by analytics being shared with other organizations. At Optum, the division of UHC that does claims analytics, they take the claims, we give them our lab work, and they process them together to give us predictive analytics. We get predictive scores on our patients that allow us to forecast which patients may need extra care, and then we can focus on them to improve outcomes.”<sup>11</sup>

To take that a step further, Summit Health Solutions in Knoxville, Tennessee, a Medicare Shared Saving Program (MSSP) ACO owned by Summit Medical Group, is also working with Optum on risk stratification and predictive modeling, and combining current clinical data from their EMR and the community HIE for a more real-time approach to their data analysis. Kimberly Kauffman, Executive Director at Summit Health Solutions explains, “We are working with Optum on risk stratification and predictive modeling based on paid claims data, but that’s looking at it through the rearview mirror because the service has already been rendered. Predicting future behavior based on past behavior is fine. However, what is more exciting is Optum’s capacity to mine our EMR and the community HIE (East Tennessee Health Information Network or ETHIN), along with the paid claims data to complete predictive modeling and risk stratification. Now we are looking through the front windshield. To me, this view is really exciting and is the direction we all need to be going.”<sup>11</sup>

### Variation Analysis to Monitor Test Utilization

Beyond the sharing of laboratory data, laboratory professionals have extensive knowledge of clinical testing purpose and function that can be tapped into to more actively contribute to positive patient outcomes. The mindset of assuming that any order that shows up in the lab must be clinically necessary and appropriate needs to be reconsidered. Pathologists and laboratorians can get involved and use their clinical knowledge and experience with laboratory assay performance to advise clinicians about appropriate test orders and enhance test interpretations.<sup>12</sup> In order to meet the changing needs of our healthcare system, the laboratory will need to be more involved in patient care management. Value can be added to the lab tests that are ordered by employing appropriate test orders and utilization monitoring.<sup>12</sup>

There are significant fluctuations in laboratory test ordering patterns between providers that can lead to wasted resources and inappropriate charges for the patient. For decades, there has been concern that lab test ordering patterns may be incongruous with patient needs.<sup>13</sup> Errors in lab orders can occur at any stage in the medical decision process; from diagnosis, to prognosis, to disease



monitoring, or treatment efficacy. An enormous array of laboratory testing options which continuously expand, combined with legitimate malpractice concerns, can lead to incorrect test orders or overutilization of lab tests. Lab test overutilization has been estimated as 17% of healthcare spending and underutilization at 38.3%.<sup>14</sup> Of \$292 billion spent on drugs and therapies in 2008, \$145 billion of that was ineffective. The cost of adverse drug events has been estimated as high as \$135 billion annually. It is estimated that up to 25% of these costs could be prevented by using lab tests to identify the correct biomarkers for drug effectiveness.<sup>14</sup>

Crystal Run Healthcare, a multi-specialty group practice in Middletown, New York, one of the first ACOs in the nation to participate in the Medicare Shared Savings Program (MSSP), has closely examined their provider ordering patterns to achieve the cost savings and efficiency needed to survive as an ACO. Crystal Run performed and presented to providers specific variation data by diagnosis (see Figure 3). Using the data generated by the variation analysis, they were able to standardize care and reduce costs while still maintaining high levels of quality by comparing provider ordering patterns and their associated costs to actual patient outcomes. This led to the development and propagation of best-practice guidelines for common chronic diseases and preventive services.

After six months of following these best-practice guidelines for ordering lab tests on diabetic patients, Crystal Run saw a 9% reduction in the overall cost of care and a 15% reduction in lab costs. Dr. Scott Hines, Co-Chief Clinical Transformation Officer at Crystal Run explains, “What we found is that by adopting and circulating best-practice standards, physicians ordered less tests while maintaining quality. Some physicians could even argue that quality was improved and cost was reduced. That’s the real bottom line to accountable care—best quality, best patient experience, and at the lowest possible costs.”<sup>15</sup>

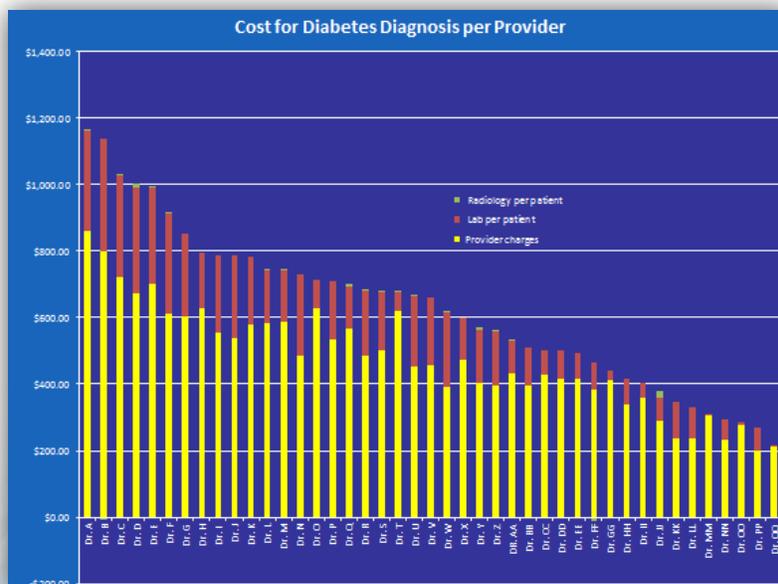


Figure 3: Crystal Run Variation Analysis

## “Best-practice” Ordering Guidelines

If your laboratory determines that test ordering guidelines would add value, a good place to begin would be with a variation analysis to determine the disparity between provider orders within a facility or across multiple organizations for a specific diagnosis. This data can be analyzed and combined with recommendations from professional societies for specific diagnoses or specialties to develop internal guidelines that support optimal usage of the laboratory. Once this data has been communicated to the providers in a positive, informative format, a committee can be appointed to use the variation analysis to begin to establish best-practice ordering guidelines. These ordering guidelines can be used to reduce redundant testing and have an overall positive impact on patient care by ensuring that the most appropriate tests for that patient’s condition are ordered.

Laboratories are experts on the technical aspects of testing—QC, sample tracking, QA, etc. However, now the focus needs to expand to include oversight of appropriate test utilization. Providers sometimes order the wrong test, or do not order a test that would be useful, or order a redundant test, or use the test results sub-optimally. There may be a moderately better test choice that can reduce further non-lab testing, such as imaging, or there may be a new test available that they are unaware of. If they knew more about the test intricacies, providers could deliver a more comprehensive treatment plan for the patient. This represents an opportunity for the laboratory to step in and provide guidance that will ensure that diagnostic tests are used optimally.

Immense growth in the depth and breadth of laboratory testing menus over the last decade alone, including molecular and gene sequencing advances, indicates that even the most studious, diligent physician can have trouble keeping abreast of the most up-to-date recommendations for laboratory testing. Not only is there a vast number of laboratory testing choices, but to complicate matters further, there are a daunting number of confusing test names and abbreviations that are not standardized from lab to lab.<sup>16</sup> David E. Newman-Toker, MD, in his commentary on ARHQ’s website said, “With such a high degree of complexity and uncertainty, it should probably be considered an achievement that physicians ever outperform chance in diagnostic decision making.” This opens an avenue for pathologists and laboratorians to provide clinician support in both laboratory test selection and test interpretation.

**CDC Identified Problems Associated with  
Incorrect Test Selection and Interpretation:**

- Large lab test compendium
- Inconsistency in test names
- Inconsistent guidelines for test usage
- Lack of training in lab medicine during medical school
- Limited knowledge of laboratory function
- Growth of molecular diagnostic testing

Figure 4: CDC Identified Problems



The Centers for Disease Control (CDC) has initiated the Clinical Laboratory Integration into Healthcare Collaborative (CLIHC) to help clinicians effectively utilize lab services to achieve better patient care. CLIHC efforts are directed at “understanding and addressing diagnostic errors caused by misordering and misinterpreting lab tests.” They have learned that when providers do not order the correct test or order too many tests, it is not only a cost consideration, but can lead to devastating consequences.<sup>17</sup> Error rates in clinical practice are typically estimated at 10 to 15%, translating into 150,000 plus patients per year that experience preventable harm due to misdiagnosis.<sup>18</sup>

### Collaborate with a “Physician Champion”

Amassing variation analysis data and beginning to implement best-practice ordering guidelines is an enormous undertaking that will obviously need strong support and buy-in from providers to ensure success. Laboratory leaders will need to partner with physician champions who readily grasp the value added by this process. In order to make improvements, there has to be a strong collaboration between providers and laboratorians that currently does not exist.

Providers who were surveyed by CLIHC stated that when they have a question regarding lab orders or test interpretation, they prefer to consult e-references or follow up with the patient rather than considering the laboratory as a source for guidance. Unlike radiology, where radiologists have become sought-after sources for clinical advice, the laboratory is often the last place providers turn.

In radiology or pharmacy, when orders are placed that are questionable as to their applicability to the patient status, the radiologist or pharmacist will proactively interact with the provider to catch errors. On the other hand, in the laboratory arena, providers are faced with a huge test compendium from which to order, with little to no advice as to which tests will provide the best outcome for his or her patient.<sup>17</sup>

Providers have questions about lab tests. The best case scenario would be to have all of the information that the provider may need at his or her fingertips at the time the test is ordered—from the beginning stages, offer ordering guidance such as a redirect to a better test option for specific diagnoses or diseases.<sup>19</sup> Laboratory professionals have knowledge in this area, which creates an opportunity to add value to the test ordering process by providing user-friendly test menus and analytics to support this progression.



## Testing Cascades & Algorithms

Clinicians can benefit from tools and guidance from laboratory professionals to assist with appropriate test selection.<sup>16</sup> Laboratorians have the knowledge of test performance characteristics to be able to effectively contribute to the establishment of appropriate test utilization guidelines.<sup>13</sup> Furthermore, laboratories can be involved in the establishment of evidence-based testing algorithms that auto-reflex down a testing cascade based on the results of the first test in the series. Below, and on the following pages, figures 5, 6, and 7 demonstrate examples of lab test algorithms that can be supported electronically by a strong LIS.

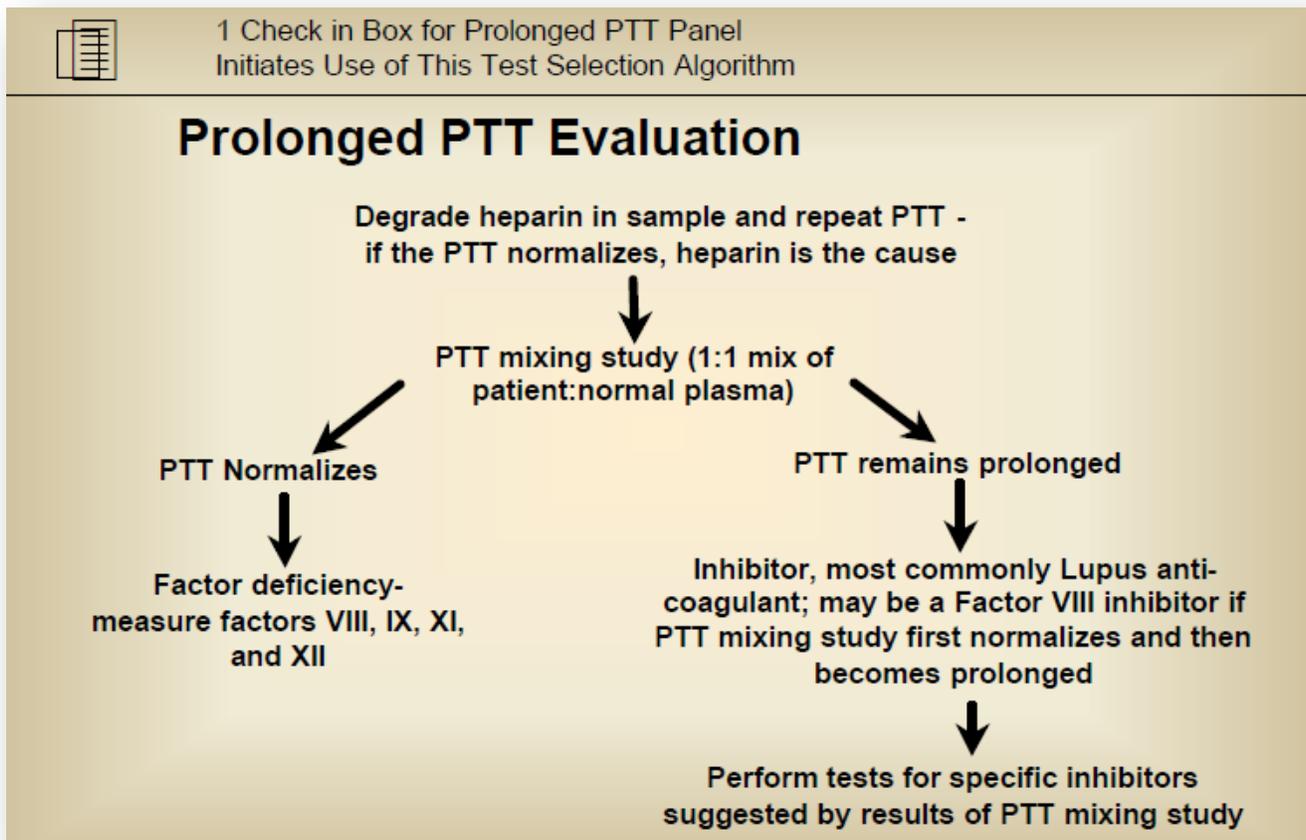


Figure 5: Vanderbilt's Prolonged PTT Algorithm: Source - [http://c.ymcdn.com/sites/www.clma.org/resource/resmgr/professional\\_development\\_-\\_past\\_thinklabs/707\\_michael\\_laposata.pdf](http://c.ymcdn.com/sites/www.clma.org/resource/resmgr/professional_development_-_past_thinklabs/707_michael_laposata.pdf)





### Celiac Disease Diagnostic Testing Algorithm

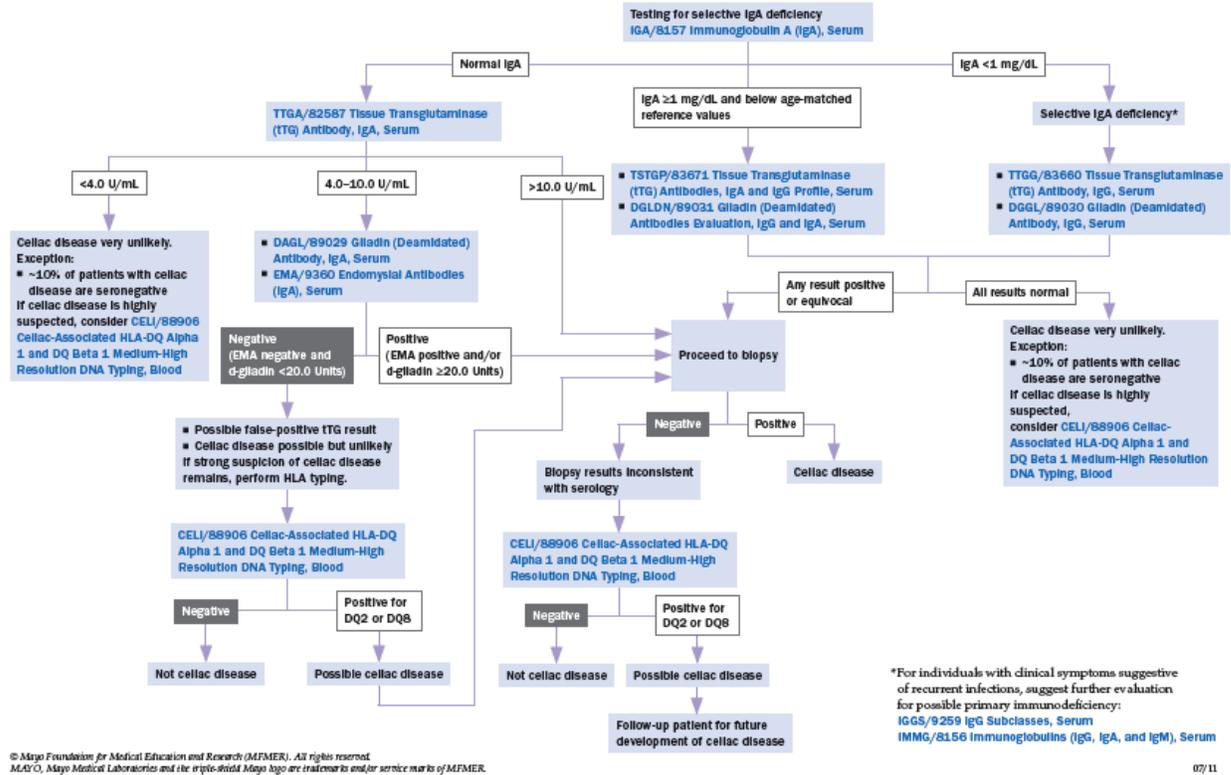


Figure 6: MML’s Celiac Disease Algorithm: Source - <http://www.mayomedicallaboratories.com/media/articles/algorithms/celiac-cascade.pdf>





## Anemia Testing

[Click here for topics associated with this algorithm](#)

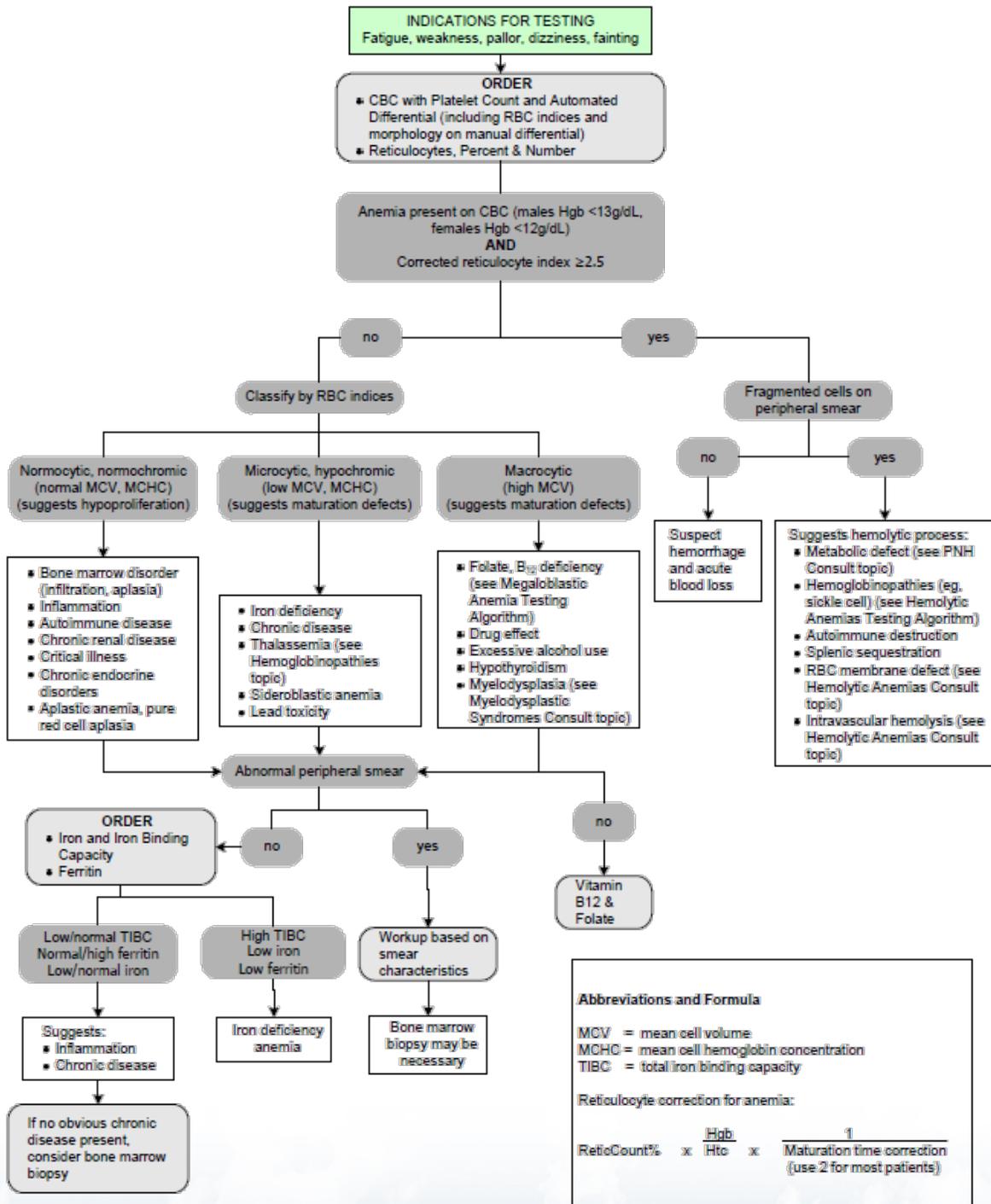


Figure 7: ARUP's Anemia Algorithm: Source - <http://www.arupconsult.com/Algorithms/Anemia.pdf>

## Choosing Wisely

Although the concept of laboratories providing additional value beyond clinical data has not yet been widely embraced, there are resources available to begin researching this project. The American Society of Clinical Pathologists (ASCP) is collaborating with the American Board of Internal Medicine (ABIM) on their *Choosing Wisely* campaign to urge physicians to think carefully about the ordering of medical tests and procedures and to “choose wisely” in efforts to render the best patient care. “Examples of inappropriate or over-utilized tests are pervasive throughout anatomic and clinical pathology and laboratory medicine,” said Dr. E. Blair Holladay, ASCP Executive Vice President.<sup>20</sup> The *Choosing Wisely* campaign encourages “pathologists and laboratory professionals to step forward and help clinicians become better stewards of medical laboratory resources.”<sup>20</sup> Listed below are the first five ASCP recommendations:

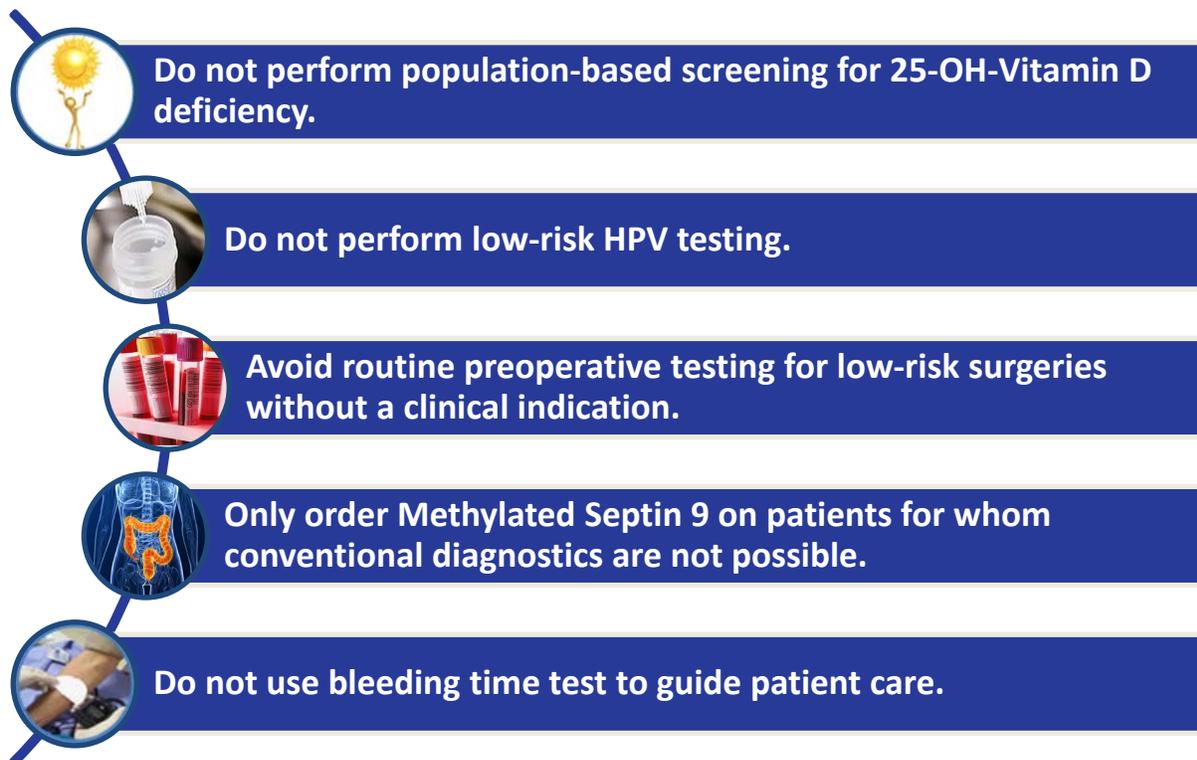


Figure 8: ASCP Choosing Wisely: Source - <http://www.choosingwisely.org>

It is useless to reduce the cost of a test if it is the wrong test. Laboratorians know which are the better tests to order and can help providers stay abreast of lab test changes and new methodologies. Laboratory professionals need to collaborate with providers, working as consultants to provide ordering guidelines that reflect optimal use of lab tests and how to best place lab results on the diagnostic continuum.<sup>14</sup>



## Detailed Test Interpretations

In conjunction with the need for guidance in test selection, there is also a need for automatic, patient-specific narrative interpretations from the laboratory that include information and recommendations about other lab testing options and relevant clinical details.<sup>21</sup> It is challenging to identify errors in test selection and misinterpretation of results; however, there is a clear, spoken need for a change in the current system to not only provide physicians with test selection assistance, but also with useful patient-specific interpretations of complex test results that lead to appropriate clinical decisions.<sup>13</sup> Although the use of predefined comments is widely perceived to be acceptable, these canned comments that automatically attach to every report of a particular lab test are not adequate to actually help the provider in his or her clinical decision making. The expertise of highly knowledgeable individuals can be utilized to create complex laboratory evaluations that can lead to improvement in the overall quality of care, reduction in medical errors, and reductions in the cost of care. Implementing patient-specific narrative interpretations can consistently reduce medical error.<sup>21</sup>

Michael Laposata, MD, PhD, and his Diagnostic Management Team at Vanderbilt University are effectively using clinical test interpretations to reduce patient length of hospital stay.<sup>22</sup> Dr. Laposata, in his key note address at CLMA 2013, remarked, “Tell providers what tests to order; and tell them what it means. We don’t hand the doc the CT and say figure out what it means. Radiology and pathology don’t give results without interpretations, why should the laboratory?” At Vanderbilt, clinicians responded positively to a survey about the value added by the narrative test interpretations, indicating that not only was time to diagnosis reduced, but also the accuracy of their diagnosis was improved in 70-80 % of cases.<sup>21</sup> Reports by clinical laboratory experts can shorten time to diagnosis and reduce length of stay, which concurrently reduces the overall cost of healthcare—demonstrating the value that the lab adds to value-based healthcare.

## POC Integration

Another shift laboratory professionals can expect to see is an increased focus on the value of Point-of-Care (POC) testing. With 32 million individuals being added to the healthcare insurance pool, a shortage of Primary Care Providers (PCP), and drug/retail stores getting into the business of healthcare, POC testing will fill in the gaps. POC testing can be a key component to driving down costs because it provides an opportunity to avoid the unnecessary admission of a patient in the ER.<sup>11</sup> POC testing can enable non-laboratory health professionals to rapidly diagnose and treat many simple, common conditions that could otherwise clog emergency departments. Diagnostic accuracy can be improved at a lower cost.

Michael Ashanin at COPC agrees, “I see POC testing increasing as a screening tool, as we try to appropriately triage people to receive the type of care they need. What’s the lab of 2020 going to look like? It’s going to be more mobile and that’s where POC testing can improve efficiencies.”

As more POC testing is used to make clinical decisions, reduce the burden on primary care providers, and eliminate unnecessary hospital admissions, an important area is the integration of POC testing into the EMR. Capturing POC results and corresponding charges in the EMR not only ensures proper billing, but makes the results available for data mining and analytics. Think of where POC testing can be utilized to bring rapid diagnosis to patients in your facility.

## Boost Outreach

In addition to POC testing, as healthcare organizations shift and make decisions regarding the best options for lab care for their patient population, strong laboratory outreach will become even more prevalent as a means for labs to add value.

At Laboratory Outreach Solutions (LOS) in New Jersey, Steve Serrano, VP of Laboratory Operations, and his management team have partnered with four hospitals to manage their outreach business. In addition to strong teamwork, the secret to their success is that their goals are aligned with the PPACA's focus of simultaneously improving patient care and reducing costs. Steve says, "In essence what we do supports the healthcare act. From the beginning we have looked to define opportunities for improvement in the quality of patient care and the delivery of a more cost-effective care delivery system through testing and outcome comparison."

Much of their outreach business revolves around nursing home care, so they have made it their mission to focus directly on ways that patient outcomes in the nursing home setting can be improved. This is what labs need to do—determine the needs of your specific providers and your specific patient population and find ways to add clinical value to your lab data.

LOS has focused on specific reports that can add value to their lab data. Specifically in infection control, when a culture is ordered, antibiotics that the patients have already been prescribed are captured through clinical questions. Then, when the sensitivity is reported, the lab can inform the ordering provider if the bacteria identified are not susceptible to the antibiotic that the patient is already taking. Reporting this to the provider clearly saves money and improves patient outcomes—thus adding value to that lab data.

Another area where LOS has been able to add value is by monitoring abnormal Hgb levels for patients who are taking the very expensive red cell stimulants Aranesp or Procrit. If these patients' anemias are not managed properly, the patients may suffer a poor quality of life or end up in the hospital. LOS is able to report abnormal Hgbs by month, and by provider, to the nursing home administrator. As you can see in the graph in Figure 9 on the following page, this patient's Hgb, although on Procrit, never reaches a normal level. Providers who may initially balk at this type of scrutiny come to appreciate the value that it enables them to add to their patient outcomes.



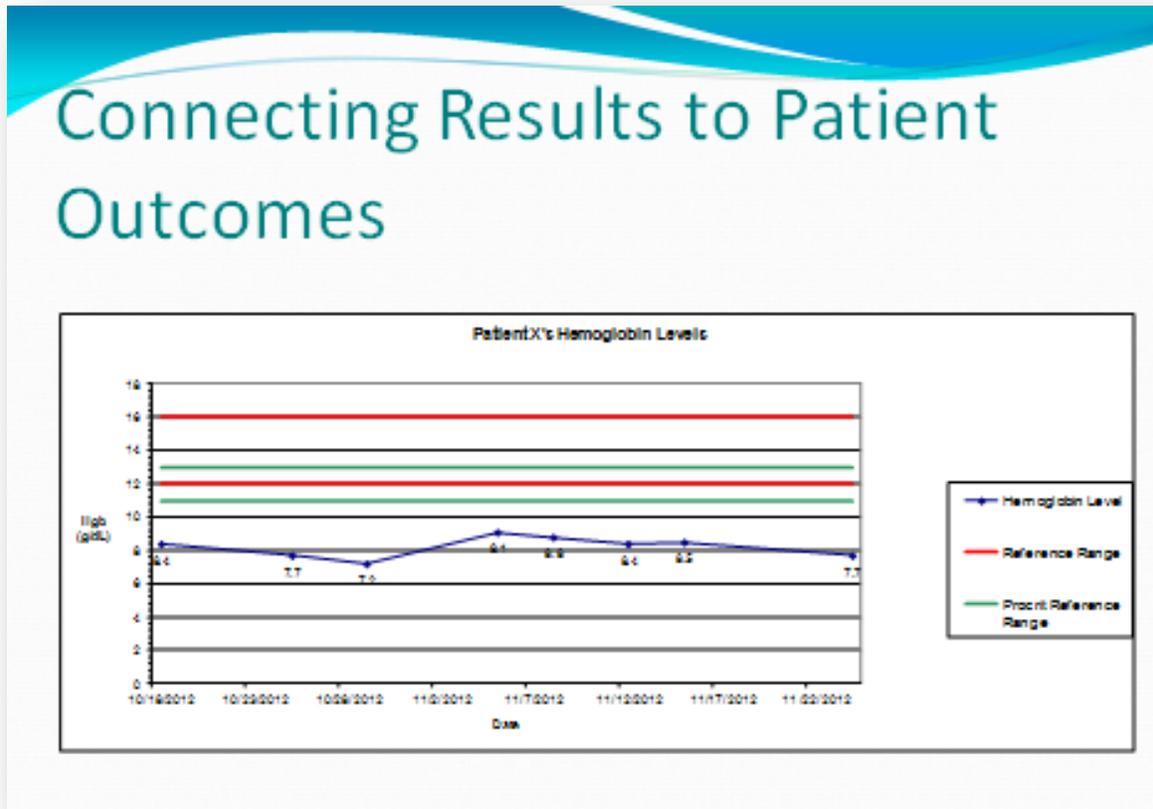


Figure 9: LOS Procrit/Hgb Chart

Additionally, in an effort to increase efficiency and cost savings, LOS has a fully automated ordering process with 96% electronic orders, including auto-registration into the hospital system at the time of blood collection. This has taken a huge burden away from personnel to allow for increased productivity. Steve Serrano explains, “First of all, in labs, the profit margins are very small and we’ve found that almost 80% of problems with revenue collection stem from errors during the pre-analytical information gathering process because of manual requisitions. If the average reimbursement per requisition is \$30 and it costs \$23 to rework every single denial, this is where you lose money. If you can capture this up front and reduce those errors, you can noticeably increase productivity by implementing an automated process.”



## Lab Ownership → Accountable Care → Quality

As we ponder the future and try to envision the prospective state of the laboratory, we have to realize that most likely there will not be a one-size-fits-all solution. There will be many scenarios, each outfitted to serve a specific patient population's needs.

One very powerful point Michael Ashanin at COPC illustrates is that if the whole move to accountable care is to ensure quality, then what better way to be accountable for the quality of your laboratory data than to house and govern it internally. "As we move towards 'the total healthcare dollar,' having the data within your own lab gives you an advantage in key clinical decision making. If you're able to track diabetics, hypertension, and coronary artery disease, because you have all that information funneling through your lab, then you're really well poised to manage the patient, ensure compliance, and to take action when you need to," he explains.

Michael thinks the reason physicians will want to keep their internal lab is to maintain and monitor accountability for the quality of test results to ensure that patients are well served. "If you have governance of your lab because you have ownership, you are more empowered to make the necessary changes. The appropriateness of tests and how tests are interpreted—all of that will be tied into the overall mission if you have control of your lab," says Michael.

## New Way of Calculating Value

Michael continues, "Labs are no longer profit centers; they have become critical cost centers that help us to manage and treat disease. That's why I believe we should be aware of consolidation, because once you lose accountability, you lose quality and ultimately that's becomes a disservice to the patient and the provider." As we go through the process of moving from a fee-for-service healthcare model to a value-based system, the method for calculating laboratory ROI changes. Currently, lab testing ROI is calculated using the reimbursement for a particular test versus the cost of a patient reportable. Different laboratories use different formulas for determining the patient reportable cost, but essentially if the test cost is low enough compared to the potential reimbursement, the test is added to the menu. The new system will not only change this mindset, but it will change the testing menus that are available, the volumes of these tests, and potentially the testing locations.

ROI in the future will not be based on how much profit is made on a test, but on how much savings there is for an episode of care. Moving forward, lab testing will be focused on prevention and diagnosis. Screening tests for cancers, heart disease, and diabetes will increase while other testing may be nearly eliminated. The goal of preventive testing will be to diagnosis an issue before it becomes a high-cost healthcare episode. In this scenario, the cost of the test versus reimbursement will not be the deciding factor on whether to perform the test. Instead the focus will be on what it can save the patient and the entire organization by enabling early detection.

Labs have always faced changes and challenges due to technological advances and economic pressures, but healthcare reform will require a complete new way of thinking. The goal of value-based healthcare is to improve patient care. With this in mind, laboratories must assess their value proposition and not only report accurate and timely results, but analyze their data to add value and create improved clinical pathways.

The examples at LOS represent exactly the type of value that laboratories need to deliver in order to establish a position of worth. LOS carefully assessed their specific patient needs and devised reports and systems that distinctly help the providers and nursing home administrators improve patient outcomes and reduce overall costs.

The value of a laboratory test must be ascertained not only on the basis of its clinical performance and cost, but also by its impact on patient management. The best, true assessment of the quality of testing lies in its impact on patient outcomes. With a stronger focus on preventive medicine versus curative, the introduction of companion diagnostics, a multitude of new testing options, and the ability to communicate results in real-time scenarios, this is an opportune time for laboratory professionals and pathologists to expand their contribution.

Steve Serrano summarizes the current situation facing laboratories by saying, “A lab has to think outside the box and utilize the data they have and make a bigger contribution to healthcare by adding clinical value to the lab data. We partner with our clients and put desirable, value-added processes in place that make the service we provide indispensable.”

To be successful, it is critical for laboratories to understand the clinical integration role that they play in an ACO. In order to thrive in an accountable care world, laboratories have to do more than give the providers the test results for the tests they ordered at a low cost. Labs have to create added clinical value.<sup>23</sup>

### Call to Action

As healthcare continues to transform and facilities decide where and how their laboratory fits in, laboratory professionals and pathologists need to be in tune and involved in these decisions. In a large healthcare facility, the administration may not see the lab as a big priority because it is not a large cost; however, it can be a huge factor in improving patient outcomes as diagnostic information becomes ever more important in the future of healthcare. This fact needs to be pointed out. Get informed and get involved. The reform of healthcare will take hard work and strong leadership from all sides. Add your knowledge to make healthcare better in our future. Our fractured healthcare system needs all hands on deck working together towards positive solutions. As Eldridge Cleaver stated, “There is no more neutrality in the world. You either have to be part of the solution, or you're going to be part of the problem.”

**Research and learn what your healthcare environment is—who are your patients? Wrap your mind around value-based healthcare.**

**Think about specific ways that your laboratory can add value.**

**Find a Physician Champion and build that relationship.**

**Assess your current testing menu and test utilization.**

**Form a collaborative committee to discuss best-practice guidelines and detailed test interpretations.**

**Think of developing beneficial reflex testing cascades that reduce costs and improve patient outcomes.**

**Continue to increase efficiency and reduce waste.**

**Evaluate potential opportunities for outreach or POC testing.**

**Venture outside of the lab and keep informed about healthcare changes and recommendations.**

Figure 10: Action List



## About the Author

Kim Futrell is the Products Marketing Manager at Orchard Software. Kim has a Bachelor's degree in Biology and is a certified Medical Technologist (ASCP) with more than 20 years of laboratory management experience. Prior to joining Orchard in 2012, Kim's role was as Operations Manager of a multi-specialty physician's office in North Carolina.

## About Orchard Software

Orchard Software, headquartered in Carmel, Indiana, and founded in 1993, is a leader in the laboratory information systems industry. Orchard offers a variety of lab system solutions to handle each laboratory's unique testing, workflow, and business situation. In 2013, Orchard celebrates its 20<sup>th</sup> anniversary, and serves more than 1,200 laboratories across the country helping them to improve efficiency, reduce errors, and enhance integration. For more information on Orchard or feedback regarding this white paper, email [news@orchardsoft.com](mailto:news@orchardsoft.com) or call **(800) 856-1948**.



## Notes

1. Committee on Quality of Health Care in America. "Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century." *Institute of Medicine*. 2001 report.
2. Berwick, Donald M, et.al. "The Triple Aim: Care, Health, And Cost." *Health Affairs*. May 2008 vol. 27 no. 3. Accessed at <http://content.healthaffairs.org/content/27/3/759.full>
3. Institute for Healthcare Improvement. Accessed at <http://www.ihp.org/Pages/default.aspx>
4. Report to Congress: National Strategy for Quality Improvement in Healthcare. March 2011. Accessed at <http://www.healthcare.gov/news/reports/quality03212011a.html#dnqs>
5. Global Genetic Testing Market Forecast to 2015. July 2012. Accessed at <http://www.reportlinker.com/p0936052-summary/Global-Genetic-Testing-Market-Forecast-to.html>
6. Naylor, Stephen and Cole, Toby. "Overview of Companion Diagnostics in the Pharmaceutical Industry." *Drug Discovery World*. Spring 2010. Accessed at <http://www.ddw-online.com/personalised-medicine/p92845-overview%20of%20companion%20diagnostics%20in%20the%20pharmaceutical%20industry.%20%20spring%2010.html>
7. Gunn, MD, PhD, Shelly. "Targeted Genomics for Solid Tumors." *ADVANCE for Administrators of the Laboratory*. April 2013. Accessed at <http://laboratory-manager.advanceweb.com/Archives/Article-Archives/Targeted-Genomics-For-Solid-Tumors.aspx>
8. Kelley, Robert. "Where Can \$700 Billion in Waste be Cut Annually from the U.S. Healthcare System?" October 2009. Accessed at <https://healthleadersmedia.com/content/241965.pdf>
9. New England Healthcare Institute. "Waste and Inefficiency in the U.S. Healthcare System." February 2008. Accessed at [http://media.washingtonpost.com/wp-srv/nation/pdf/healthreport\\_092909.pdf](http://media.washingtonpost.com/wp-srv/nation/pdf/healthreport_092909.pdf)
10. Forsman, R.W. "Why is the laboratory an afterthought for managed care organizations?" *Clinical Chemistry*. May 1996. Accessed at [http://www.clinchem.org/content/42/5/813.abstract?ijkey=992bb364565b317c7fe1a68163e4ba63b3e871bb&keytype2=tf\\_ipsecsha](http://www.clinchem.org/content/42/5/813.abstract?ijkey=992bb364565b317c7fe1a68163e4ba63b3e871bb&keytype2=tf_ipsecsha)
11. Futrell, Kim. "Laboratory in the ACO: The Essential First Step." *Group Practice Journal*. March 2013.
12. Panteghini, Mauro. "The Future of Laboratory Medicine: Understanding the New Pressures." *The Clinical Biochemist Reviews*. November 2004. Accessed at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1934959/>
13. Catrou, Paul G. "Is that Lab Test Necessary?" *Am J Clin Pathol*. 2006. Accessed at <http://ajcp.ascpjournals.org/content/126/3/335.full.pdf>
14. White, Lâle. "The Lab's Role in Value-based Pricing." *Executive Insight*. October 2012. Accessed at <http://healthcare-executive-insight.advanceweb.com/Features/Articles/The-Labs-Role-in-Value-based-Pricing.aspx>
15. Futrell, Kim. "The Lab's Role in the ACO." *ADVANCE for Administrators of the Laboratory*. January 2013.
16. Howerton PhD, Devery. "Clinical Laboratory Test Selection May Require a Translator." Society to Improve Diagnosis in Medicine. March 2013. Accessed at <http://www.improvediagnosis.org/blogpost/950784/161645/Clinical-Laboratory-Test-Selection-May-Require-a-Translator>
17. Rollins, Genna. "The Path to Better Test Utilization." *Clinical Laboratory News*. September 2012. Accessed at [http://editiondigital.net/display\\_article.php?id=1152962#](http://editiondigital.net/display_article.php?id=1152962#)
18. Newman-Toker, MD, PhD, David. "From Possible to Probable to Sure to Wrong—Premature Closure and Anchoring in a Complicated Case." Agency for Healthcare Research and Quality. April 2013. Accessed at <http://www.webmm.ahrq.gov/case.aspx?caseID=297>

19. Laposata, MD, PhD, Michael. "Reducing Medical Errors by Providing Expert Advice in the Selection and Interpretation of Laboratory Tests." Quality Institute Conference. 2003. Accessed at <http://www.cdc.gov/mlp/QIConference/Presentations/Laposata-CDC%20errors%20talk%20final.pdf>
20. Lee H. Hilbourne, MD, MPH, FASP, DLM (ASCP). "Choosing Tests Wisely Turns U.S. Medicine Inside Out." *Critical Values*. April 2013 Volume 6 Issue 2.
21. Laposata, MD, PhD, Michael. "Patient-specific narrative interpretations of complex clinical laboratory evaluations: who is competent to provide them?" *Clinical Chemistry*. 2004. Accessed at <http://www.clinchem.org/content/50/3/471.full>
22. Roth MD, MBA, Erlo and Paula Garrott, Ed.M., MLS. "The Evolving Role of Laboratory Professionals." *CAP Today*. May 2011. Accessed at [http://www.cap.org/apps/cap.portal?nfpb=true&cntvwrPtlr\\_actionOverride=%2Fportlet%2FcontentViewer%2Fshow&windowLabel=cntvwrPtlr%7BactionForm.contentReference%7D=cap\\_today%2F0511%2F0511g\\_evolving.html&state=maximized&pageLabel=cntvwr](http://www.cap.org/apps/cap.portal?nfpb=true&cntvwrPtlr_actionOverride=%2Fportlet%2FcontentViewer%2Fshow&windowLabel=cntvwrPtlr%7BactionForm.contentReference%7D=cap_today%2F0511%2F0511g_evolving.html&state=maximized&pageLabel=cntvwr)
23. Shirts, Brian H. and Brian R. Jackson. "Informatics Methods for Laboratory Evaluation of HPV Ordering Patterns with an Example from a Nationwide Sample in the U.S, 2003-2009." *J Pathol Inform*. 2010. Accessed at <http://www.jpathinformatics.org/article.asp?issn=2153-3539;year=2010;volume=1;issue=1;spage=26;epage=26;aulast=Shirts>

