



PROJECTED PATHOLOGIST SHORTAGES: SERIOUS IMPLICATIONS FOR PATIENT CARE

June, 2014

To our Clients and Friends:

Recently published estimates of projected pathologist shortages should be a concern for all executive leaders in hospitals, academic medical centers, and healthcare systems. Study results indicated that by 2030, the number of active pathologists may decrease by approximately 30% compared to 2010 levels. According to a 2011 survey of College of American Pathologists' members, about 80% of active pathologists spend much or all of their time in hospital or academic medical center settings.¹ Given the pivotal role pathologists play in diagnosing disease, projected pathologist shortages have serious implications for patient care.

This Client Alert will summarize key information concerning projected pathologist shortages, review factors that may influence future pathologist supply and demand, and offer suggestions to hospital leaders so they may organize an analysis of how these issues may impact their organization.

It is acknowledged that pathologists play a critical role in the diagnosis of disease. According to Mayo Clinic information, an estimated 60 percent to 70 percent of all decisions regarding a patient's diagnosis and treatment,

About the author:

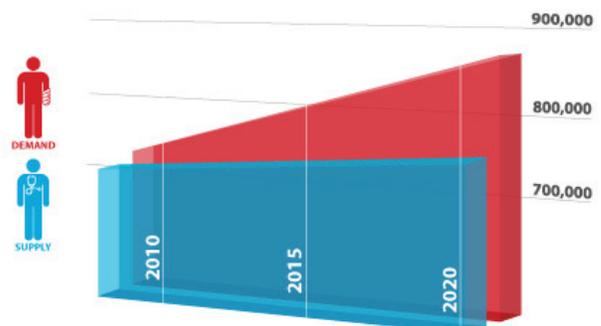
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and hospital admission and discharge are based on laboratory test results. With an anticipated increase in the number of cancer cases, it is very important that the quality and timeliness of surgical pathology and cytopathology diagnoses must be optimized. Considering emerging technological advances in molecular and genomic testing, hospitals and academic medical centers must arrange for an appropriate number of pathologists in order to assure the availability of beneficial diagnostic information in all aspects of disease identification and treatment.

Physician Shortages Projected in Most Major Specialties

Physician shortages in the US have been predicted for some time. As shown in Figure 1 below, a 2008 Bureau of Health Professions report detailed supply and demand issues of the physician workforce.² Based on industry information, report projections show that in 2020, baseline physician FTE's would not come close to approaching the need for physicians.

Figure 1
Projected Supply and Demand, Physicians, 2008-2020
(ALL SPECIALTIES)



Source: HHS, Bureau of Health Resources and Services Administration; 2008

Other projections of physician workforce supply and demand seem equally dire. According to an American Association of Medical Colleges' study, it was estimated that the 26,000 residency positions available for first year trainees would not be enough to provide training for the students graduating from medical school as early as 2016.³

The 2012 AAMC Physician Specialty Data Book reviewed the percent changes in numbers of active physicians by specialty from 2000 through 2010.⁴ Based on their analysis, AAMC identified Anatomic and Clinical Pathology as the specialty with the next to the largest decrease in the number of active physicians (1,057 pathologists), second only to general surgery (1,664 surgeons) in the number of active physicians. Pathologists had the largest percent decrease in active physicians for that ten year period.

With regard to hospital-based physician specialties, the 2008 Bureau of Health Professions' report projected that Anatomic and Clinical Pathology would have the highest percent physician shortages (24%), almost twice the percent shortages as radiologists (13%).⁵ The 2008 BHA report indicated that other hospital-based physician specialties including emergency medicine and anesthesiology were projected to have an adequate supply of physicians.

Projected Pathologist Shortages

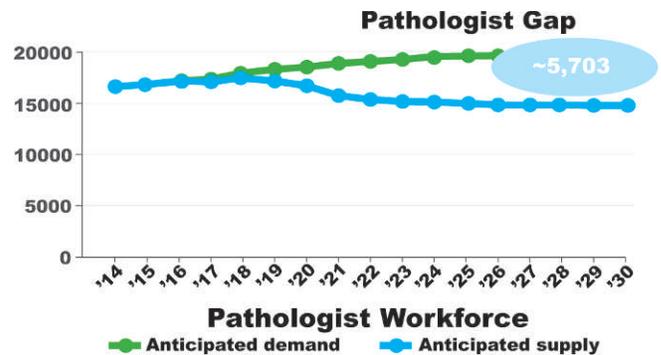
A December, 2013 article published in the Archives of Pathology and Laboratory Medicine (APLM) titled "Pathologist Workforce in the United States, Development of a Predictive Model to Examine Factors Influencing Supply" projected that by 2030, there may be a shortage of 5,700 pathologists; or about a 32% decrease from 2010 levels.⁶ Compared to about 5.7 pathologists per 100,000 population in 2010, the per capita number of practicing pathologists is projected to drop to 3.7 pathologists per 100,000 population by 2030.

The APLM article is particularly important because its authors are part of a Workforce Project Work Group that includes representatives of major pathology organizations including the American Society of Clinical Pathologists (ASCP), the Association of Directors

of Anatomic and Surgical Pathology (ADASP), the Association of Pathology Chairs (APC), the College of American Pathologists (CAP), and other groups.

The Workforce Project Work Group article estimated that the gap between pathologist supply and demand will widen over time as shown below in Figure 2.

Figure 2

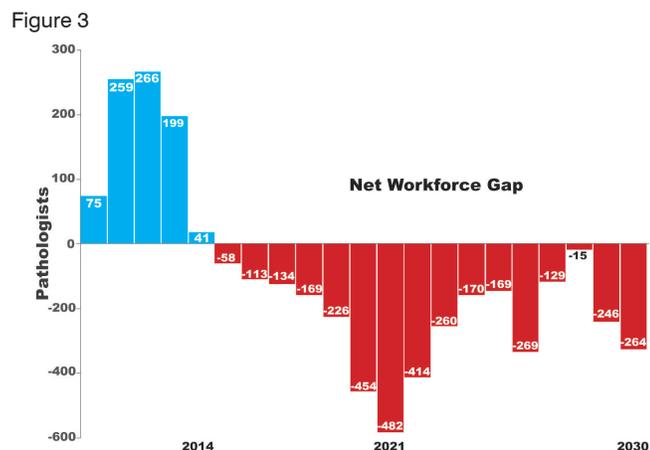


Source: Archives of Pathology and Laboratory Medicine, December, 2013

Since the Workforce Project Work Group study methodologies considered projected supply of pathologists only, it's our view that increased workload demands placed on pathologists will only exacerbate the estimated shortages. As described later in this Client Alert, we believe that current and prospective increases in pathologist workload will contribute to make pathologist shortages even more imperative than described in the Archives study.

The importance of projected pathologists shortages was noted by the immediate past president of the College of American Pathologists when he presented his views at a recent industry meeting. He commented that "without significant changes in pathologist training, patients and their clinicians will experience potentially disruptive changes in current patterns of practice."⁷ Additionally, one of the observations from the *Pathology Workforce Summit* held in December, 2013 was that "technological advancements of laboratory testing, emerging pharmacogenomic testing, and digital pathology could significantly change the qualifications required of the next generation of pathologists and laboratory professionals."

The Workforce Project Work Group developed assumptions to forecast the rate of decreasing numbers of active pathologists over time. Figure 3 below portrays the authors' estimates of the changing number of pathologists from current levels through 2030.



Source: Archives of Pathology and Laboratory Medicine; December 2013

A major cause of projected pathologists shortages is generational. According to the AAMC November, 2012 Physician Specialty Data Book, the Anatomic and Clinical Pathology specialty had the second largest proportion of physicians over 55 years when compared to all other specialties.⁸ AAMC data indicated that in 2010, more than 57% of all active pathologists were >55 years old; only the Preventative Medicine specialty had a greater proportion of MD's over 55 years old (62.4%) at that time.

The pathologist shortage issue is complex and multi-layered. For example, the Workforce Project Work Group projected that the number of medical school graduates entering pathology residency programs were not adequate to meet future needs.⁹ Additionally, the Workforce Group also considered pathologist mortality, retirement, emigration and residents taking up nonmedical professions, as contributing factors when estimating future pathologist shortages.

It should be noted that some pathologists believe there will be no serious shortage. They point out that, in some parts of the country, there is an overabundance of pathologists. We learned that search firms specializing in placing pathologists note that pathologists coming

out of residency programs and fellowships are experiencing difficulty in finding a "good" job. Notwithstanding what may be short term availability of pathologists coming out of residency and fellowship programs, we believe that the Workforce Project Study Group got it right. Without some forms of mitigation, starting sometime in the next 3-4 years, the industry will begin to experience a net outflow of the number of active pathologists.

Serious Implications for Patient Care

If there is to be a decrease in the number of active pathologists, healthcare system leaders need to consider whether or not projected pathologist shortages will impact patient care in their hospitals. It's our view that without some forms of change to present pathology practice models, it is possible that serious quality and patient safety issues may arise in the future.

As it relates to quality and patient safety issues, aspects of pathologist workload stress were studied by the Royal College of Pathologists (RCP) in Australia. Their January, 2011 report provided insights into concern the College had regarding how workload stress impacted pathologist quality and safety.¹⁰ While the study was small and represented only ninety-six pathologists, the report summarized the concern as the "inability of pathologists to fully undertake quality assurance activities due to excessive workloads."

The Executive Summary of the RCP study quoted from diaries kept by survey respondents who measured the current capacity of the existing workforce and the sustainability of the current workloads. The adverse impacts on quality and safety they reported included:

- An increase in report turn-around-time
- Not always completing QA
- Quality compromises
- Patient care compromised
- Health and well being of pathologists compromised

Another aspect of projected pathologist shortages relates to the frequency and severity of diagnostic error made by pathologists. A 2010 Quality in Cancer Diagnosis study indicated that the large majority of diagnostic errors do not result in severe harm, “although mild to moderate harm in the form of additional testing or diagnostic delays occurs in up to 50% of errors.”¹¹ If pathology report turn-around-time is extended, due in part to pathologist shortages, it might be expected that patient treatment decisions could be delayed.

It is not our contention that pathologist shortages in the U.S. will result in the same degree of stress found in the Royal College of Pathologists’ study, nor is it our view that projected shortages will produce similar outcomes as found in the Quality in Cancer Diagnosis study. However, we believe that, unless there are substantive changes to the current pathology practice model, the quality and timeliness of important diagnostic information may suffer.

Prospective Pathologist Workload Demands

This section of the Client Alert describes factors we believe will contribute to both increased and decreased pathologist workload. We make no attempt to estimate the net effects of these counter balancing factors on future pathologist workload; but rather to only enumerate each factor.

It has been our experience that work demands of hospital and academic medical center-based pathologists have increased over the past several years. For example, in many hospitals, the number of surgical pathology cases has increased, and there is evidence that the amount of work per case has grown as well. According to client information, the number of relative value units (RVU’s) per surgical pathology case has increased by about 5% to 10% over the past five years. A major reason for the increase in work/case relates to special stains and other procedures now required for many cancer diagnoses.

As noted earlier, the December, 2013 Workforce Project Work Group article focused entirely on the projected supply of pathologists. The study did not consider future demands placed on pathologists; the authors indicated they are developing a companion article that will focus on future pathologist workload *demands*.

According to information presented at a recent meeting of the Association of Directors of Anatomic and Surgical Pathology in March, 2014, it’s our understanding that the companion article focusing on future pathologist workload demands will consider population demographics, disease incidence, sub-specialization, new technologies, and the role of informatics.¹²

We understand the Workforce Project Work Group will also consider service types and work setting. It’s our view that work location is a critical element in order to project future pathologist workload demand in hospital acute care and outpatient settings. As noted in a recent *Hospitals and Health Networks* article, inpatient and outpatient patient care environments must be considered in both community hospital and academic medical centers since it’s generally agreed that “efforts in provider integration will continue moving toward seamless care across all relevant settings.”¹³

As mentioned earlier in this Client Alert, approximately 80% of pathologists who responded to the 2011 College of American Pathologists’ Practice Characteristics Survey indicated they work primarily in either a hospital or an academic medical center. We believe that future workload demand should be carefully analyzed in order to distinguish between pathologist responsibilities in direct patient care settings versus other sites such as independent and commercial laboratories, as well as forensic pathology laboratories, and research settings.

Considering that hospital and academic medical center pathologist responsibilities include inpatient, outpatient, and outreach services, it will be important for the Workforce Project Workgroup to identify how much patient care is transitioning to outpatient settings. According to *Health and Hospitals Network* magazine, inpatient admissions fell by 7.8% while outpatient volume rose by 33.6% from 2004 to 2011.¹⁴

So that surgical pathology workload can be estimated as it relates to pathologist staffing needs, it’s important to recognize that work intensity for some outpatient and outreach surgical pathology specimens is often less than for many inpatient specimens. Acknowledging this industry dynamic, we believe that future analyses need to clearly delineate pathologist work demands that reflect diverse patient care environments.

In order to better understand how projected shortages may be impacted by future demands on hospital-based pathologists' workload, following are the factors we believe will contribute to increases in the work many pathologists perform.

Cancer Cases Require Significant Pathologist Involvement

Industry experts note that a major contributing factor to increased pathologist workload concerns "the disproportionately prevalent diagnosis and management of cancer in an ageing population." In their September, 2013 Statement for the Record, the Council on Graduate Medical Education described cancer care as involving "extensive use of both anatomic and clinical pathology testing and services, including cancer diagnosis on biopsy and surgical specimens." Their Statement went on to note "fine needle aspirations of tumors, molecular and genomic testing of malignant neoplasms, and pharmacogenomic testing to guide and monitor therapy are additional activities that add to pathologists' workload."

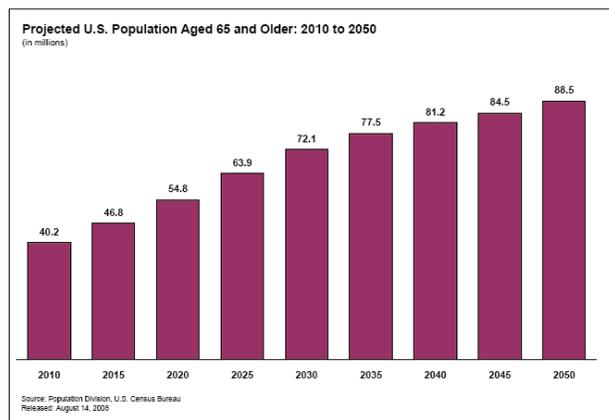
According to a 2008 study published in the Journal of Clinical Oncology, cancer cases were projected to increase by approximately 45% from 1.6 million in 2010 to 2.3 million in 2030.¹⁵ The study projected a 67% increase in cancer incidence in older adults, and concluded that "demographic changes in the United States will result in a marked increase in the number of cancer diagnoses over the next thirty years." Presuming that this study's projections are mostly accurate, it can be expected that pathologist cancer-related workloads will substantially increase over time. While innovative technology will certainly improve pathologist diagnostic capabilities and contribute to greater productivity, it's our opinion that increased numbers of cancer cases will make the supply of pathologists even more problematic than reflected in the Workforce Project Work Group report.

To illustrate how the number of pathologists in the workforce and the number of cancer cases relate to each other, a study of cancer cases per pathologist in Canada from 1999 to 2009 showed that, even though the absolute number of pathologists increased during that time, the number of cancer cases per active pathologist increased by 17%.¹⁶

Ageing Baby Boomers And Formerly Uninsured Patients

Another cause for increased numbers of surgical pathology cases is the growing number of ageing baby boomers and formerly uninsured patients. These patients are expected to significantly add to the need for surgical pathology services. As projected by the 2008 US census, the US population over 65 is expected to increase by 24% from 2015 to 2025.¹⁷ The Census Bureau projections shown in Figure 4 below graphically portray these trends.

Figure 4



Source: Population Division, U.S. Census Bureau
Released: August 14, 2008

Laboratory Director Responsibilities Add Work for Pathologists

Reports of projected pathologist shortages to date have focused only on surgical pathology and cytopathology services. In addition to these activities, many pathologists also perform CLIA defined Laboratory Director duties.

While, according to the 2011 CAP Practice Characteristics Survey, pathologists spend about 62% in surgical and clinical pathology activities, Laboratory Director responsibilities can represent additional work demands. Depending on hospital-specific circumstances, a portion of those responsibilities can be delegated to other laboratorians. However, the Laboratory Director is ultimately responsible for the quality and accuracy of test results.

The portion of pathologists' time relating to non-patient specific administrative, medical management activities is often referred to as Part A. When considering pathologist shortages, we believe that it's important to evaluate demand for current and prospective Laboratory Director responsibilities, and the time expected to be devoted to that work.

Based on client information, we found that pathologist time devoted to Laboratory Director responsibilities can vary dramatically from one hospital to another. In very large laboratories, those responsibilities can even vary from one section to another. Laboratory Director administrative medical management duties are not related to hospital bed size, or test volume. Rather, those duties are based on CLIA requirements, as well as by expectations defined by hospital administrators and medical staff leaders.

While the scope of Laboratory Director responsibilities can differ from hospital to hospital, several of many required duties include:

- Review and approval of appropriate test methodologies
- Determination of the affects of disease states, medications, and other analytes on test results
- Developing and implementing a response to values that require immediate medical consideration
- Assurance that hospital laboratories and services comply with state, federal, and other licensure, accreditation, and laboratory certification and other requirements.

Other current and prospective pathologist work demands are driven by evolving technical and clinical expectations for expanded services. Across the industry, pathologists are in the process of updating their professional expertise in emerging technologies. For example, molecular diagnostics, genomic, and personalized medicine testing modalities are important aspects of managing cancer patients. As noted in recent industry articles, rapid technological advancements provide opportunities for pathologists to better understand disease states, and participate in helping plan more effective treatment plans.^{18, 19, 20}

In addition to developing expertise in expanding technologies, some pathologists are being tasked with helping re-organize laboratory and pathology services based on Accountable Care Organization requirements. As might be expected, the evaluation, coordination, and implementation of new forms of service and payment criteria require substantial time and energy. To some degree or another, hospital administrators and pathologists will need to determine how best to re-apportion pathologists' time for these administrative responsibilities.

Other activities that may consume some pathologists' time involves participation in population health management programs. By integrating laboratory testing algorithms into EHR's across inpatient, ambulatory care, and continuing care settings, pathologists can coordinate laboratory information in order to improve overall patient care. These important, non-patient specific medical management activities are expected to grow, and consume greater proportions of pathologists' time.

Other Elements of Incremental Pathologist Workload

As prospective pathologist work demands are inventoried, it is important to consider the following workload elements we believe will add to pathologist responsibilities.

- ***Clinical Pathways as Next Generation Pathology Services***

Recent studies have indicated that diagnostic expertise coupled with advanced technologies can improve patient outcomes and lower costs. The Prometheus study model identified the frequency and avoidable costs of many gaps in patient care or potentially avoidable complications in sepsis, renal failure, and surgical infections.²¹ Pathologist and other laboratorians can be positioned to implement key model recommendations.

- ***Blood Utilization Management***

One of the most actionable and complex activities pathologists should be responsible for is the management of blood and blood product utilization. The American Association of Blood

Banks reported that effective rules regarding blood and blood products have demonstrated that hospitals can reduce blood costs by 10% to 25%.²² While some hospitals have already implemented blood utilization management programs, many hospitals have not yet started. It's been our experience that when pathologists participate in organizing, implementing, and monitoring blood utilization management programs, their administrative management time increases.

- **Laboratory Test Utilization Management**

The ABIM Foundation, along with many medical professional organizations support "Choosing Wisely" initiatives. These initiatives help physicians and patients engage in conversations to reduce overuse of tests and procedures, and support physician efforts to help patients make smart and effective care choices.

A recent Beth Israel Deaconess Medical Center study reported a large-scale analysis of 1.6 million results from forty-six of medicine's fifty most commonly ordered lab tests found that, on average, 30 percent of all tests are probably unnecessary.²³ Even more surprising, the results suggest that "equally as many necessary tests may be going unordered." While a complex process, we note that pathologists will be expected to spend substantial time helping coordinate test utilization management programs.

Pathologists who are involved with decision support analyses in concert with medical staff leaders are expected to participate in the development of computerized physician order entry (CPOE) programs. Typically, this process includes development of formularies and other mechanisms to assure that the right test is ordered at the right time. According to a 2011 presentation made by a MGH pathologist, CPOE is a key step for pathology since orders set up the entire lab testing cascade.²⁴

Consults with Clinicians

- Based on interviews with pathologists, we learned that the number of medical staff consults has increased markedly over the past several years. Given the widening scope of diagnostic

information required by clinicians, we learned that greater portions of pathologists' time is devoted to reviewing complex cases with members of the medical staff. The consults include more preparation for Tumor Board meetings, review of molecular analysis, putting nextgen sequencing information into context for oncologists, and other work. Given projections of increased incidence of cancer cases, it's anticipated that the frequency of pathologist consults with the medical staff will expand correspondingly.²⁵

Factors That May Reduce Future Pathologist Workload

We believe there are innovative technological and operational strategies that can reduce or redistribute pathologist workload in the future. This section of the Client Alert will summarize those factors.

- **Telepathology Services**

Telepathology services provided via digital pathology technology will have a major influence on how pathologists practice in the future. Even today, many applications exist to digitize pathology slides, and transmit images with a high degree of clarity and precision. Digital pathology is considered by many as a disruptive technology because it can provide the foundation for an entirely new case distribution system.

Today, digital pathology technology is used to transmit slides from residents to senior pathologists in academic medical centers. In some community hospitals, pathologists utilize digital pathology to share cases among pathologists, prepare comprehensive information for conferences, and transmit digital images for second opinions. One of the key benefits offered via telepathology is expedited access to sub-specialist pathologist expertise. Some academic medical centers and commercial organizations have developed secure, on-line information exchanges as the basis for digital consultation networks for consults and second opinions in the US, and abroad.

We anticipate a dramatic increase in telepathology services once the FDA approves use of digital pathology systems to transmit and store case information

for routine, primary pathology cases. When that occurs, we believe it will create an enormous opportunity to organize sophisticated case distribution systems that are not restricted by pathology group size, hospital affiliation, degree of specialization, or geographic proximity. When surgical pathology and cytopathology cases can be distributed based on case complexity and availability of sub-specialists, we believe that general pathology cases will be diagnosed by general pathologists, and complex pathology cases will be diagnosed by sub-specialists.

Cervical Cancer Screening

- Reduced frequency of Pap testing means less work for pathologists and cytotechnologists. Government agencies now recommend that women age 21 to 65 years be tested for cervical cancer every 3 years or, for women age 30 to 65 years who want to lengthen the screening interval, screen with a combination of cytology and human papillomavirus (HPV) testing every 5 years.

Newly introduced technology may make for more effective Pap testing. A device for HPV testing provides new tools for women who have discordant co-testing results. Even though a U.S. Food and Drug Administration panel recently voted unanimously to replace the common Pap smear test with a specific Human Papillomavirus (HPV) test as the standard of care for American women²⁶, there are concerns that while HPV testing is more sensitive, they are less specific. If HPV testing is eventually accepted by the medical community, it may result in a somewhat decreased pathologist workload.

According to Healthline News, as it stands right now, most OB/GYNs perform “co-testing,” which means they test for HPV with a Pap and perform an HPV test as a follow-up to an abnormal Pap, depending on the patient’s age.²⁷ It should be noted that it may be too early to estimate the extent of the Roche cobas testing as the primary Pap screening tool for abnormal Pap’s. Some physicians have noted that FDA does not mandate the use of the HPV test; it just makes it another option.

- **Circulating Tumor Cells**

Another technology that may reduce pathologist workload concerns the use of circulating tumor cells (CTC) as liquid biopsies. By reading genetic messages, pathologists and oncologists diagnose lung tumors and monitor how they respond (or don’t) to treatment. The technique is highly sensitive and is broadly applicable to many types of solid tumors. According to some experts, using CTC “may reduce the number of biopsies on some solid tumors because performing multiple biopsies is impractical, uncomfortable and not without risk.”²⁸ While not in common use at this time, this technology may eventually contribute to reducing future pathologist workload.

- **Fewer Prostate Biopsies**

As recently reported, a new experimental molecular blood test for prostate cancer may result in reducing the number of prostate biopsies by about 1 million each year.²⁹ According to news releases about the test developed by Memorial-Sloan-Kettering Cancer Center and Opko Health, the *4K score blood test* measures four different types of protein, and “accompanied with a digital rectal exam, can provide an accurate Gleason score.” Once approved by the FDA and evaluated by the National Comprehensive Cancer Network, this molecular test could ultimately prove an important tool for urologists, and could help reduce the number of prostate biopsies.

- **Blood Tests May Spot Recurrent Cancers**

A recently reported breakthrough at Johns Hopkins Kimmel Cancer Center described a blood test that accurately detects the presence of advanced breast cancer. The article in *Science Daily* explains that currently there is no useful test to monitor patients with early breast cancer.³⁰ Given the experimental nature of the test, this technology is not anticipated in the near term, and much method validation will be needed.

However, if this test is approved for commercial use, the number of breast biopsies performed by pathologists may be impacted.

- **Improved Protocols for Obtaining Biopsies**

Improved biopsy protocols are another opportunity to reduce pathologist workload. According to an article that appeared in *Frontline Gastroenterology*, when optimal biopsy protocols are designed for certain clinical situations, the result may be fewer lower gastrointestinal biopsies.³¹ Fewer biopsies could mean reduced pathologist workload.

- **Digital Dictation and Speech Recognition**

Use of desktop software applications that incorporate digital dictation and speech recognition have proven to speed report turn-around-time, and improved the accuracy of pathology reports. In a study reported by the University of Pittsburgh, their experiences showed that median report TAT decreased by 81%, and the number of cases signed within one day improved by 89%, even with a 68% increase in case load.³² It's acknowledged that digital dictation and speech recognition technologies can speed the pathology report distribution process, but require a dedicated learning process. It remains to be seen just how quickly pathologists embrace this technology even in the face of projected pathologist shortages.

Merger of Pathology Groups

Today, the majority of community hospital-based pathology groups are unable to take advantage of economies of scale. According to the College of American Pathologists 2011 Practice Characteristic Survey, about two-thirds of survey respondents practiced in groups of ten or less physicians.³³ Of that total, about half of the respondents practiced in groups of five pathologists or less. As shown in Table 1, pathology groups of eleven or more physicians represented only a little more than one-third of survey respondents.

Table 1: Full-Time Pathologists by Group Size (n=1300)

Practice Size	Full-Time Pathologists	Percent of Respondents
1-5	532	40.9
6-10	285	21.9
11-15	162	12.5
16-20	99	7.6
21-25	60	4.6
26-30	45	3.5
More than 30	117	9.0

Source: 2011 Practice Characteristics Survey; College of American Pathologists

Pathology group size is largely driven by the number of surgical pathology and cytopathology cases in individual hospitals and academic medical centers. Since the mission of pathologists in academic medical centers includes research and teaching in addition to service work, it is generally understood that the number of pathologists there are higher than in community hospitals with similar case volume. Another factor that frequently drives pathologist levels in academic medical centers is more complex cases compared to community hospitals. In both community hospitals and academic medical centers, the extent of Laboratory Director responsibilities can also influence the number of pathologists on staff.

A major benefit that larger pathology groups offer is the ability to distribute cases based on the degree of specialization. Many pathologist leaders acknowledge that aggregate productivity often increases when general cases are directed to general pathologists and complex cases are directed to sub-specialist pathologists. Given that the preponderance of pathologists practice in small and medium sized groups, the opportunity to take advantage of sub-specialist on-site expertise is limited.

Some pathology industry leaders point to the value of large groups.³⁴ They believe that, in addition to greater productivity, large groups are able to better respond to changes in case volume, hospital consolidations, changes in technology, expertise in emerging testing methodologies, Lean

and Six Sigma management methods, as well as decreasing reimbursement.

Historically, some hospital administrators and medical staff leaders chose not to contract with pathology groups that served other hospitals in the same or adjacent patient services areas. However, our experience has shown that the formation of multi-hospital health systems and networks, joint operating agreements, and the expanding number of ACO's has made the opportunity for hospitals to contract with large pathology groups more worthwhile to consider.

Look for future Client Alerts that will focus on pathology group mergers.

Redistribution of Pathologist Workload to “Pathologist Extenders”

We believe that any initiative to consider re-distribution of pathologist “pre-sign out” responsibilities should be viewed under the lens of policy, accreditation, and political and practical perspectives.

The Workforce Project Work Group reviewed the availability and work scope of Pathology Assistants (PA's), and found that “PAs can be seen to some extent as replacing certain work that the pathologist might otherwise do, to a large extent, they extend what pathologists perform, and are essential as the requirements for a comprehensive examination of a specimen become far more complex.”³⁵ Unfortunately, they found that the current and future supply of PA's and PhD clinical scientists may not be adequate to provide adequate extender coverage.

While not every hospital or pathology group employs a Pathologist Assistant, there are many duties a PA can perform to reduce pathologists' workload. Based on information presented at a recent meeting of the Association of Directors of Anatomic and Surgical Pathology, Pathology Assistants can play an expanded role in assisting pathologists.³⁶ As presented at the meeting, some pathologist responsibilities that may be delegated to PA's include the following:

- Complete autopsies: record review, dissection, PAD, histologic review and final sign-out by pathologist
- Coding
- Tissue procurement for research
- Gross and Microscopic synoptic template development
- Training and competencies for Histotechnologists
- Supervisory role (to include personnel management) in Frozen Section and Routine Gross Laboratories

With regard to PhD's, the Workforce Project Work Group reported that, based on limited surveys, about 15% of PhD clinical scientists sign out clinical pathology cases. Some PhD clinical scientists may be qualified and experienced in order to take responsibility for Laboratory Director responsibilities. In those situations, it might be expected that pathologists' workload could be reduced. Clearly, this option requires thoughtful analysis and deliberation.

Interestingly, the Workforce Project Work Group did not include a review of Histotechnologists and Cytotechnologists as possible pathologist extenders. In some hospitals, these non-MD laboratorians can and do play an important role in providing valuable pre-sign out work.

For example, qualified Histotechnologists may perform tissue grossing and other administrative duties. According to the CAP laboratory accreditation manual, the qualifications for a non-pathologist to perform gross examinations include an associate's degree in laboratory science or medical laboratory technology.³⁷ While not all Histotechnologists have earned this degree, those who have can help with this aspect of pathologist workload. Additionally, Histotechnologists can play an expanded role by gathering all previous blocks, slides, and relevant radiological studies and reports for cases. For those not familiar with pathology workflow, this information is necessary in order to correlate current findings with previous pathologies, and to provide integrated pathology reports. Often, pathologists perform the gathering of these materials which can be very time consuming.

Cytotechnologists currently play a valuable role for some aspects of pathologist pre-sign out workload. In addition to reviewing Pap tests, pre-screening of non-gynecologic and FNA specimens, qualified Cytotechnologists can use their morphologic experience in the areas of Digital Image Analysis, FISH analysis, quantitative immunohistochemistry i.e. ER/PR and Her2 quantification, circulating tumor cells, AFB screens, tumor identification for molecular markers, and workflow management.³⁸ While there are often unclear career ladder specifics in order to develop expanded Cytotechnologist responsibilities, several hospitals and academic medical centers are currently working to develop that information. As technology incorporating morphology expands, it would seem that opportunities for Cytotechnologists to assist in pathologist pre-sign out work may increase.

It's our impression that, even though the Pathology Workforce Summit work paper states that "workforce projections must take into account all members of the laboratory team", it will require a much more focused, practical approach in order to reach any meaningful consensus on the future role of pathologist extenders.

Suggested Next Steps

We recognize that hospital and academic medical center leaders have many important operational, organizational, market, and reimbursement issues on their plates. And while projected pathologist shortages will need to compete for their attention, we believe that it's prudent for those executives to consider how possible pathologist shortages may impact their organization.

We believe now is the time for hospital leaders to engage their organization's pathologists in discussions concerning projected decreases in the number of active pathologists. Through conversations with the pathologists that serve their institution, hospital executives will be able to evaluate the degree of difficulty the shortages may have on their organizations in the future. In order to prepare for those conversations, we developed the following list of topics we believe should be included in discussions hospital leaders have with the hospital's pathologists.

- Succession Plan – Based upon the circumstances of the hospital's pathology group, do they have a current succession plan? Do they anticipate hiring pathologists as older pathologists retire, or do they plan to leverage new technologies in order to perform their responsibilities in a quality and timely manner?
- Sub-specialization – For pathology groups with fewer than ~ eight to ten pathologists, how do the pathologists currently refer sub-specialty surgical pathology cases? What arrangements does the pathology group employ for cases requiring sub-specialist attention? Do the pathologists believe that future case volume and mix will be sufficient to support one or more sub-specialist pathologists?
- Utilization Management – To what extent are the pathologists involved with blood utilization and laboratory test utilization management? Do the pathologists anticipate evolving their responsibilities in order to develop and manage these utilization management programs? Does the current contractual arrangement between the hospital and pathologists provide detailed responsibilities and compensation for utilization management activities?

Pathologist Extenders – Does the hospital

- or pathology group employ Pathologist Assistants, Histotechnologists, Cytotechnologists, or PhD clinical scientists who serve as pathologist extenders? If those individuals are employed, what portion of their time is devoted to pre-sign out work commonly performed by pathologists?

Innovative Technology – To what extent do the

- pathologists utilize new technologies to improve surgical pathology or cytopathology diagnostic capabilities? Examples of these technologies include molecular diagnostic testing, genomic testing, essential telepathology devices, digital dictation and speech recognition systems, and other technology that has proven to improve workflow, and expedite pathology services.

- Merger of Pathology Groups – If the group has fewer than eight to ten pathologists, has the hospital or pathologists considered merging the group with another pathology group? If the hospital is a part of a multi-hospital healthcare system, are the pathology groups in each hospital separately organized, or do they operate as a single entity?
- Pathology Report Logistics - Based on current and projected case mix, required report detail, service intensity, and need for report turn-around-time, do medical staff leaders believe there is comprehensive information included in pathology reports? Does the hospital laboratory or pathologists plan any enhancements to pathology IT capabilities as it relates to CPOE or testing formularies?
- Pathology Department Quality Plan – Do the pathologists have a current/updated quality plan for the department? A quality plan defines steps to ensure accuracy, completeness, and timeliness of all the reports generated by the pathologists by utilizing the principles of a Performance Improvement Program. Does the Quality Plan include responses to possible reductions in available pathologists?

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