The Cost of Implementing ICD-10 for Physician Practices – Updating the 2008 Nachimson Advisors Study

A Report to the American Medical Association

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Executive Summary

The U.S. Department of Health & Human Services (HHS) has designated ICD-10 as a code set under the Health Insurance Portability & Accountability Act (HIPAA) and it will be required for use by physicians and others in the health care industry beginning October 1, 2014. The transition to ICD-10 is expected to be much more disruptive for physicians than previous HIPAA mandates, as they must adjust their documentation and other processes. Unlike previous HIPAA mandates where physicians could lean heavily on other partners, such as billing services, vendors, and clearinghouses, use of the new codes will require a much deeper level of involvement by the physicians themselves.

In October 2008, Nachimson Advisors produced a landmark paper[1] on the cost of ICD-10 implementation for physician practices and clinical laboratories. This study estimated costs to implement ICD-10 in six areas for three hypothetical practice sizes. Our findings showed that the ICD-10 costs ranged from an estimated $83,290 for a small practice up to $2,728,780 for a large practice.

Since 2008, the regulatory environment for physicians has changed dramatically. As well, we now have some real world experience documenting implementation costs. Based on this new information, the results of our 2014 study demonstrate that costs to implement ICD-10 may be much higher than what was estimated in 2008, especially for physicians who must pay for upgrades to their electronic health records (EHR) and practice management systems (PMS). Below is a summary of the newly estimated costs as compared to the 2008 study.

	Typical Small Practice	**Typical Medium Practice**	**Typical Large Practice**
2008 Estimated Costs	$83,290	$285,195	$ 2,728,780
2014 Estimated Costs	**$56,639 - $226,105**	**$213,364 - $824,735**	**$2,017,151 - $8,018,364**

The 2014 study takes into account the convergence of dynamic and financially demanding physician requirements; several of which focus on the cost to purchase new or upgraded software. Moving to ICD-10 includes a transition to codes and system configurations embedded in the PMS or integrated EHR that contains a PMS module. In addition, physicians are required to use Version 2014 certified EHR technology (CEHRT) in order to meet the requirements of the Meaningful Use EHR Program requirements.

The 2014 study follows the general methodology used in the 2008 study, in addition to interviews with practices, vendors, and consultants. It also expands the expense categories to include tasks that were not recognized as critical in 2008 (e.g. testing). We also estimate anticipated costs using ranges, in order to reflect variations in practices.

[1] http://www.nachimsonadvisors.com/Documents/ICD-10%20Impacts%20on%20Providers.pdf

Introduction

ICD-10-CM is the updated version of the ICD-9-CM code set currently used for coding diagnoses on all health care standard administrative transactions. The ICD-9 code set was developed by the World Health Organization (WHO) and modified for U.S. use in 1977. It has been in widespread use since 1988, and required under the Health Insurance Portability and Accountability Act (HIPAA) since 2002.

The WHO produced an updated version, ICD-10, in 1992. Modifications to the code set for U.S. use have been developed by the National Center for Health Statistics (NCHS) for diagnoses (ICD- 10-CM). The update to the ICD-9-CM code set, the ICD-10-CM code set expands diagnosis codes by a factor of five, enabling greater specificity in the coding of diagnoses.

On August 22, 2008, the Federal Government proposed a new rule that would require all physicians, other health care providers, and health plans to use the ICD-10-CM code set as the standard code set for coding diagnoses on *all* HIPAA standard transactions.

In October 2008, Nachimson Advisors produced a landmark paper (http://www.nachimsonadvisors.com/Documents/ICD-10%20Impacts%20on%20Providers.pdf) on the cost of ICD-10 implementation for physician practices and clinical laboratories. This paper was the first attempt to quantify the cost of implementation at the individual practice level. Previous studies had estimated costs and benefits to the industry in general, but had not provided any information for physicians to gauge the cost for their own implementation. The results of the 2008 study have been widely quoted from the time of publication through the present time. They have been generally accepted as a guide for physician practices.

That study used a combination of existing research results and interviews with experts, physician practices, and clinical laboratories to estimate the costs of implementation. In 2008, only a proposed rule had been published by the Centers for Medicare & Medicaid Services (CMS), and there were no requirements to move from ICD-9 to ICD-10. No actual implementation experience existed.

At the time of the 2008 study, the American Reinvestment and Recovery Act of 2009 (ARRA) also had not yet been passed. This law (ARRA) contained the Health Information Technology for Economic and Clinical Health (HITECH) Act that incents the purchase and use of certified EHRs among eligible professionals (EPs) and eligible hospitals (EHs). The HITECH Act is the law from which the "Meaningful Use" of electronic health records (EHR) incentive program originated. Under this program EPs – the vast majority of whom are physicians – must use these EHRs in a manner prescribed by the federal government to obtain the incentives and to avoid financial penalties. The costs and reporting criteria to meet these requirements can exceed the incentives and represent significant changes to physician workflow. These new costs are now overlapping with the costs to comply with the ICD-10 requirements.

The 2008 study estimated potential costs of ICD-10 implementation in six areas for three hypothetical practice sizes. The published results are summarized in Table 1.

Table 1: 2008 Total Cost Summary

	Typical Small Practice	Typical Medium Practice	Typical Large Practice
Education	$2,405	$4,745	$46,280
Process Analysis	$6,900	$12,000	$48,000
Changes to Superbills	$2,985	$9,950	$99,500
IT Costs	$7,500	$15,000	$100,000
Increased Documentation Costs	$44,000	$178,500	$1,785,000
Cash Flow Disruption	$19,500	$65,000	$650,000
TOTAL	**$83,290**	**$285,195**	**$2,728,780**

The 2008 paper included an extensive discussion of the ICD-10 code set and its significant differences from ICD-9. It also provided significant details on the areas incurring costs. The intent of this paper is to update the cost areas and figures from the 2008 study. The discussion of the code set will not be repeated, as that information has changed relatively little from 2008 to the present day.

Why Update the 2008 Paper?

The figures developed in the 2008 paper were intended as predictors of implementation costs. No actual implementation work had been completed at the time the paper was produced. In January 2009, the Federal Government published a final rule that required the health care industry use the ICD-10-CM code set for coding diagnoses for services provided on and after October 1, 2013. The specific compliance date was arrived at after reviewing industry comments on the need for adequate time to implement ICD-10. The 2008 proposed rule had suggested 2011 as the compliance date but based on public comments, the timing was deemed insufficient.

Despite having been granted an extended time to implement ICD-10, industry progress toward implementation moved slowly from 2009 to 2011 as they worked to implement other mandates, like moving to the next version of HIPAA known as “5010.” 2011 was also the first year incentives were available under the Meaningful Use program. More than half of physicians were using some form of an EHR, although only a third of those physicians were using a system that even had “basic features” such as the ability to record patient demographics and see laboratory and imaging results. Also, EHR systems were still in immature phases of using standardized clinical data code sets (e.g. Standardized Nomenclature of Medicine (SNOMED)). This lack of standardization makes it more difficult to have a uniform method for selecting the correct ICD-10 code. Furthermore, vendors were incorporating a

number of changes that would bring more consistency to billing and coding including trying to standardize an approach to clinical documentation that supported ICD-9 diagnosis and Current Procedural Terminology (CPT®) procedure billing codes. Physician practices were focused on adopting and implementing EHR software and managing a decline in productivity from workflow and clinical documentation changes. ICD-10, although required by regulation, took a back seat as physicians and vendors alike tried to navigate the new Meaningful Use reporting requirements.

Mounting Pressures

Economic slowdowns that drove unemployment and lost health benefits resulted in an increase in patients' inability to pay for health care. The emergence of Accountable Care Organizations and new payment and delivery reform models are changing the way physicians practice and are paid, increasing the need for accurate and specific data from both hospitals and practices. Technology has advanced with the expansion of mobile and tablet computing creating additional privacy and security responsibilities for practices to manage. There is continued pressure on physician practices to reduce costs as payments are decreasing from health plans and being tied to quality performance. The mounting pressure for physicians to contend with a vastly different health care landscape has resulted in an increase in hospitals and health systems acquiring physician practices[2].

Not surprisingly, status surveys indicated that the industry was falling behind recommended benchmarks for ICD-10 implementation. As a result of requests from the American Medical Association (AMA) and other organizations, the federal government agreed in early 2012 to revisit the ICD-10 compliance date. On September 5, 2012 the Department of Health and Human Services (HHS) published another final rule that moved the ICD-10 compliance date to October 1, 2014; granting the industry a one year delay in implementing ICD-10.

This updated study takes into account the convergence of dynamic and financially demanding physician requirements: 1) adopting ICD-10, which includes a transition of codes and system configurations embedded in the practice management system (PMS) (PMS is software that serves as the business brain for the practice or an integrated EHR that contains a PMS module.); and 2) upgrading to Version 2014 certified EHR technology (CEHRT) (use required by physicians under the Meaningful Use Program), enabling complex and specific clinical documentation improvements to not only support ICD-10, but also report clinical quality reporting measures, driven by the presence of ICD-10 codes. Ideally, the implementation of both software components should be synchronized.

In reality, the EHR vendors' release of Version 2014 CEHRT software is not aligned with ICD-10 compliant PMS software. Many integrated EHR vendors (EHR and PMS supported by the same company) plan to release ICD-10 compliant systems in the first quarter of 2014 and Version 2014 CEHRT software in early summer 2014, essentially leaving many practices without time to participate in ICD-10 testing and adjust to new technology. The timing also means that physicians are likely to be using a hybrid system, accessing both ICD-9 content for Meaningful Use, but also using ICD-10 compliant billing systems,

[2] http://www.jacksonhealthcare.com/media/182032/practiceacquisitionreport_ebook0213.pdf

resulting in potential for patient billing errors and problems with Meaningful Use reporting and attestation data.

For example, physicians participating in the Meaningful Use program in 2014 will select a 90-day attestation period during the year, a time when health care professionals use the EHR system for 90 continuous days and demonstrate they are meaningful users of CEHRT. They must also, however, be assured that as of October 1, 2014, they can submit appropriate ICD-10 codes for diagnoses. Results from field interviews and organizational studies indicate physician ICD-10 implementation is lagging. Results of a recent Medical Group Management Association (MGMA) survey showed the direction physician groups are heading – "only 4.8 percent of medical practices reported that they have made significant progress when rating their overall readiness for ICD-10 implementation."

Should a practice also be called upon for a Meaningful Use audit, the upgraded, integrated EHR system will not look like or perform exactly as the previous EHR version, making it difficult for practices to defend the numerator and denominator percentages attested to in applying for and receiving Meaningful Use incentive funds. Auditors seeking proof of 2012 or 2013 activity means the physician must determine where screen shots were stored in older versions of their software to defend their data was accurately pulled. Unless the physician was diligent about storing screen shots – most practices were unaware they needed to retain this information — identifying defending material is labor-intensive and sometimes difficult to secure.

Also competing for the physician's attention is how to fit newly insured patients under the ACA into their practice schedules. Revenue cycle management companies we interviewed said they anticipate the newly insured will begin to exercise their entitlement to health care in mid-summer 2014, about the same time ICD-10 and Meaningful Use Stage 2 will be in full implementation mode.

Given the significantly changed environment and the rapidly approaching ICD-10 deadline, updating the 2008 costs based on current knowledge and experience from some in the early stages of practice implementation, will produce better information as a guide to practices. This study, therefore evaluates the cost impact of ICD-10 and interdependencies of transitioning to Meaningful Use in 2014.

What Will Be Updated From the 2008 Paper

This updated study will provide estimates on physician practice costs for the implementation of ICD-10-CM. We will attempt to duplicate the general approach of the 2008 paper by focusing on three hypothetical practices representing different sizes. We will be revisiting the cost categories as Nachimson Advisors and others have had some experience in assisting vendors, health plans, physicians, and other health care providers in their ICD-10 implementation and planning efforts. We have seen that there are a few additional implementation cost centers for practices, including costs for clearinghouses and/or billing services, and for testing ICD-10 changes both internally and externally. While these are not the main drivers of cost, they will have some impact on overall cost totals.

There has been considerable progress in understanding that the cost impact of moving to ICD- will differ from specialty to specialty since the extent of the changes in the code set also differs by specialty. Orthopedics, cardiology and obstetrics/gynecology, for example, will see large scale changes to ICD-10 coding. Additionally, other factors, such as vendor contracts and the timing of software version releases that support ICD-10, show great variability in their impact on practices. Rather than a single cost estimate for each practice size, we will attempt to establish a reasonable range of costs based on the information we have collected and our experience working with practices.

Methodology

We followed the general methodology used in the 2008 survey, using published research (including information from the 2008 study). We also used information gleaned from interviews with actual practices and included both their actual incurred costs and budget estimates. We also interviewed several vendors and consultants who provide ICD-10 services, such as education, revenue cycle management, and preparedness assessments. These vendors did not have such tools available in 2008, so they provided a far more realistic picture of the present day environment. Additionally, we interviewed six EHR vendors to get a sense of how they will roll out ICD-10 enabled and Meaningful Use certified systems.

As noted in the MGMA study, few practices have made significant progress in this implementation. Therefore, most of the figures produced will still be predictors rather than actual practice costs. These figures, however, will now be based on more educated guesses, anticipated budgets, and the experience of those who have completed some of the assessment work.

Training Costs

Studies and experience continue to indicate the need for clinical and coding ICD-10–CM training for virtually all staff in a practice no matter what the size. The level of training will differ considerably, with many administrative staff needing some basic training, clinical staff needing more detailed training in documentation concepts and coding, and coders (or those who do coding for the practice) needing extensive training in the new code set, anatomical concepts, and health plan impacts. Of note, many small practices are depending on their integrated EHR vendors to provide necessary training for ICD-10, as well as, migration of ICD-9 to ICD-10 codes.

A variety of products and training classes are available, from basic code books to onsite boot camp training by experts in coding and documentation or online training from community colleges or associations. Registered Health Information Technology (RHIT) and Registered Health Information Administrators (RHIA) have long been trained to support the coding transition, but most practices cannot afford either in their practice. There also is a significant shortage of both designees (RHIT and

RHIA) available to manage the ICD-10 training. Because of variability in the size and specialty of practices, there is no "one size fits all" implementation process for practices to follow, as time, resources, learning preferences, IT capabilities, and current skills all impact the decisions on training.

Nonetheless, we provide some baseline to allow for cost estimation. Note that it is both the time spent on training and the training resources themselves that contribute to the cost of training. Training can be provided throughout the implementation time frame as needed for individuals, but the October 1, 2014 date is fast approaching and thus limits the training time period.

Practices should also consider any post-training/ongoing resources that may need to be developed or acquired, such as refreshers, continuing education, and new employee orientation materials. While these materials may not add significant costs for training, they still need to be considered.

Resources

Some examples of resources for ICD-10 coder training include $300 for a diagnosis coding book, $600 for attendance at a "boot camp" session for general ICD-10 training with additional costs (25 to 50% more) for specialty training, and $500 per coder for larger on site group training with per coder costs dropping as the number of coders increases. Practices also must factor in travel costs for onsite training. Online boot camps for coders are available for $1,000 where coders can take whatever time they need to finish the class.

Clinician training – online documentation and coding training can be purchased for around $300 for a three-hour training in a particular specialty.

Staff training – two-day boot camps are available for around $700 and provide more "implementation" type training. This is training is targeted more for practice managers of medium to large size practices. Managers could then return to an office and provide training to other administrative staff. Our study includes both out of pocket costs and soft costs, such as time and materials for internal training.

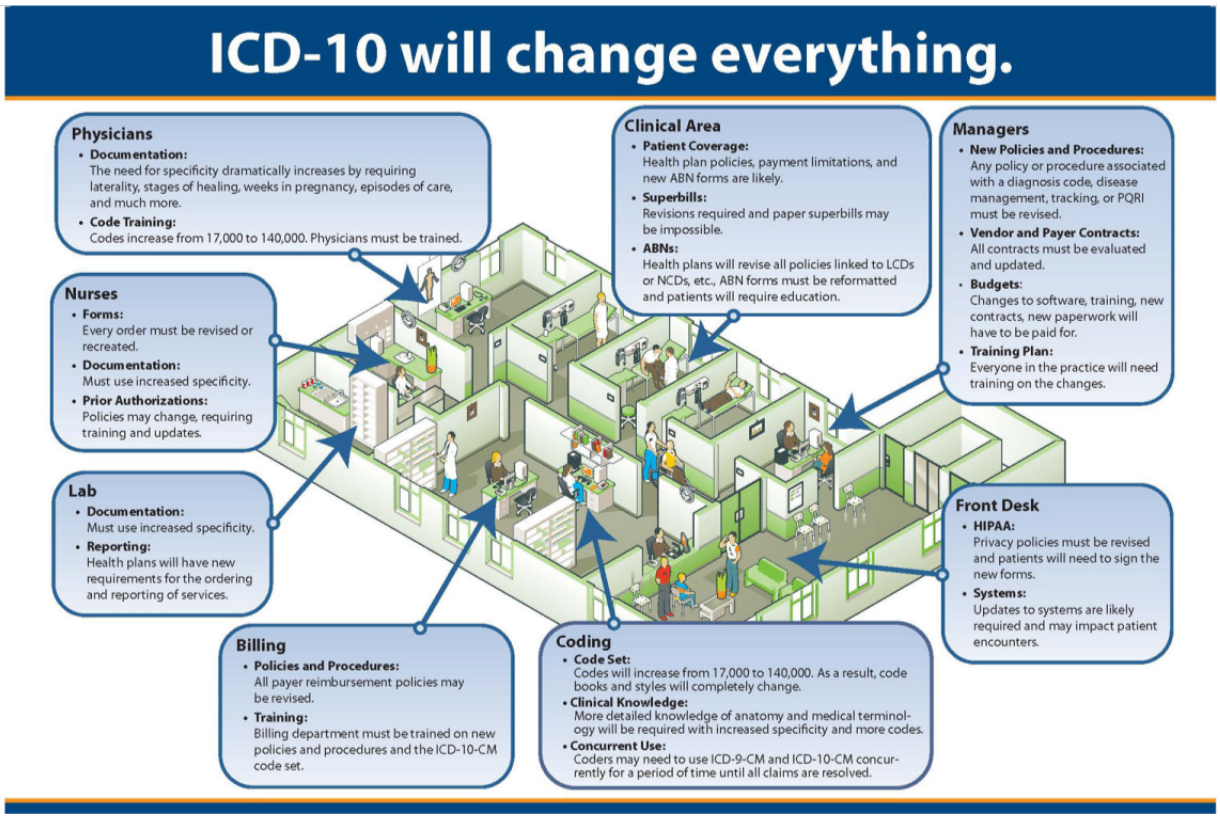
Some estimates from consultants who train small practices indicate that costs are around $1,500/day for the training. The time commitment would range from two to three days for training.

Estimated training cost from a very large practice (900+ physicians, 900+ staff, and 50 coders) was approximately $350,000. Another very large practice learned from their assessment that their documentation processes were very nearly sufficient for ICD-10 coding already. Physicians needed one hour or less for any necessary updating of documentation. They anticipate training costs for the entire organization to be less than $500,000.

Note that training costs will need to include the time individuals spend on training, as well as the materials cost for the training. One of the difficulties for practices is finding the time for individuals to take the training without interfering with daily operations.

Assessment Costs

There are two basic types of assessments that will be necessary in the ICD-10 implementation process. Practices must first assess where codes and code information is collected, produced, used, and reported throughout the practice. This will include an assessment of all of the patient flow and all of the IT system interdependencies. It will include both internal personnel and vendor products. This step allows the practice to understand exactly where the code set change will impact their personnel, their operations, their internal systems, and their vendor products. A study of interfaces also must be included to ensure data will transition between systems. This assessment can be done with internal staff, by consultants, or using a combination of the two. The following graphic depicts the range of impacts of ICD-10 that must be assessed[3]:



While smaller practices may tend to rely heavily on internal staff, the time commitment can be significant. From a consulting perspective, the ICD-10 impact assessment in a typical small practice can be completed in about three days at cost of about $6,000. For larger practices, the assessment process

[3] American Academy of Professional Coders, www.aapc.com/ICD-10/office-map/index.aspx.

is generally done by working through a steering committee; the initial phase cost is about $8,000 to $9,000.

Our findings indicate that most of the smaller practices have not yet determined a budget for any portion of ICD-10, choosing instead to rely on their EHR vendors to walk them through the process.

The second major assessment activity involves documentation. Our 2008 paper discusses the expected documentation changes necessary for ICD-10 coding as compared to ICD-9. Given those, it is necessary for a qualified individual to review the existing documentation in a practice and determine its accuracy and specificity. While it might be sufficient to meet ICD-9 coding needs, the enhanced ICD-10 coding requirement may mean changes in documentation procedures are warranted. The extent and type of those changes can be discovered through a documentation assessment. Interviews reveal that small practices are mixed in how they approach the integrity of clinical documentation. Approximately a quarter of practices indicate their documentation has already been updated for ICD-10. Three-fourths of small practices, however, plan to assess documentation needs when their software vendor rolls out ICD-10 to their PMS during the 1st Quarter of 2014.

One estimate of the cost of such an assessment is approximately $18 to $20 per record; another is $1,000/day for 50 records with unlimited training for physician while the consultant is on site. For large practices, costs tend to drop to $100 or less per physician. The extent of the assessment will be determined by the number of clinicians (to determine differences in documentation practices) and by the variety of conditions the clinicians will treat. Again, specialty plays an important role here in that requirements for coding change specificity will differ depending on the specialty. For example, orthopedists must document both laterality and types of fractures while primary care physicians will see the greatest variety of conditions as compared to specialists.

Very large practice organizations will expend considerable resources for their business and documentation assessment. One very large practice estimated their assessment cost at $800,000. Clinical and administrative staff in that organization total approximately 4,000.

One key lesson from wide-sweeping EHR adoption is that the small physician practices are more likely to adopt an internal do-it-yourself approach to ICD-10 preparedness, and accept advice from their vendor that the system is ICD-10 ready. If this plays out to be the predominant approach, outside partnering influencers, such as testing interfaces and payers, as well as clinical documentation improvements for ICD-10 compliance will stifle the physician's ability to successfully submit claims.

Practices that have invested resources to learn, manage, and assess the impact of ICD-10 on clinical documentation, coding, and claims report their coders spend an average of one-third of a calendar year in broad awareness, training, workflow process analysis and redesign, physician collaboration, anticipating system redesigns and implementation. The time practice administrators spend in similar assessment and planning ranges between 30 and 100 hours. Findings in our survey indicate that EHR vendors will offer fee-based ICD-10 revenue cycle management consulting services as part of their 2014 ICD-10 roll out. Their costs will range from $120/hour to $175/hour.

The updated study takes into account staff time that is allocated to ICD-10 preparedness.

Vendor/Software Upgrade Costs

There are two key systems in physician offices that must be upgraded for ICD-10 capabilities. The first is the EHR; the second is the PMS. The EHR collects the clinical information and documentation used to determine the appropriate ICD-10 diagnosis codes; the PMS produces the billing information to submit to a health plan for payment, which includes the ICD-10 diagnosis code. There are a number of configurations of these products in physician offices. These may be two separate systems from two different companies with a single interface to exchange clinical and coding information. They may be one integrated system (built on one database). A third design is a tightly interfaced system, which means the vendor purchased several disparate system pieces and designed several internal interfaces to make them communicate and then packaged them as one solution. The third is most common. Some offices may outsource the functions of one system or the other, for example, a billing system to an outside billing company.

There are also different contracting arrangements for system upgrades. Some vendors will include software updates in their contracts with physicians; some will charge for upgrades. Note also that any peripheral systems (quality measurement systems, utilization review (UR) systems, etc.) that interface with the EHR or PMS systems will likely need to be upgraded as well to accommodate the new codes.

Recent MGMA study data provides information about anticipated ICD-10 upgrade costs. About 80% of practices indicated that they will need to upgrade their PMS. Only about one-third of the practices anticipate that this upgrade is part of their annual contract. The costs of the upgrade average about $10,000 per physician full-time employee (FTE).

Regarding EHRs, about 70% of practices indicated that they would need to upgrade or replace their EHR systems for ICD-10. About 40% indicated that these costs would be covered by their vendor; with upgrade costs also averaging around $10,000 per physician. Furthermore, some costs can be expected for additional hardware, the use of computer assisted coding software (especially for larger practices), and other systems that may need to be remediated to accommodate the new code set.

Clearinghouses, used by many physician offices, are also upgrading their systems for ICD-10 codes and for potential new payer edits. Physician office costs are not expected to change for basic services. Also, most basic billing service costs are not expected to change based on the ICD-10 upgrade. However, if physicians have their billing services or other outside companies do all of their coding, there may be some increase in costs for ICD-10. Should physician offices need outside coders to do coding due to loss of productivity or lack of staff knowledge of ICD-10, there will be additional vendor costs.

Physician practices face an additional risk in upgrading their EHR systems to meet the 2014 Meaningful Use certification requirements. This must be completed in 2014, prior to October 1 in order to meet Meaningful Use reporting deadlines, along with ICD-10 implementation. Many vendors are indicating

that the ICD-10 upgrade will be separate from the 2014 upgrade. If a physician is facing two upgrades during the year, testing and training costs will increase. Timing is also important here. If physicians are in the midst of ICD-10 testing and then must face an EHR upgrade, they are faced with additional financial and operational risk. The ability of practices to meet these dual requirements in such a short span of time will be further challenged as they also work to meet other federal mandates in 2014.

Furthermore, from an audit standpoint, should a practice be notified they have been selected for a Meaningful Use audit, screen shots from the previously installed EHR version will become essential as they will no longer be available in the upgraded system. While physicians are advised to keep all screen shots and Meaningful Use documentation, this is not typically the case. A Meaningful Use audit will add 60 to 100 hours of the practice manager's time to respond to the initial inquiry if documentation is not readily available. Some EHR vendors have been helpful in providing screen shots, and some also charge a fee for this service. Some systems are also incapable of replicating historical screen shots.

Process Remediation/Productivity Loss Costs

As the industry has become more familiar with the impact of ICD-10, both through education and through practice impact assessments, there is a recognition that the actual process of collecting information for coding will need to change. Practices will need to look at the roles of patient registration staff, nursing staff, and physicians in the documentation and coding process. As such, these staff will have to spend some time in revising practice business processes. This task was minimally mentioned in the original 2008 study regarding updating the "superbill", but has become a bigger part of most ICD-10 implementations. The communications among physicians and the coding and billing staff is a key area that can be improved in the ICD-10 implementation, especially as previous claim denials are analyzed for clinical documentation and demographic information weaknesses. Each practice should spend some time on this process remediation. We will include time for this step in the practice cost estimates. Based on experiences in EHR implementations and reviews, this step should include about 30 hours of physician time and 20 hours of coder time, with a small percentage of coders and physicians involved in this effort. We would expect the same amount of time to be spent for practices without an EHR, as documentation processes are the key element that would need to be remediated – basically a manual effort.

Included in process remediation are the new roles that coders take on as physicians transition into ICD-10 and Meaningful Use. Coders, for example, are getting out of the back office and becoming more engaged in clinical workflows. They are learning to use the EHR system to help with specific changes required to modify and adapt ICD-10 compliant EHR systems to specific practices. Often, templates and documentation directions must be customized. Some are taking on a dual role as coder and EHR documentation advisor, helping physicians capture clinical documentation required for ICD-10 claims.

Others are becoming Meaningful Use and ICD-10 liaisons or data stewards, helping the practice optimize the EHR system to its full use. These new tasks represent growth for the coding industry. They also

require additional time, training and collaboration that, for 2014, will impact productivity. While there are fears of ICD-10 coder shortages, no specifics have yet been identified.

One common theme from our interviews is that physicians have a false sense of belief that they have been correctly coding for ICD-9, when in fact coders report that rather than continually querying the physician, they recode on their own. Therefore, the challenges physicians will face in moving to an even greater number of codes are likely to persist and in fact be exacerbated. For ICD-10, coders reported that physician-coding communication would be one of their greatest challenges; whereas physicians reported that productivity loss would be the greatest impact for them.

Studies continue to show that ICD-10 coding will take more time for either trained coders or staff that does the coding. While the majority of these studies were focused on hospital experience that included both the new ICD-10 diagnoses and procedure codes there are lessons for ambulatory practices. These studies point to a nearly 50% drop in productivity. We do not expect that to be as great when dealing with just the diagnosis codes in the ambulatory setting, some initial estimates appear to show about a 10% decrease in productivity for the physician side of the business. In addition, the increase in documentation time for physicians continues to exist. Discussions with various consultants have indicated that there is a continued belief that ICD-10 coding will require additional time of physicians for documentation. This will manifest itself in either additional "clicks" for an EHR, or in additional writing and/or dictation for other types of documentation. We will continue to use our 15% increase in documentation time for physicians. Information from Medscape's Physician Compensation Report: 2013 Results shows a wide range of salary income for physicians with wide differences by specialty. Using data from this survey we will use an income range of $170,000 to $405,000 and divide these by 2,080 (40 hours a week x 52 weeks) to establish an hourly rate. The hourly range will be $81.73 to $194.71.

Recent data from the AAPC2013 Healthcare Salary Survey shows an average salary of medical coders to be $46,487/year. We equate this to $22.35/hour ($46,487/2,080).

Testing Costs

It has been recognized that the ICD-10 implementation changes go far beyond those of previous HIPAA transaction set changes, such as the upgrade from version 4010 to version 5010 in 2012. While those changes were focused on the electronic data interchange (EDI) transactions format, the ICD-10 implementation focuses on the change in the production, meaning, and processing of the code itself. The 5010 upgrade did not require changes in health plan coverage or payment policies; ICD-10 does. The 5010 upgrade did not require physicians to change their documentation processes, ICD-10 does. The 5010 upgrade did not require coders to use an entirely new code set to designate diagnoses; ICD-10 does. And the 5010 upgrade did not impact EHR systems or reporting systems; ICD-10 does. Moreover, physicians were able to lean heavily on their clearinghouses and vendors to achieve compliance under 5010; ICD-10 is far more complicated and requires significant physician involvement.

There was some limited testing of the 5010 upgrades. For the most part, small batches of transactions were tested between practices and plans (with clearinghouse in the middle), and as long as these transactions were deemed "compliant", the tests were considered successful. Reports, however, from many about lessons learned point to a need for a considerable expansion in ICD-10 testing. Holly Louie, CHBME, Chair of the Healthcare Billing and Management Association ICD-10/5010 Committee testified before the National Committee on Vital and Health Statistics (NCVHS), a federal advisory group that makes recommendations on HIPAA to the Secretary of HHS:

> *We have also learned from the 5010 conversion that payer testing was severely limited. The first six months of 2012 underscore this point in that many payers only tested syntax prior to the implementation of 5010 and in many cases the scope of testing did not adequately cover the true edits nor did the testing provide for end-to-end testing with full claim level adjudication and remittances as part of the test.*

She recommended:

> *'ICD-10 CM ready' should mean, at a minimum, the complete end-to-end testing of 837 and 835 transactions in full production has successfully been accomplished. Any maps or crosswalks used by a health plan to adjudicate a 5010/ICD-10 CM compliant claim must be publicly available and the diagnosis code(s) used for claims adjudication are reported.*

The Workgroup for Electronic Data Interchange (WEDI), another advisory group to HHS on HIPAA made the following comments on this theme in a June 2013 letter to CMS[4]:

> *In the case of ASC X12 5010 testing, most testing was done for submission and no return transaction test was conducted. WEDI believes that proxy testing, or not testing with real transactions with real partners, is not adequate. While testing with vendors is one step, there must be end-to-end testing to ensure a business transaction can be carried out in full. We acknowledge that the definition of end-to-end testing has not been established at this time.*

The consensus from industry experts is that significant end-to-end testing that replicates the round trip a transaction must make in order to be successfully processed will need to be an essential part of ICD-10 testing. As such, practices must take the time and effort to participate in enough testing within their organization, and with their trading partners, to assure that their operations will work correctly under ICD-10, including that they can submit claims to health plans, and that the health plans can correctly process those claims. Anything short of that will threaten the revenue stream of the practice. Medicare has said that they will not conduct end to end testing with trading partners; other health plans have indicated that they will do end-to-end testing with only a sample of providers.

[4] http://www.wedi.org/knowledge-center/comment-letters-testimony/comment-letters/2013/06/06/industry-lessons-learned-from-asc-x12-5010-implementation---letter-from-wedi-to-cms

We have little history of end–to-end testing for health care, and few tools to carry it out. The time to do this testing can be considerable, as it requires the recreation of all of the operational steps in a practice, testing each of the people, processes, and systems involved. In addition, a considerable number of transactions will need to be tested to assure that a relatively wide range of conditions are subject to testing. Of course, partners in the transaction (clearinghouses and health plans) must also be ready for this testing, including having ICD-10 edits, policies, and payment processes ready for testing.

Another complicating factor for physicians will be the variety of testing requirements from different health plans. It is expected that the types of claims to be tested, the number of tests, and the formatting requirements will be different for testing with Medicare, Medicaid, and commercial health plans. Some plans have already asked practices to recode existing claims from ICD-9 to ICD-10, while others are asking practices to process "clinical scenarios", that is hypothetical patient situations. Because these are very different processes, practices will need to spend considerable time responding to each health plan specific testing requirements.

The National Testing Program (NTP), offered by the Lott QA Group, is an example of a service that physician practices can pay to use to assist in the testing. The program offers test data based on the physician actual medical records, a dual coding review to test the practice's coding accuracy, and assistance in dealing with multiple health plans for testing. Time can be considerable here.

We offer some estimates for participation in the NTP as well as staff time. Staff time will be estimated at one full-time week for a portion of the practice.

Payment Disruption Costs

Even CMS recognizes that the ICD-10 transition will have an impact on the physician reimbursement processes. "The Centers for Medicare & Medicaid Services (CMS) estimates that in the early stages of implementation, denial rates will rise by 100 to 200 percent."[5] Besides the potential changes in reimbursement policies, there will be disruption in the process due to physician and plan issues in the implementation of ICD-10.

From the CMS Paper on ICD-10 Implementation for Physician Practices:

> *Fee-for-service payments*
>
> *Fee-for-service payments may potentially be affected for the following reasons:*
>
> - *Increased denials because of incomplete or inaccurate translation of existing policies, benefit and payment rules in payer systems as they attempt to migrate these rules to ICD-10*
> - *Delays in payments because of challenges in claim processing in the ICD-10 environment*

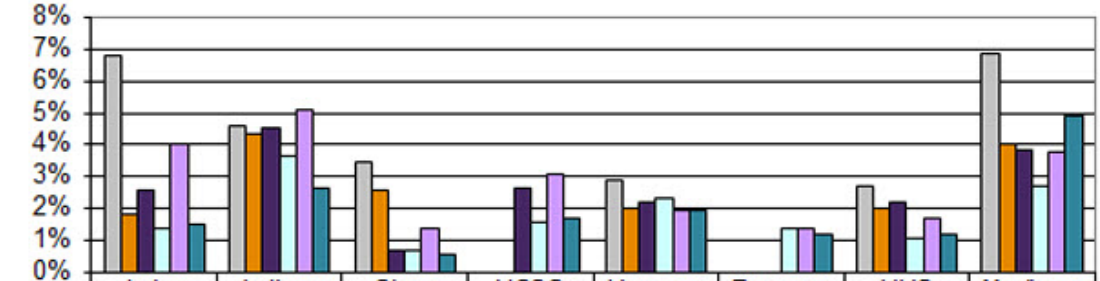
[5] "Readying Your Denials Management Strategy for ICD-10", p. 2, February 2013 © 2013 Healthcare Financial Management Association

Claims processing and cash flow interruption represent considerable challenges to physician practices though the exact magnitude for each physician will be unknown until on and after October 1, 2014. One orthopedic surgical practice administrator well into ICD-10 preparedness said, "There aren't enough margins in Medicare that allow us to absorb a 10% productivity or reimbursement loss. That would put us out of business."

It is hoped that testing prior to the compliance date will either alleviate some of those issues, or allow practices to get some sense of the extent of the issues and prepare for those. In 2008, we estimated that these issues would cost practices about 1% of annual revenues. Fears of these disruptions have increased due to the lack of testing and the lack of publication of revised payer edits and policies.

Initial estimates from the CMS rules on ICD-10 indicated the potential of tripling of denials. Figures from the AMA's National Health Insurer Report Card indicate that line item denials range in 2013, for various payers, from .54% to 4.82%[6]:

Metric 11 - Percentage of claim lines denied



	Aetna	Anthem	Cigna	HCSC	Humana	Regence	UHC	Medicare
2008	6.80%	4.62%	3.44%		2.90%		2.68%	6.85%
2009	1.81%	4.34%	2.56%		2.03%		2.02%	4.00%
2010	2.57%	4.50%	0.67%	2.67%	2.18%		2.21%	3.82%
2011	1.38%	3.62%	0.68%	1.59%	2.33%	1.36%	1.05%	2.73%
2012	4.00%	5.07%	1.39%	3.06%	1.97%	1.38%	1.71%	3.78%
2013	1.50%	2.64%	0.54%	1.70%	1.97%	1.18%	1.18%	4.92%

Averaging the payer percentages gives us about a 2% average. Tripling this figure provides an estimated denial rate of 6%, as compared to the current 2%, an increase of 4%. For this paper, we will use a range of 2% - 6% for disruptions. Further results of testing may provide a better estimate.

For physician revenue data, we used MGMA Physician Compensation and Production Survey: 2013 Report Based on 2012 Data. Table C on page 15 aggregates Median Collections for Professional Charges (excluding technical component of ancillary services and production from non-physician providers) as:

[6] http://www.ama-assn.org/ama/pub/advocacy/topics/administrative-simplification-initiatives/national-health-insurer-report-card/denials.page

Primary Care -- $376,315, Specialist -- $557,496

These are the figures we will use in estimating revenue disruptions.

Monitoring the Effort/Contingency Planning Costs

Since the 2008 study, work has been done in plotting out the necessary steps for ICD-10 implementation. An important consideration is what needs to be done after October 1, 2014. Even CMS recognizes the need to monitor what is going on in a practice post-ICD-10 compliance date. From their guidance paper:

- *Monitor the impact on reimbursements, claims denials and rejections, coding accuracy and productivity, fraud and abuse detection, and investigations*
- *Resolve post-implementation issues as quickly as possible; create plan for full problem resolution as needed*

Practices will need to consider the time and effort necessary for this monitoring and remediation. As with any large transition, some problems will occur and must be identified and resolved. It will be difficult to measure the work here, so we will not include any cost estimates. There will, however, be costs incurred for this.

Hypothetical Practice Cost Estimates

In our 2008 paper, we estimated costs for three hypothetical physician practices; a small practice (three physicians and two administrative staff), a medium size practice (10 physicians, one full time coder, and six administrative staff), and a large practice (100 physicians, with 64 coding staff, 10 full time coders, and 54 medical records staff). We use these same practice compositions and update their costs with the information we have gathered. As compared with 2008, we have identified some "real" costs through interviews and research, and have uncovered several additional cost areas. There are still costs that must be roughly estimated as they represent ones that have not yet been experienced or even modeled through testing. The industry remains behind projected implementation timelines.

Typical Practice 1 - "Small" Size

The following cost estimates are based on the assumption that a typical small practice has three physicians and two administrative staff.

Training Costs

Interviews with practices and consultants, as well as reviews of vendor web sites, have shown some relative consistencies in training costs. For this practice, at a minimum we would expect the purchase of a code book at $300, $600 for one staff person to attend a boot camp session, and $600 per physician for online general ICD-10 training plus one specialty training per physician. That totals $2,700 for training materials and courses. This cost is about the same as our consultant estimate of around $3,000 for two days of training on site. This is a slight rise from our 2008 figure.

Assessment Costs

Small practices may rely on internal staff to determine how ICD-10 will impact their overall practice workflow and the physician's documentation, but the option to bring in outside consultants also exists. Staff time can be considerable. For consultants to do both the impact and documentation assessment, for a small practice, we will estimate $6,000 for the impact assessment and $1,000 (50 chart assessment) for the documentation assessment. That would be a total estimate of $7,000 for the assessment by consultants.

As an alternative for this practice, we will assume that one of the administrative staff, after taking some training, will perform the overall assessment. 2012 figures from MGMA show an average salary of about $88,000 for administrators of small practices, or about $43/hour for a 2,080 hour year. Given an estimate of about 100 hours to perform this task brings us to a cost of $4,300 for this small practice.

These figures indicate a decrease from our 2008 estimates at the low range, with about the same cost at the higher end of the range.

Vendor/Software Upgrades

As we have seen, there are many practices that will need to upgrade their EHR, their PMS, or both. There are some practices that will not need to upgrade, and some for whom the upgrade is included in their contract. Thus, we will project this cost using a fairly wide range. If a small practice does not need to update, or has their updates included in the product, the cost is zero. For a full upgrade of both systems, using the MGMA estimates of $10,000 per physicians for the PMS and EHR systems gives us a maximum estimate of $60,000. We recognize that this is a wide range, but believe that it reflects reality.

Note that these estimates at the high end are considerably larger for this practice than was noted in the 2008 study. We believe this is a much more accurate representation of reality.

Process Remediation/Productivity Losses

For a small practice, we assume that one physician and one administrative person will be involved in the remediation work. Thirty hours of physician time estimated at $81.73 to $194.71/hour ranges from $2,452 to $5,841. Administrator cost is 20 hours times $43/hour or $860. This is a total range of $3,312 to $6,701.

For a small practice, we assume that physicians will be doing the vast majority of the documentation and coding. While our estimate of the added time to perform documentation under ICD-10 will stay the same as in our 2008 paper (4%), we add another 1% for additional time for coding. We therefore estimate the cost of a 5% loss to a small practice's revenue ($170,000 to $405,000) to be $8,500 to $20,250. This is a post implementation cost that will continue.

Testing

For this practice, participation in the NTP will cost $2,000. One week's time for all staff is 40 hours times 2 staff times $43/hour equals $3,440 for administrative staff, and 40 times a range of $81.73 to $194.71 times 3 physicians or a range of $9,808 to $23,365. Total cost is in the range of $15,248 to $28,805.

Payment Disruption

Using our range of 2% to 6% of revenues, this provides a range for disruption. Three physicians have a range of $1,128,945 to $1,672,488 for revenue. The range of disruption will vary from $22,579 to a maximum of $100,349. This cost will be incurred during the first year of ICD-10 implementation, similar to the productivity loss.

Total

In sum, for a small practice, pre-compliance implementation costs will range from a minimum of $25,560 and a maximum of $105,506; post implementation annual costs for the first year will range from $31,079 to $120,599. In total, the cost of switching to ICD-10 for a typical small practice will range from $56,639 to $226,105.

Interviews with managers in small practices indicated they had either budgeted $8,000 to $10,000 for ICD-10, or not budgeted at all.

Compared to our 2008 estimate to implement ICD-10 of $83,290, the original amount falls between our new minimum and maximum costs. The costs, however, for those practices that must pay for system upgrades (the majority) are considerably higher than the 2008 estimates.

Typical Practice 2 – "Medium" Size

The following cost estimates are based on the assumption that a typical medium size practice has ten physicians, one full time coder, and six administrative staff.

Training

For the coder, we expect $300 for coding materials and $600 for boot camp training with an additional $300 for specialty training. One administrative person can go to the implementation boot camp for $700 and train the remainder of the staff. We will estimate $600 per physician for initial training and one specialty training. This totals to $7,900 for training costs. A consultant estimate would be about $4,500

(three days onsite); plus $300 for coding books. This gives us a total of $4,800 for the onsite consultant option. It may, however, be more difficult for this size practice to gather everyone for a three-day training session. We set the training cost range at between $4,800 and $7,900; a bit higher than our 2008 estimate.

Assessment

For a medium size practice, the workflow analysis could be done by a consultant for $6,000. The documentation assessment will be somewhat more complicated, as each physician's records should be analyzed for their documentation practices. We will estimate a review of 200 records for a medium practice, costing $18 for each review for a total of $3,600. The total cost for a consultant would be $9,600.

If internal staff were to do this, we estimate 200 hours for this review with a cost of about 100 hours of administrative staff ($43/hour) and 100 hours of coder ($22.35/hour) staff time. The cost for staff to conduct the workflow and documentation assessment is estimated to be $6,535, combining $4,300 and $2,235.

Vendor/Software Upgrades

As with our small practice estimate, the low estimate for this task will be zero. The high estimate will be $200,000 ($20,000 for 10 physicians). The estimate is considerably higher than the 2008 figure of $15,000 for this medium size practice.

Process Remediation/Productivity Losses

For a medium practice, we assume that two physicians, one coder, and one administrative person will be involved in the remediation work. Sixty hours for a physician is in the range of $4,904 to $11,683. We estimate 20 hours of one administrative staff time ($43 /hour) or $860 and 20 hours of coder time ($22.35/hour) or $447. This totals from $6,211 to $12,990.

For our medium practice estimate of productivity loss, we assume physicians will be doing documentation and the coder will be doing the coding. Our estimate of the increase to document under ICD-10 will stay the same as in our 2008 paper (4%). We will add another 10% of the coder's time as the additional coding cost and estimate that cost to be $4,649. The physician's time will be 4% times range of $170,000 - $405,000 salary times 10 physicians for a range of $68,000 to $162,000. We therefore estimate the cost to a medium size practice's revenue to be from $72,649 to $166,649.

Testing

For a medium practice, participation in the NTP will cost $4,000. Additional costs will be one week's time for administrative staff at $10,320 (40 hours times 6 staff times $43/hour), $894 for the coder (40 hours times $22.35/hour), and from $32,692 to $77,884 for the physician's time (40 hours times range of $81.73-$194.71 salary times 10 physicians). The total estimated cost for testing is estimated to be $47,906 to $93,098.

Payment Disruption

Ten physicians have a range in annual revenue of $3,763,150 for primary care to $5,574,960 for specialists. Using 2% as the minimum and 6% as the maximum provides us with a range of $75,263 to $334,498.

Total

In sum, for a medium size practice, pre-compliance implementation costs will range between a minimum of $65,452 and a maximum of $323,588; post implementation annual costs for the first year will range from $147,912 to $501,147. In total, the cost of switching to ICD-10 for a typical medium size practice will range from $213,364 to $824,735.

Compared to our 2008 estimate to implement ICD-10 of $285,195, the original amount falls between our new minimum and maximum costs. Overall, the costs for those practices that must pay for system upgrades (the majority) are considerably higher than the 2008 estimates.

Typical Practice 3 – "Large" Size

The following cost estimates are based on the assumption that a typical large practice has 100 physicians, 64 administrative staff, and 10 full time coders.

Training

For a large practice, we will assume that there will be onsite training supplemented by some online courses. The onsite training will cost $500 per coder with additional online training for half of the coders at an estimated cost of $10,000. Administrative staff can be trained by several in-house staff after other staff has attended boot camp sessions. A total of three staff will attend at a cost of $2,100. They will purchase 10 coding books for $3,000.

Clinician training will be estimated at $600 per physician for online basic and specialty training, adding $60,000 in costs. Total costs are $75,100.

Assessment

For a large practice, we provide a consultant to train the "steering committee" at a cost of $9,000 to conduct an assessment of the impact of ICD-10 on the overall practice and physician's documentation. Steering committee members will then spend time on the full practice assessment. Three administrative staff will be trained at the boot camp for 80 hours each for a cost of $10,320 (3 staff times 80 hours times $43/hour). Our total estimated cost is $19,320.

Vendor/Software Upgrades

The key deciding factor in determining how much software upgrades will cost again is whether or not ICD-10 changes are included in annual contracts. For those practices in which they are included, the upgrade costs are zero. If not included, our estimate of costs would be $20,000 per physician or $2,000,000 total.

Process Remediation/Productivity Losses

We estimate a large practice's remediation team will consist of five physicians, two administrators, and two coders. Physician time, at 30 hours per physician costs 150 hours x $81.73 at the low range for physicians or $194.71 at the high range. Thus, our physician time cost is $12,260 to $29,207. Administrator costs, at 20 hours per administrator, are $1,720 (40 x $43) and coder costs are $894 (40 hours times $22.35). This results in a range of $14,874 to $31,821.

Physician productivity losses are again estimated at 4% of time. For a large practice, it will range from $680,000 to $1,620,000 (4% times $170,000 to $405,000 salary times 100 physicians). Coder losses are estimated to occur at a rate of 10% for an amount that is equivalent to one full time coder or $46,487. Total productivity loss is $726,487 to $1,666,487.

Testing

Testing will consume one week's worth of all staff time. This will be 40 hours for each of the 100 physicians for a range of $326,920 to $778,840 (40 hours times 100 physicians times $81.73 - $194.71 salary), 40 hours for each of the 10 coders at $22.35 per/hour for a total of $8,940, and 40 hours for each of the 54 administrative staff persons at $43/hour for a total of $92,880. This totals to a range of $428,740 to $880,660.

Payment Disruption

For one hundred physicians we estimate the impact on revenue stemming from a payment disruption to will be between $37,631,500 for primary care to $55,749,600 for specialists. Using 2% as the minimum and 6% as the maximum provides us with a range of $752,630 to $ 3,344,976.

Total

In sum, for a large practice, pre-compliance implementation costs will range from $538,034 to $3,006,901; post implementation annual costs for the first year will range from $1,479,117 to $5,011,463. In total, the cost of switching to ICD-10 for a typical large practice will range between $2,017,151 and $8,018,364.

Compared to our 2008 estimate to implement ICD-10 of $2,728,780 the original amount falls between our new minimum and maximum costs. The costs will be considerably higher than the 2008 estimates for those practices that must pay for system upgrades, which is expected to be the majority.

Cost Summary

	Typical Small Practice	Typical Medium Practice	Typical Large Practice
2008 Estimate			
	$83,290	**$285,195**	**$ 2,728,780**
2014 Estimate			
Pre-implementation Costs			
Training	$2,700 - $3,000	$4,800 - $7,900	$75,100
Assessment	$4,300 - $7,000	$6,535 - $9,600	$19,320
Vendor/Software Upgrades	$0 - $60,000	$0 - $200,000	$0 - $2,000,000
Process Remediation	$3,312 - $6,701	$6,211 - $12,990	$14,874 - $31,821
Testing	$15,248 - $28,805	$47,906 - $93,098	$428,740 - $880,660
Total Pre-Implementation Costs	$25,560 - $105,506	$65,452 - $323,588	$538,034 - $3,006,901
Post Implementation Costs			
Productivity Loss	$8,500 - $20,250	$72,649 to $166,649	$726,487 - $1,666,487
Payment Disruption	$22,579 - $100,349	$75,263 - $334,498	$752,630 - $3,344,976
Total Post-Implementation Costs	$31,079 - $120,599	$147,912 - $501,147	$1,479,117 - $5,011,463
Total Costs	**$56,639 - $226,105**	**$213,364 - $824,735**	**$2,017,151 - $8,018,364**

Conclusion

We have attempted to estimate the ICD-10 costs using actual costs for training materials, consultants, and reasonable estimates for staff time based on expert knowledge. We do not purport to have

captured all of the costs and all of the staff time involved in this effort. In comparing these ranges to our 2008 estimates, the 2008 estimates fall towards the lower end of our ranges. The 2014 ranges include much higher figures due to the need for testing and the potential for increased payment disruption. A major element in the cost is clearly the vendor/software upgrade category. Practices fortunate enough to have no cost associated with a software upgrade, perhaps around one-third, will see their costs towards the lower end of our range. The majority of practices, however, will have such costs, and thus will be incurring much higher overall costs for implementing ICD-10. Specialty practices, because of their higher revenues and per hour rates, show the greatest costs, especially for productivity losses and payment disruption.

These figures indicate that physician practices face significant costs with ICD-10 implementation, and especially the risk of payment disruptions. A poorly executed ICD-10 implementation effort will increase those risks and expose practices to large costs in 2014 and beyond. Planning must take place now so those risks can be mitigated and practices can continue to operate effectively.

Authors

This paper was written by Carolyn Hartley, Physicians EHR, and Stanley Nachimson, Nachimson Advisors, who are responsible for its content. The authors thank the AMA for providing funding and support for this work.