



Improving Outcomes in Document Imaging and Conversion

**New Methodologies to Measure Scan  
Capture Performance in HIM**

**IOD Incorporated**  
1030 Ontario Road  
Green Bay, WI 54311  
800.236.3355  
[iodincorporated.com](http://iodincorporated.com)



## Executive Summary

Paper documents remain an important component of the medical record, even amongst the most highly automated provider organizations. In fact, almost every hospital in the US even today continues operating in some form of a hybrid medical record environment: part paper and part electronic.

In a recent survey of over 200 healthcare information technology experts, 86% considered it acceptable if an electronic health record (EHR) contained scanned documents and images; along with discrete electronic data fields. Further, the implementation of an EHR is greatly improved if the patient's previous paper records are scan captured and available within the electronic system prior to go live. Access to the imaged record saves physician time and enhances physician satisfaction.

The bottom line: document imaging technology and the human resources necessary to convert paper information into digital images are not going away anytime soon. Document conversion will continue to be an important process within HIM departments for the foreseeable future.

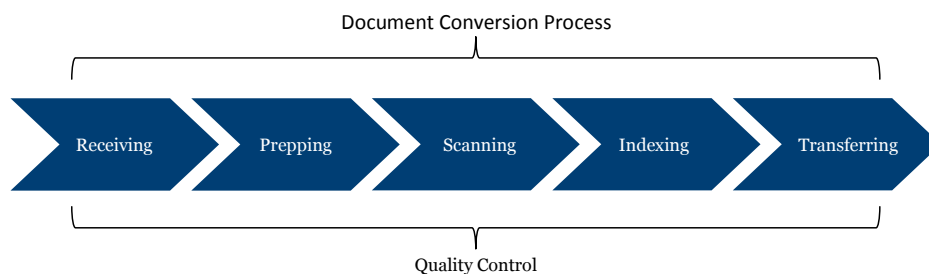
This white paper addresses key components of document imaging in healthcare, specifically the scan capture of patient medical records within the health information management (HIM) department. Healthcare providers will find this paper valuable in evaluating current processes and making data-driven decisions about the effectiveness of their document conversion operation whether it's in-house or outsourced.

Common problems are explained and three critical areas for measuring performance are discussed. Finally, we will introduce the **Quality Performance Index** as a new, empirical methodology to analyze document conversion processes.

## The Document Conversion Process: Mapping Out Best Practice Workflow

The typical process for converting paper documents to digital images begins when the records are received in the HIM department (Figure 1). Once received, HIM is responsible for carefully monitoring the flow and processing of the record; and quality control is a part of each step. HIM professionals must be able to track the time it takes to perform each step in order to accurately measure and manage productivity, costs and staff accountability. Having the use of workforce management software that includes a well-organized set of document conversion workflows and robust management reporting functions provides HIM managers with the transparency needed to maintain the pulse of the operation.

FIGURE 1:



**“The Hospital of the University of Pennsylvania (HUP) has historically outsourced the document imaging operations. Since partnering with IOD, Inc. in 2006 our quality levels have risen while simultaneously reducing our turnaround times to 12 hours for most inpatient charts.”**

Rachel Chebeleu,  
RHIA  
Director of HIM &  
Professional Fee  
Abstraction  
Entity Privacy Officer  
Hospital of the  
University of  
Pennsylvania

Quality Control (QC) checkpoints should exist throughout the document conversion process and include such things as review of 100% of the work processed by the new staff, random focused review of experienced staff, and management by walkabout, as a balance between turnaround time and quality must be maintained. The information collected from the QC process will assist the HIM manager in addressing and reassigning tasks as needed to ensure that productivity and quality are not lagging. However, conducting QC measures takes time and often places additional demands on HIM managers and may not address all of the challenges associated with documentation.

## Common Problems in Document Conversion

The major concern for provider organizations using document imaging as part of their EHR strategy is to maintain high quality standards and manage costs, while not losing control of the process. At one end of the concern spectrum is mission-critical timeliness and accuracy of scan capture. At the other end, HIM directors cite departmental costs and staffing headaches as their most pressing problems.

IOD conducted a brief survey of HIM directors managing the document conversion process. Directors were asked about common problems in this area and results are included in Table #1.

Of the problems noted, IOD identified three common areas that HIM directors must carefully measure to make strategic, data-driven decisions about document conversion. These areas are quality, timeliness and costs. In the next section of this paper, each of these areas is explored and a new methodology for measuring them is presented.

**Table #1: Commonly Reported Problems with Document Conversion**

<b>Quality</b>
<ul style="list-style-type: none"> <li>Poor quality images</li> <li>Document incorrectly identified and indexed</li> <li>Patient, account number, date of service, etc. are entered incorrectly</li> <li>All pages are not captured</li> <li>Mixed patient records</li> </ul>
<b>Technology</b>
<ul style="list-style-type: none"> <li>Lack of routine maintenance resulting in degraded performance</li> <li>No service agreement, scanner goes down</li> <li>Improper handling of scanner resulting in damage</li> <li>Wrong sizes and type of scanner for goal</li> <li>Failure of interfaces with imaging systems and the EHR</li> </ul>
<b>Turnaround Time and Cost</b>
<ul style="list-style-type: none"> <li>Slow turnaround time from paper record to images available in EHR</li> <li>Loose documents post-discharge require manual handling</li> <li>Staff burnout, employee turnover</li> <li>Escalating system costs: hardware, software and maintenance</li> <li>Overall staffing costs</li> </ul>

## Poor Quality Document Imaging: What's at Risk?

### Financial Concerns

- Delay in claims submission
- Spike in accounts receivables
- Breach of information
- High operational cost in HIM

### Clinical Concerns

- Lag in physician access to record
- Potential for medical errors
- Low satisfaction with EHR

## Three Critical Areas for Effective Performance Measurement

Document conversion is clearly all about quality, timeliness and costs. Quality is the most important factor as it has direct impact on patient care and the reimbursement your facility receives for the services provided. The timeliness of the operation, or turnaround time (TAT), is a major driver of the revenue cycle and may impact other departmental metrics; such as availability of records for care providers. Finally, costs must be closely monitored regardless if providers are using either an in-house or outsourced staffing model for document conversion services.

### Quality

In addition to the quality control checkpoints mentioned earlier, all document conversion centers should perform an agreed-upon percentage of final quality reviews or quality assurance (QA). This QA step is significantly more detailed than the 100% quality control (QC) performed during the initial image capture process to ensure image legibility. Best practice is to review 5-10% of the total accounts received at this step.

QA should be performed by comparing the entire paper record to each page of the corresponding imaged document. Reporting should be available that categorizes the types of errors discovered such as a high severity error or a low severity error. Staff should be held accountable for the frequency and types of errors each individual may commit and a corrective action plan put into place for any staff member who continually makes the same error.

What if a correction or change is needed after the record has been transferred to the EHR? Best practice workflow design should include the ability of authorized HIM staff members to submit a request for change (or correction) to the document conversion area. Corrections should be accomplished within established timeframes which may vary depending on the type of request.

### Turnaround Time (TAT)

Getting records coded and distributed within the established deadlines is one of the most important goals (or perhaps worst nightmares) for every HIM manager. Having the ability to determine at a glance exactly where the scan capture process delay is occurring is a necessary function to successfully achieve this goal.

Best practices should include the availability of reports that identify which nursing units are slow to have discharged records delivered to HIM—not only the full chart but loose documentation as well. Staff should be able to know almost immediately if any of the following are issues:

- Accounts that are approaching the imaging turn-around deadline
- Missing high priority documents (progress notes, physicians orders, H&P for example)
- High risk accounts (possible mixed accounts or multiple barcode values, etc.)

To provide a holistic view of quality and TAT, and for transparency purposes, best practices suggest that a document conversion workflow should include a daily summary of activity report. The report should provide the HIM manager with the information necessary to calculate the total number of accounts received for the day, reflect the total TAT (from time of patient discharge until the imaged record is available in the EHR); the document conversion center TAT (from the time the record is received by document conversion staff until the record is available in the EHR); percentage of QA performed, and error rate percentages by the error category. With multi-campus systems, these reports should provide this information from each individual facility separately as well as the system as a whole. Monthly TAT reporting should also be available for trending.

### Citrus Memorial Health System Outsources Document Conversion Services to IOD

Citrus Memorial, a 198-bed acute care hospital in west central Florida, conducted in-house document conversion for years. While their electronic document management system (EDMS) was state-of-the-art, their scan capture process was inefficient and revealed several areas for improvement.

Based on the challenges identified and a shortage of HIM resources to tackle them, Citrus turned to IOD for completely outsourced document conversion services. The onsite service was in full-operation within six weeks and over time, reports the following benefits:

- 37% reduction in annual costs
- 73% improvement in turnaround time
- Enhanced reporting and accountability
- Faster record retrieval and completion

Read the complete Citrus Memorial Health System case study online at: [www.iodincorporated.com](http://www.iodincorporated.com).

## Cost

Cost is the full cost per page to process, audit, and release scanned documents to the EHR. For outsourced providers this price is committed by contract and includes all staff and system costs. For healthcare organizations performing their own document conversion these costs reflect the actual cost of recruiting, retaining and managing scan capture staff as well as the necessary imaging hardware, software, and maintenance.

## Calculating Quality Performance Index (QPI)

The document conversion with in-house or outsourced staff is clearly enhanced by a data-driven analysis of the above three categories. The cost and TAT metrics are fairly straight forward. The determination of the quality metric, while a bit more complicated is also available.

IOD has developed a new, empirical methodology to analyze the document conversion process: the Quality Performance Index (QPI). HIM departments can use the QPI to measure the effectiveness of their internal operations or performance of an outsourced vendor.

The index is based on a formula that creates an index value based on the three factors mentioned above: quality, TAT and cost. Specifically the formula is:

$$\text{QPI} = ((\text{Quality Rate} / \text{Cost}) / \text{TAT}) * 100$$

**Quality Rate** - the percentage of actual errors as compared to the total records processed.

**Cost** - total cost of operations including staff, hardware, software, furniture, space, maintenance, supplies, etc.

**TAT** - the time it takes from receipt of the record to the time it's released into the EHR

The resulting index values are typically double-digit numbers; where the higher the index values the better the performance of each of the three factors in the formula. The following table reflects the TAT and QPI for four large health systems who outsource document conversion services to IOD.

**“Using the QPI has enabled me to objectively measure the effectiveness of my clients’ imaging operations.”**

**Kelly McLendon,  
RHIA  
President, Health  
Information Xperts**

**Table #2: IOD Customer Experience with Document Conversion Services**

Customer Name	Turnaround Time (Hours)	Quality Performance Index
Aria Health	13.83	77.17
Penn Presbyterian	7.42	134.22
Hospital of the University of Pennsylvania	11.65	83.42
Citrus Memorial	9.08	125.12



## Conclusion

Emerging regulatory demands and the rapid pursuit of electronic records are driving dramatic change and continue to be a monumental challenge in HIM departments. Revenue is being squeezed and expenses need to be cut-even with increased demand for staffing. One place where HIM can find some relief is the area of document conversion.

The scan capture and indexing of paper documents into the EHR presents an opportunity for HIM directors to take a fresh look at outcomes, staffing and costs. In many cases, document conversion can be better accomplished by outsourced resources. Alternatively, where labor is abundant and technology is reliable, in-house staff may be the best option. Either way, the potential to increase productivity and decrease costs while maintaining a focus on quality exists.

The document conversion process can be an important aspect of HIM's contribution to easing financial pressures for the entire organization. A focused and carefully measured document conversion team can help streamline operations and reduce overall staffing costs in HIM - as was the case at Citrus Memorial Health System.

**For more information about QPI or to have IOD conduct an in-depth analysis of your document conversion area, contact the company at: 800.236.3355 or visit us online:  
[www.iodincorporated.com](http://www.iodincorporated.com).**