

Service Categories:

VOICE & SPEECH RECOGNITION  
WORKFLOW TECHNOLOGIES  
OUTSOURCED TRANSCRIPTION & CODING SERVICES

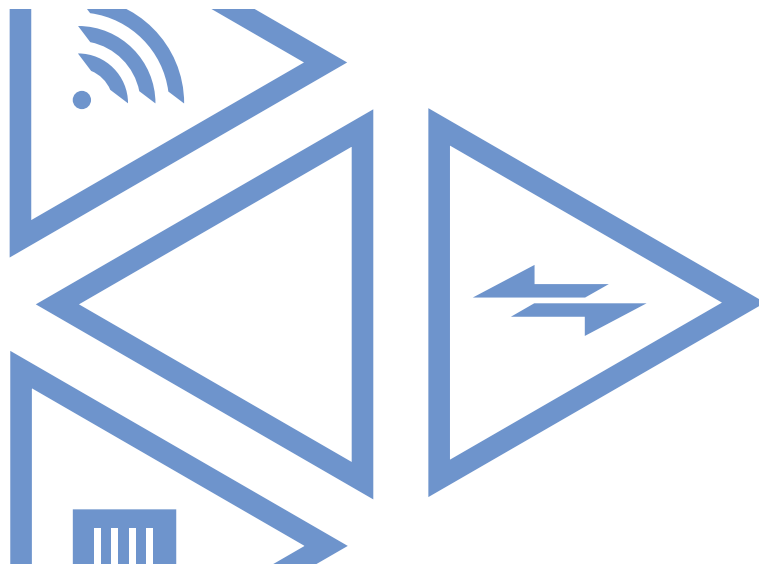
MedQuist™



PATIENT #

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# The on-ramp to EHR:

Exploring the symbiotic relationship between EHR and transcription solutions.

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# 1 The On-ramp to Electronic Health Record

The national spot light is on healthcare and the electronic health record, with increasing pressure to make this a reality for all Americans in just a few short years. But that presents a quandary to the healthcare industry. How do healthcare providers make the transition from the traditional dictation methods of today to the sophisticated technology that EHRs will demand? In response to that critical need, MedQuist has developed an “on-ramp to EHR” to help the healthcare market ease into the transformation. This strategy is based on using speech recognition and natural language processing (NLP) technologies to create a process of capturing clinical documentation that is both efficient and effective.

This white paper will look at the environment of today and discuss the national goals and objectives. It will also discuss technology, such as speech recognition and natural language processing, that makes a transitional approach to EHRs a prudent and cost-effective one. Finally, it provides an overview of MedQuist products and services, and discusses how they are aligned with those goals, to support the healthcare industry as it makes this transition to EHRs.

## 2 Patient Safety

One of the long-recognized influencing forces in the healthcare scene is the Institute of Medicine. More than a decade ago, they published reports extolling the virtues of an electronic medical record. But it was their reports in 1998, titled, "To err is human," and another in 2001, "Crossing the quality chasm" and a third in 2004, titled "Patient Safety" that shaped the national debate.

The 1998 report estimated there are 98,000 deaths in acute care settings each year that can be directly attributed to medical errors. However, in an article that appeared in Journal of American Medical Association in July 2000, by Dr. Barbara Starfield, "Is U.S. Health Really the Best in the World?" put the deaths due to iatrogenic causes at 225,000 per year. Based on these numbers, yearly deaths attributable to medical errors are greater than the impact of a jumbo-jet plane crashing every day of the year. Clearly the time has come to address the efficacy of patient care and take the necessary steps to address patient safety concerns.

### 3 Economic Imperatives

There are also compelling economic reasons to reform the healthcare delivery system. In Health Information Technology's 2005 Leadership Panel Final Report, it was noted that, "In 2004, U.S. National Health Expenditures amounted to approximately \$1.8 trillion, or about \$6,300 per person, accounting for 15.8 percent of gross domestic product (GDP). This level far exceeds those in other developed countries; for example, it was 8.5 percent for the European Union in 2001." Medicare expenses are also increasing, thanks in part to the recent addition of drug benefits, which are estimated to cost \$100 billion annually. Medicaid is increasingly taking a larger bite out of the state budgets and is edging towards insolvency. And finally, the single most feared specter in healthcare is just over the horizon -- the impact of 65 million retiring baby boomers over the coming decades.

All of these fiscal imperatives, combined with the fact that the adoption of information technology in healthcare is far slower than in other industries, has led to the current focus on the national front to improve healthcare IT adoption. It is hoped that improved IT will improve the efficiency and efficacy of care being provided, as well as reduce the financial burden. The National Health Information Infrastructure (NHII) has been established to focus on healthcare IT designed to support the care delivery process. President George W. Bush created the Office of the National Coordinator for Health Information Technology (ONC) in April 2004, with Dr. David J. Brailer heading that effort. ONC published its strategic framework, focusing on four main goals:

1.	Informed clinical practice – to support the adoption of EHR.
2.	Interconnect clinicians – primarily to support the notion of providing access to clinical information, whenever and wherever needed.
3.	Personalized care – to support the notion of a personal health record and to stimulate consumer activism.
4.	Population health – to support the goals of population health, such as tracking pandemics (such as bird flu), syndromatic surveillance (such as bio-terrorism), etc.

The national focus has resulted in an avalanche of activity. Perhaps the most critical among them is the establishment of Regional Health Information Organization (RHIOs) in support of NHII, along with the promulgation of incentives that are collectively referred to as pay-for-performance (P4P). While these efforts are aimed at increasing adoption of EHRs and interconnectivity among such systems, it is also hoped that they will help in capping healthcare costs.

**"The President's vision is to develop a nationwide HIT infrastructure that ensures appropriate information is available at the time and place of care, resulting in improved health care quality, fewer medical errors and may even reduce health care costs."**

David J. Brailer. M.D. Ph.D.

<sup>1</sup> In the context of this document, "physical security" only refers to the facilities over which MedQuist has positive control (i.e., MedQuist's data centers).

## 4 Promise of EHR

Though it is anticipated that electronic health records will improve clinical care and result in savings once they are adopted, there are a number of barriers to the widespread adoption of EHR. Chief among those barriers are resistance by physicians and the cost to implement comprehensive EHR solutions. Both of these barriers are driven by a concern over the return on this investment.

Proponents of EHR suggest that many physicians are impeding the adoption of technology, and that they must be required to adopt it given its beneficial impact to healthcare system. Historically, however, physicians have not been slow to accept technology. In fact, they are some of the earliest adopters of technology such as personal digital assistants (PDAs), cell phones and diagnostic devices. If physicians believe that technological advances improve their productivity, they will readily embrace them. This has been proven in the Radiology field, where digital solutions and speech recognition systems are now common. Conversely, if technology is cumbersome or takes too much of their time, physicians tend to reject it.

Once physicians have accepted it, the key ROI arguments and benefits of using EHR are clear:

1.	Elimination of duplicate tests;
2.	Availability of relevant clinical information at the point of care and beyond;
3.	Elimination of misinterpretation of orders, due to unclear handwriting or verbal instructions;
4.	Elimination of misinterpretation of handwritten prescriptions and dosages;
5.	Elimination of adverse drug interactions and the attendant costs for those reactions;
6.	Clinical decision support and adherence to evidence-based medicine, resulting in more effective care and reduction in malpractice lawsuits; and
7.	Availability of structured information which can be used in clinical research, development of standard protocols, and population monitoring.

An examination of the benefits suggests that providing digital access to information and capturing information in a digital form will address the first four issues. In addition, using a Computerized Physician Order Entry (CPOE) system will help eliminate misinterpretation of orders and an electronic prescription application will help with the problems associated with handwritten prescriptions. Structured clinical documentation will assist with the problems addressed in the last two points.

Stated another way, electronic notes created through the dictation/transcription process directly supports the first four benefits and judicious use of various technology elements, which are discussed later in this report, can address the remainder of the benefits.

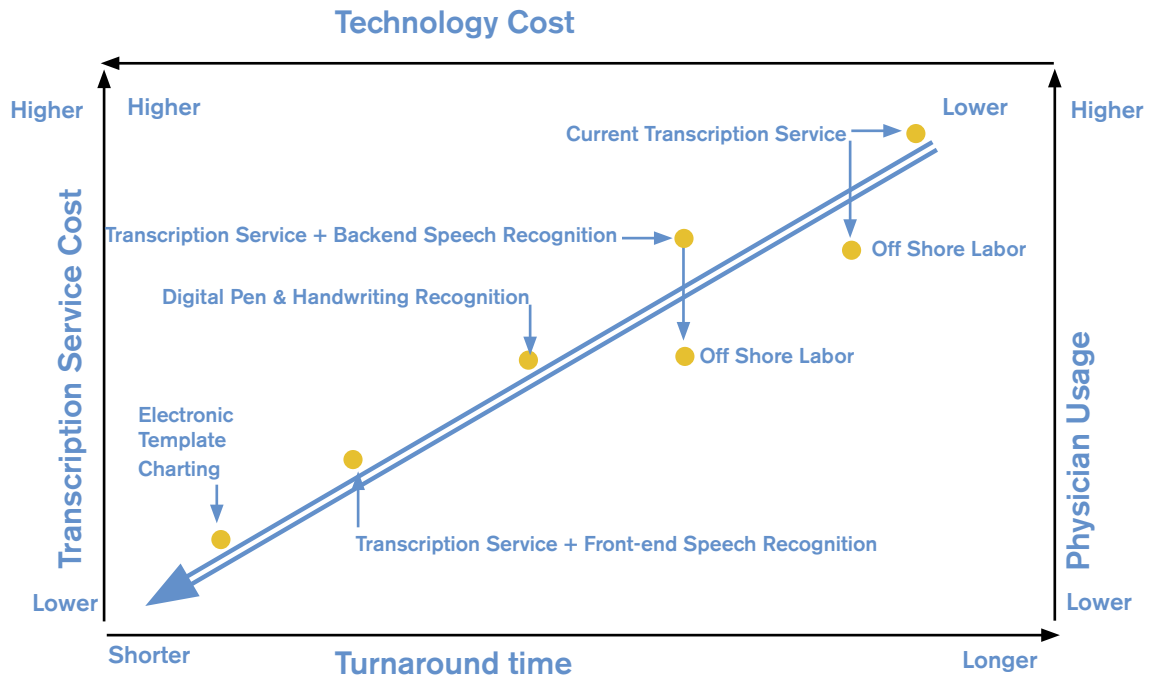
<sup>2</sup> In fact, user IDs are often components of an individual's e-mail address.

<sup>3</sup> A hash is a one-way encryption using the SHA1 algorithm, meaning there is no known decryption method for the hashed data.

# 5 Clinical Documentation Approaches

Some proponents of EHR argue that template-driven electronic documentation capture is the best approach to realize the benefits of EHR. Yet this view ignores the benefits of a more “migratory” approach provided by using existing dictation and transcription processes. In this section, we will provide a rationale for taking a more evolutionary approach toward realizing the vision of EHR.

Let’s look at this premise starting with a picture of the various ways in which clinical documentation is captured. The diagram shows that there is a continuum of trade-offs between technology cost, service (labor) cost and physician adoption.



Any approach that forces all physicians to use an evolving technology misses the larger issue of looking at the trade-offs of physician productivity loss versus the benefits realized. More judicious introduction of technology can move an organization from its current level to a level that incorporates a broader vision of EHR. That limits physicians’ resistance to adopting new technology while still achieving clinical gains.

## 6 Role of Technology

What is the role of technology in the roll out of clinical documentation capture solutions? MedQuist's philosophy is that healthcare providers can continue to capture clinical documentation through the proven transcription process, while at the same time realizing the benefits of EHR solutions.

It has been argued that documentation captured through the traditional dictation and transcription process is inefficient and does not support clinical care efficacy goals, such as the use of evidence-based medicine. However, the dictation/transcription process is not the culprit in this state of affairs – it is the broader approach to education which is implicated.

The dictation/transcription process remains an efficient way to document certain information from the physician's standpoint, reflecting that physician's knowledge and experience. However, EHR proponents believe that physicians can be "coached" through the use of warnings from the system at the time of decision-making. This "coaching" process, unless engineered to be completely non-intrusive, will no doubt face resistance from physicians. Combined with the fact that many physicians see a lot of routine cases in their specialty, "educational second guessing" might be better provided on the physician's own terms. We should focus instead on ways to document their intentions in succinct and clear ways. Some of this type of documentation can be provided by custom-engineered templates, but using dictation and transcription provides this as well. This approach also has an advantage, in that it allows physicians to document care "naturally" using voice instead of a keyboard and mouse.

There are also other factors which suggest this approach is a prudent and cost-effective one. There are two key technologies that have risen to the forefront in the clinical documentation industry: speech recognition and natural language processing.

## 7 Role of Speech Recognition

Gartner Analysts, which tracks technologies that impact healthcare, have indicated that speech recognition technology has reached mainstream usability. In fact, back-end speech recognition technologies are now being routinely used across the healthcare industry. (Back-end speech recognition means that physicians transcribe as usual and the speech recognition is used after the voice is captured.) As a subsidiary of Philips, MedQuist uses the Philips Speech recognition engine in its data center in Atlanta. More than 150 million lines have been generated annually using back-end speech recognition systems currently, making MedQuist the largest user of speech recognition software in the industry today. MedQuist currently serves more than 15,000 active dictators, employing the services of more than 1,000 medical editors.

Speech recognition is also migrating to the “front end.” In Radiology, front-end speech recognition systems have become routine, as speech recognition accuracy has increased. Front-end speech recognition can play a pivotal role in making the process of capturing clinical documentation more efficient, because once the physician enters the information and validates it, the documentation is complete.

It is just as important to harness the power of the technology to affect the clinical workflow. This takes effective design of workflow solutions, as well as strategic use of human labor. In this context, the role of editors cannot be emphasized too strongly. We will come back to this point later, when we discuss training of editors to become knowledge workers.

## 8 Role of NLP

The other technology that shows great promise is natural language processing (NLP) technology. The origins of NLP are as old as the computing discipline itself. NLP is a suite of technologies that allows the processing of natural language text for a variety of purposes. The key here is an ability to “understand” text. The following are some of the capabilities that NLP provides in the context of healthcare:

- > Parse sentences into its component structures;
- > Understand the medical vocabulary and clinical terms used;
- > Disambiguate the context – to interpret the clinical terms correctly within the broader context of the documentation; and
- > Represent the processed information for further use.

This technology is now maturing and is showing great promise. Today, NLP technology is what speech recognition was five years ago in terms of its growth and adoption.

Proper and judicious use of NLP technologies can have a wide array of uses within the healthcare industry. The area where NLP technologies are most common is in medical records, in coding and in billing. NLP technology can also play a pivotal role in pay-for-performance (P4P) initiatives undertaken by CMS. MedQuist plans to automatically abstract quality measures as defined by CMS in support of P4P.

Just as editors have to review speech recognized documents, abstraction done using NLP technologies has to be verified for accuracy and relevance. Consider then that abstraction done using NLP technologies can allow the application or invocation of the EHR functionality, such as drug-drug interaction, clinical decision support, reporting to registries, or pay-for-performance reporting.

## 9 Role of Knowledge Workers

As the balance shifts between technology and transcription, companies need be prepared to make the change. All industries evolve with the times and changing technology -- and the healthcare industry is no different. Profound changes are already underway. Companies like MedQuist must continue to invest heavily in its transcriptionists. To keep up with changing technology, transcriptionists need to evolve as well, transitioning from transcriptionists to editors to knowledge workers. Their skills will need to change from listening to dictation and transcribing it, then to editing speech-recognized text, to abstracting, and finally to reviewing abstracting done by NLP. The transcription workforce has a long history of working with medical documentation, so who is better than transcriptionists to drive the process of deriving more value from such documentation? MedQuist, as the largest employer of transcriptionists in the United States, is working to provide the necessary training to its workforce to help in this transition to knowledge workers – and it will be a critical step towards supporting the goals of EHR.

Transcriptionists need to evolve as well - from transcriptionists to editors to knowledge workers.

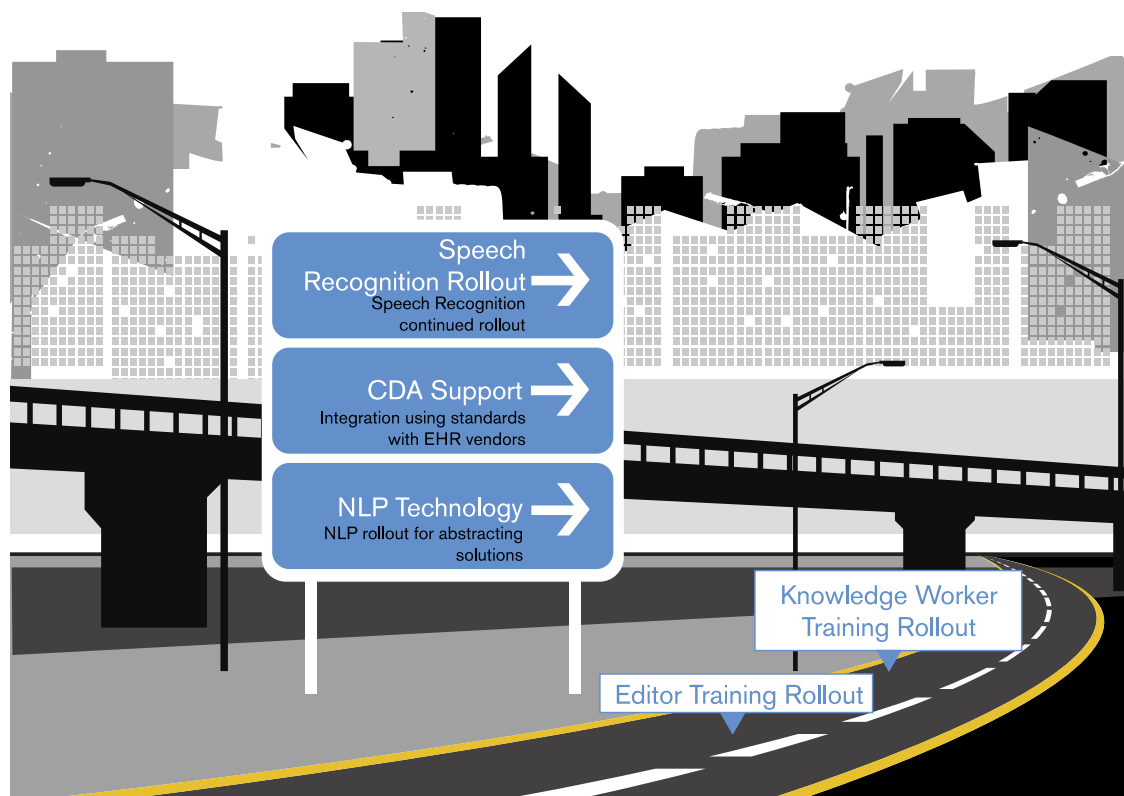
## 10 Role of Standards

As part of their initiatives, Dr. Brailer and the ONC office have focused on healthcare standards. Health Level 7 (HL7) has passed a Draft Standard for Trial Use (DSTU) in the realm of EHR, a key effort to stimulate more focus in this area. The Certification Commission for Healthcare Information Technology (CCHIT) is a non-profit organization, established with the explicit goal to certify the EHR vendor solutions.

As standardization efforts evolve, our perspective on EHR systems, is based on a subset of these standards. Specifically, MedQuist is actively supporting standardization around HL7 Clinical Document Architecture (CDA) – an XML-based markup of clinical documents, HL7 Care Record Summary, ASTM Continuity of Care Record (CCR) and coding and terminology standards such as: SNOMED, CPT, ICD9, ICCD10, etc. The company is also actively following solutions established by organizations such as Interoperable Healthcare Enterprise (IHE). In particular, the Cross Enterprise Clinical Document Exchange Profiles and Patient Care Coordination profiles are relevant to documentation companies. These standards and profiles provide a clear underpinning to provide interoperable solutions across EHR and dictation/transcription vendors. MedQuist is committed to providing standardized interoperable solutions as envisioned by the ONC office.

# 11 EHR and Transcription

In today's healthcare environment, transcription remains a key "linchpin" to quality healthcare. It is a key process that can serve as an on-ramp to EHR systems.



But what happens after you use the on-ramp and are on the road? Where do healthcare providers go from there? The chart on page 13 illustrates the step-by-step approach MedQuist is using to help its customers navigate the rest of the journey to the EHR. Our goals are to:

>	Improve efficiency and speed of the dictation and transcription process by adopting speech recognition.
>	Integrate using interoperability standards recommended by ONC with EHR solutions, in particular the use of CDA-based XML-markup and IHE approaches.
>	Train transcriptionists to become editors, then knowledge workers who can support the process of abstracting clinical documents.
>	Rollout NLP technologies for the use of abstracting clinical documentation (separate from its use in coding).

## 12 From the on-ramp to the EHR highway

EHR systems are not going to replace the traditional dictation and transcription solutions -- and dictation and transcription solutions are not a substitute for EHR systems. Instead, they complement each other. However, dictation and transcription solutions can and do provide a pathway for realizing the benefits of EHR. As the industry completes the journey to an EHR environment, MedQuist is committed to assisting its customers during that transition. Our customers will be able to maintain the efficiency of the current processes from a physician perspective, allowing them to document through means that come naturally to them today, but still derive the benefits of EHRs using technology and service-based solutions.