Speech Recognition

Accelerating the Adoption of Electronic Health Records

HEALTHCARE

NUANCE

CONTENTS

SUMMARY

The rush to adopt Electronic Health Records (EHR) is on. Funding for those who qualify under the Medicare and Medicaid Electronic Health Records Incentive Programs under the HITECH provisions of the 2009 American Recovery and Reinvestment Act can run up to $44,000 for Medicare, and up to $64,000 for Medicaid—and millions of dollars per hospital when implementing an EHR system that is on ONC's official Certified Health IT Product List (CHPL). This list includes EHR technologies that have been tested and certified as being technically capable of supporting those providers' achievement of meaningful use based on Stage 1 criteria outlined in HHS rules, and have it deployed to meet time-phased reporting requirements.

Practices around the country are faced with the challenge of getting their physicians to document patient care in the EHR. But did you know that speech-enabling your EHR system can actually increase EHR adoption amongst physicians, improve their efficiency within the system, and ultimately allow them to provide better patient care?

This white paper identifies forces both driving and inhibiting EHR adoption. EHR systems' inflexibility and other limitations often prevent them from being used effectively by a broad range of physicians—without help from enabling technologies.

Speech recognition is one such technology. It has proved effective at helping physicians create electronic health records. Today, over 400,000 clinicians use voice recognition to dictate findings into electronic records—far more than those documenting findings solely via typing or 'mouse clicks.' Speech recognition allows physicians to capture anywhere their observations, assessments, and plans for ready access within the EHR.

In addition to speech recognition, innovations are being developed to understand the full meaning of speech-captured data, such as Clinical Language Understanding (CLU) solutions. These advances will facilitate the extraction of structured, actionable information from unstructured dictation to meet meaningful use requirements, ICD-10 standards, and ensure that the document is coded completely for revenue cycle management processes.

The benefits of speech-enabled EHR systems include:

• Dramatically reduced transcription expense.
• Substantially improved physician experience.
• Improved patient care via complete documentation that is immediately available.
• Reduction in time spent documenting care.
• Increased per-patient revenue by enabling physicians to document a more complete patient note.

Some speech recognition solutions offer physicians multiple methods by which to dictate—a critical requirement. While all physicians in a department or practice might use the same clinical system, they may have widely different styles of documentation, which EHR systems alone cannot address.

As more EHR systems become web-enabled, new speech platforms will be needed to serve clinicians in an 'on demand' manner, offering all dictation modalities as a web service. The EHR vendors with the largest market shares support the seamless use of speech recognition within their applications, further accelerating EHR adoption.

Further, as more and more health systems are deploying EHRs within virtualized desktops or cloud-based architectures, so have speech technologies kept pace—with exciting advances in the works.

FORCES ARE DRIVING THE U.S. TOWARDS ELECTRONIC HEALTH RECORDS...

The era of Electronic Health Records is finally on the horizon.

What's driving U.S. healthcare towards EHR adoption?

- **Federal government initiatives.** The American Recovery and Reinvestment Act (ARRA) of 2009 included, according to current estimates, as much as $27 billion over ten years which will be expended to support adoption of electronic health records (EHRs). Under the Health Information Technology for Economic and Clinical Health Act (HITECH), federal incentive payments will be available to doctors and hospitals when they adopt EHRs and demonstrate use in ways that can improve quality, safety, and effectiveness of care. Eligible professionals can receive as much as $44,000 over a five-year period through Medicare. For Medicaid, eligible professionals can receive as much as $63,750 over six years. Medicaid providers can receive their first year's incentive payment for adopting, implementing, and upgrading certified EHR technology, but must demonstrate meaningful use in subsequent years in order to qualify for additional payments.[1]

- **A change in reimbursement philosophy.** U.S. healthcare is evolving from 'fee for service' to 'pay for quality' and 'pay for performance.' Private and government payors base a portion of reimbursement on measurable outcomes. EHR systems are needed to keep score.

- **Substantially improved patient care.** Prior studies by the Institute of Medicine have determined that many medical errors occur because of a lack of universal access to patient documentation. Leveraging speech recognition technology, physicians can infuse the patient record with their direct observations, assessments, and plans—in their own words. Having patient notes immediately available in the EHR means that all members of a patient's care team have access to up-to-date, complete information—meaning better decisions and better patient care.

> "Interviewees reported that most physicians using EHRs spent more time per patient for a period of months or even years after EHR implementation. The increased time costs resulted in longer workdays or fewer patients seen, or both, during that initial period…"

> "Most respondents or their colleagues considered even highly regarded, industry-leading EHRs to be challenging to use because of the multiplicity of screens, options, and navigational aids. Problems with EHR usability—especially for documenting progress notes, caused physicians to spend extra work time to learn effective ways to use the EHR. These substantial initial time costs are an important barrier to obtaining benefits, as greater burdens on physicians' time decrease their use of EHRs, which lowers the potential for achieving quality improvement.…"

> Physicians' Use Of Electronic Medical Records: Barriers And Solutions
>
> Robert H. Miller and Ida Sim, UCSF Health Affairs Magazine

…YET EHR TEMPLATES SLOW PHYSICIANS DOWN

Most physicians say that EHRs slow them down and prevent them from documenting care in a manner that accurately depicts the patient encounter.

"Much of the meaning and inference that can be gleaned by the clinician through the use of narrative is lost when a rigidly structured template is used, and the ability to communicate complex ideas in an efficient and fluid manner diminishes," notes Jason S. Shapiro, MD, of Columbia University's Department of Bioinformatics.

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1. For more information on the HITECH Act, please visit http://healthit.hhs.gov/portal/server.pt

Experienced EHR users agree. "Although our EHR system is an exceptional product, you cannot make a template to cover every situation and scenario," said Steve McCullough, MD, a nephrologist based in Paducah, Kentucky, and a strong advocate and user of electronic medical records in his internal medicine practice.

A study performed by UC Davis School of Management and released in December 2010 determined that the initial implementation of an EHR system resulted in 25% to 33% drop in physician productivity.

While some information is necessarily captured via 'point and click'—choosing from a list of medicines or allergies—documenting the substance of an encounter requires the physician to use his or her own words. Clinical findings, history of the present illness, patient descriptions, past medical and social history, assessment and plan, as well as referral letters and consult notes, all require that the physician 'dictate' using unrestricted free text.

PHYSICIANS AGREE: SPEECH MAKES EHR SYSTEMS FASTER AND EASIER TO USE

For the U.S. healthcare system to gain the benefits of electronic records, physicians must broadly adopt computerized medical systems. Speech recognition is one technology that offers an inviting on-ramp for clinicians to drive EHR systems. Speech recognition technology has been shown to:

• Help physicians use EHR systems without changing their documentation methods.

• Convert EHR systems into a quality-of-care-enhancing and revenue-enhancing technology.

This finding was supported by a report issued by KLAS (www.klasresearch.com) identifying that:

• Three-quarters (76%) of the clinicians using 'desktop' speech recognition—directly controlling an EHR system via speech—report faster turnaround time, better service to patients, and faster reimbursements as the greatest benefits.

• Nearly 3 in 10 (33%) cite sharply reduced costs and increased productivity as other benefits. Cost savings from EHRs are realized by both reductions in transcription and overhead associated with the billings and collection process.

"Dragon Medical Practice Edition lets me describe the patient encounter in my own words," says Dan Field, MD, an emergency physician for Kaiser Permanente in Northern California. "It's embedded in our EHR system so I can use free-text dictation anywhere. I can also quickly navigate to different parts of the chart using my spoken commands."

Clearly, physicians find EHR systems more effective when driven by speech.

"If I didn't have speech recognition, I couldn't use the EHR. I can't type, and I'm not going to 'point and click' all day. Speech recognition and an EHR is the ideal combination," says Andrew Fireman, MD, a cardiologist at AMS Cardiology, a 17-physician practice in Abington, Pennsylvania, which uses the eClinicalWorks EHR.

Speech recognition software can be customized to record voice macros—pre-defined templates with standard elements to guide the physician's documentation—which can also keep physicians in compliance with guidelines established by the Centers for Medicare and Medicaid Services (CMS). These voice macros are easy to create and are an important time-saving feature.

MAJOR HEALTH SYSTEMS USE SPEECH RECOGNITION

Clinicians at many of the leading healthcare delivery networks rely on Nuance Healthcare solutions to document patient encounters, including:

100% of the *U.S. News & World Report* **Honor Roll Hospitals**[1]
92% of the Most Connected Hospitals[2]
94 of the Top 100 Hospitals[3]

These healthcare providers have recognized the positive impact of speech recognition on the quality and cost of care and have deployed speech recognition for use by its clinicians:

Advocate Health
Atrius Health
Banner Health
Barnes-Jewish Hospital/
    Washington University
Baylor Health Care System
Brigham and Women's Hospital
Catholic Healthcare West
Cleveland Clinic
Dartmouth-Hitchcock Medical
    Center
Duke University Medical Center
Group Health Cooperative
Health Partners
Intermountain Healthcare
The Johns Hopkins Hospital

Kaiser Permanente
Lahey Clinic
Lifetime Health
The Mayo Clinic
New York-Presbyterian Hospital
NYU Medical Center
Partners Healthcare Providence
    Health
Stanford Hospital and Clinics
St. Joseph's Healthcare
UCLA Healthcare
United States Air Force
United States Army
United States Navy
United States VA Hospital
    System

University of California,
    San Francisco Medical Center
University of Michigan Hospitals
    and Health System
University of Pennsylvania
    Health System
University of Pittsburgh Medical
    Center
University of Virginia Health
    System
University of Washington
    Medical Center
USC—Keck School of Medicine
Sutter Health
Wellspan

1. America's Best Hospitals: The 2011 – 2012 Honor Roll, *U.S. News & World Report*
2. 2011 Most Connected Healthcare Facilities, HealthImaging.com
3. America's Top Hospitals, 2011, *U.S. News & World Report*

Frequently-accessed information and frequently-visited parts of an EHR can easily be accessed with macros, or by speech-enabling the EHR system.

BENEFITS ARE SUBSTANTIAL

Speech-driven EHR users report the following benefits:

• **Reduced transcription expense.**
  EHR systems driven by speech can enable clinicians to dictate substantial sections of the medical record in 'free-text' directly into the EHR, using their own words, without having to rely on transcription. Speech-driven EHR systems can reduce or eliminate the ongoing cost of transcription by providing physicians greater flexibility to document findings.

• **Dramatically increased physician productivity.**
  Studies show that the average physician spends up to 15 hours a week documenting encounters. The average encounter takes three to four times as long to document in an EHR using keyboard and mouse as it does to dictate. Speech recognition systems reduce time-on-documentation by as much as 50%—freeing up the physician to spend more time with patients.

- **Improved patient care via more detailed documentation and faster results delivery.**
  Patient notes created via speech contain deeper and more descriptive information—vital detail
  needed for a complete patient assessment.

  The immediacy of information means that treatment plans are formulated more rapidly, reducing the
  chance of adverse medical effects.

- **Increased cash flow and revenue.**
  A recent study by Fallon Clinic (Worcester, MA) measured the impact of speech recognition on
  clinical workflow and quality of care and found substantial opportunities to maximize reimbursement
  per physician using speech recognition with an EHR.

  "We have saved enough on transcription costs using Dragon Medical Practice Edition to pay for the
  software many times over," says Kaiser's Dr. Field. "Dragon Medical Practice Edition is one of the most
  successful cost savings investments I've ever seen. We're expanding its use both in the ED and in other
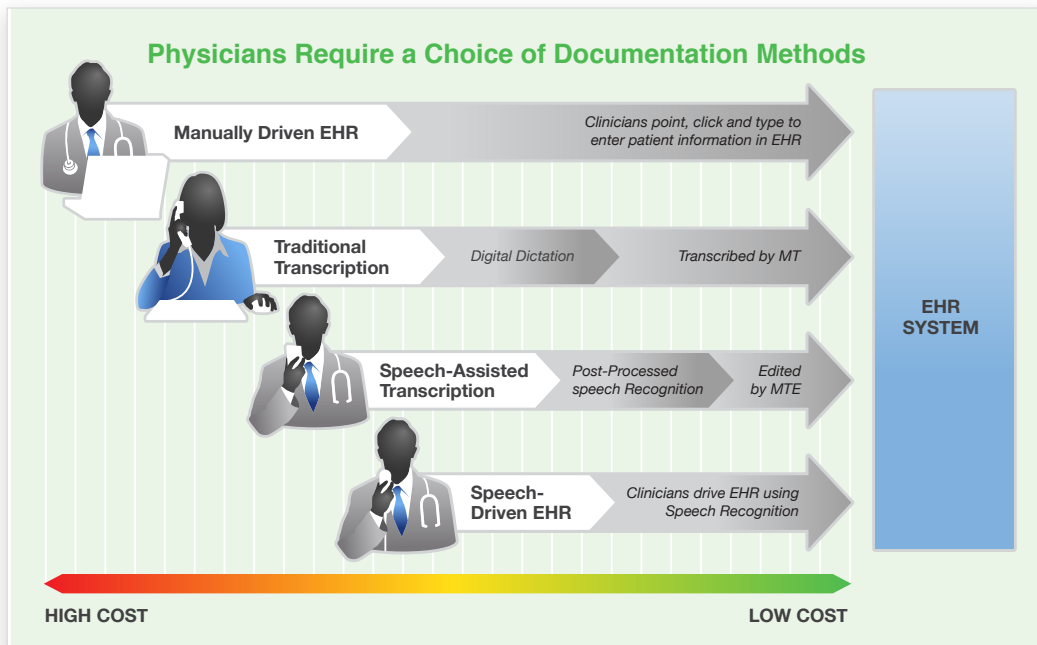 departments across Kaiser."

SPEECH RECOGNITION SUPPORTS MANY PHYSICIAN DOCUMENTATION STYLES

Understandably, physicians exhibit a wide range of comfort with using medical software. While
Physician A may readily adapt to controlling an EHR by speech, Physician B may resist abandoning
standard dictation. Similarly, some clinicians may be comfortable using 'point and click' methods—with
some keyboard use—to run their EHR, while others feel that typing takes their attention away from the
patient—or changes their thought process.

Technology has evolved to offer clinicians a range of documentation methods—from traditional to
automated– to capture anywhere patient data by speech recognition.

These methods include:

- **Manually–driven EHR**, where clinicians use neither traditional nor speech-assisted transcription
  services within the EHR for creating free-text narratives. In this instance, clinicians become typists.
  While transcription savings are significant, they are more than overshadowed by the often significant
  reduction in physician productivity.

- **Traditional transcription.** A clinician dictates into a microphone or standard telephone, which is
  then transcribed by a medical transcriptionist before being released for review and signature by
  clinicians in the EHR systems. Traditional dictation is the most labor-intensive and therefore the least
  cost-effective method of documenting findings in an EHR.

- **Speech–assisted transcription**, in which a clinician's dictation is captured and 'recognized' by a
  speech recognition engine as a first-pass step. The initial recognition is then reviewed, edited, and
  corrected by a Medical Transcription Editor (MTE) and then released for review and signature within
  the EHR. Studies have shown that this 'back end' (i.e., in the background) speech recognition, in
  conjunction with manual editing after the initial recognition has been completed, reduces the cost of
  creating medical records vs. traditional transcription by as much as 50%.

- **Speech–driven or speech-enabled EHRs**, where clinicians can dictate directly into free-text fields
  of the EHR and observe their findings on the screen, and can make edits as needed. This 'front end'
  approach represents the fastest and most cost-effective method for clinicians to document findings,
  requiring far fewer process steps (see graphic following). Voice macros—allowing clinicians to navigate
  any EHR system with a single voice command—improve ease of use immensely.

Physicians Require a Choice of Documentation Methods

Method			
Manually Driven EHR		Clinicians point, click and type to enter patient information in EHR	
Traditional Transcription	Digital Dictation	Transcribed by MT	
Speech-Assisted Transcription	Post-Processed speech Recognition	Edited by MTE	
Speech-Driven EHR	Clinicians drive EHR using Speech Recognition		

EHR SYSTEM

HIGH COST — LOW COST

These four methods are identified in the figure above.

FREEDOM OF SPEECH WILL INCREASE CHANCES OF EHR SUCCESS

With an expanded range of choices that facilitate EHR use, we recommend that:

- **Physicians should be offered 'freedom of choice' within a practice or hospital.** Physician A should be able to use an EHR system driven by his voice, while Physician B uses a more traditional transcription solution where 'back end' speech recognition processes physician dictation, presenting the editor with a draft they edit and can upload directly into the EHR for that patient.

- **The speech technologies offered should allow all clinical records to be stored in the same EHR system, regardless of how they were created.**

CONCLUSION

A perfect storm of prevailing market winds and advances in technology is poised to usher in the long-awaited era of electronic health records. The final tack needed to ensure widespread EHR adoption—making EHR software accessible to physicians in a way which supports their documentation preferences—is now within reach.

Physician surveys confirm that speech technology is an essential technology which makes EHR systems accessible and user-friendly—and improves clinician satisfaction.

"Not having patient notes in the appropriate charts at 'point-of-care' affected our workflow and created significant difficulty with cross-coverage and ongoing patient care," said Betty Rabinowitz, MD, Associate Professor of Clinical Medicine, University of Rochester School of Medicine (URMC). "Now, using Dragon Medical Practice Edition, physicians articulate the thought process behind their diagnostic and therapeutic decisions....We believe the presence of unique narrative sections that are specific to the patient and the encounter enable URMC to provide the best patient care."

EHR VENDORS EMBED SPEECH INTO THEIR PRODUCTS

• **Epic® Systems** (www.epic.com) supports Dragon® Medical Practice Edition with its EpicCare® EHR system.

"I use Dragon Medical Practice Edition daily to perform all of my medical documentation... We see a significant workflow efficiency advantage when a physician can document directly into our EpicCare EHR…We also leverage Epic's intrinsic charting tools with voice by building custom commands in Dragon Medical Practice Edition to voice activate those charting tools…This can reduce the number of 'mouse clicks' to complete a particular section of the EHR."—Robert Frank, MD, Epic and Dragon Medical Practice Edition user, Advanced Healthcare, Milwaukee, WI

• **Cerner® Corporation** (www.cerner.com) supports Dragon Medical Practice Edition for use with its PowerNote physician documentation solution.

"We've been using Dragon Medical Practice Edition alongside our Cerner EMR …and have seen significant benefits. Not only are clinicians empowered to complete comprehensive, high quality notes in real-time by speaking, but…the optimization has simplified problem diagnosis and repair, improved recognition accuracy…Dragon Medical Practice Edition works very well within a Citrix-based EHR environment. On average, I've been able to save 30 minutes per day on documentation…" —Steven H. Zuber, MD, Chief Medical Information Officer, Cerner PowerNote and Dragon Medical Practice Edition user, Nebraska Methodist

• **Allscripts®** (www.allscripts.com) supports Dragon Medical Practice Edition for its Enterprise EHR and Sunrise Clinical Manager, and Dragon Medical Practice Edition for its Professional and MyWay solutions.

"It's a lot of fun. I really enjoy it and have probably saved about $20,000 in the last two years in transcription costs."—Steven McCullough, MD, Allscripts Enterprise and Dragon Medical Practice Edition user, Western Kentucky Kidney Specialists, Paducah, KY

• **eClinicalWorks®** (www.eclinicalworks.com) a provider of EHR and practice management solutions, supports the use of supports the use of Dragon Medical Practice Edition and Dragon Medical 360 | Network Edition for physician documentation.

"Dragon Medical Practice Edition works great for me—I can't type—I use eClinicalWorks for a lot of 'point and click,' but for the subjective information, as well as my conclusions and impressions, that's where Dragon Medical Practice Edition shines. I would never go back to life pre-Dragon."—Bruce Berger, MD, Cardiologist, eClinicalWorks and Dragon Medical Practice Edition user, AMS Cardiology, Abington, PA

• **NextGen®** (www.nextgen.com), a provider of integrated practice management and EHR systems, has found that its customers document more efficiently with Dragon Medical Practice Edition and Dragon Medical 360 | Network Edition.

"At my former practice, I felt the pain of dealing with this total 'point and click' world. The dream of speaking into the note instead of typing to supplement my 'point and clicks' is now becoming a reality... With Dragon Medical Practice Edition, the note stares me in the face so I'm able to recognize that I've documented appropriately, and, if appropriate, I can bump the code level up to where it belongs." —Douglas Golding, MD, Medical Director and Chief of Healthcare Informatics, NextGen and Dragon Medical Practice Edition user, Lifetime Health Medical Group, Buffalo, NY

Dragon Medical Practice Edition works with hundreds of other EHR software packages, including those offered by **MEDITECH®, GE®, McKesson®, Siemens®, athenahealth®,** and many others.

CASE STUDY: ADVOCATE ILLINOIS MASONIC MEDICAL CENTER

PowerNote®, developed by Cerner Corporation, is one of the most widely used EHR modules in hospitals and integrated delivery networks. Dragon Medical Practice Edition speech recognition technology is used with PowerNote by over 15,000 clinicians, who use computer-generated templates to create patient documentation. Using Dragon Medical Practice Edition, PowerNote has been speech-enabled to improve their ease of use, and in turn, the efficiency and productivity of medical professionals. Clinicians can use voice macros to select values from drop-down menus and use free-text dictation when needed.

Nearly 600 providers from Advocate Illinois Masonic Medical Center (AIMMC), home to a Level I Trauma Center, a Level III Neonatal Intensive Care Unit, and one of the top health systems in the U.S., currently use Dragon Medical Practice Edition from Nuance Healthcare within Cerner PowerNote, the structured clinical documentation module of Cerner Millennium® EHR system. Providers are using Dragon Medical Practice Edition speech-recognition capabilities and specialty-specific templates. Dragon Medical Practice Edition allows clinicians to document patient care directly into PowerNote and maintain full-text control of the dictation. AIMMC has been able to reduce transcription costs and can now focus limited resources on providing excellent patient care.

New speech technology will make EHR software more usable regardless of location or client technology.

"I am not a typist," says Dr. Field. "Every EHR I have worked with requires the skills of a data entry clerk. When I have to type, I cut corners to save time and clicks on my hands. With Dragon Medical Practice Edition's speech recognition I capture my patient encounter, deliver excellent documentation to my colleagues through the EHR, and produce a medical record that will stand up in court, if that should ever be necessary. I can't imagine using any EHR system without Dragon Medical Practice Edition."

As speech accelerates physician adoption of EHR systems, the U.S. healthcare system will continue to gain the benefits of slower healthcare inflation, improved outcomes, and higher patient and clinician satisfaction alike.

As healthcare organizations deploy EHRs, the challenge they face is how clinicians can continue to capture the entire patient story, as part of the clinical workflow. Clinical Language Understanding technologies are being developed today to convert the patient story into actionable data, which can be used across the enterprise and adapted into virtually any EHR chosen by a healthcare facility.

The next generation of speech recognition solutions promise physicians the ability to capture clinical data anywhere, on any device, provide a full understanding of the patient story, and use it for both clinical and business benefit.

ABOUT NUANCE HEALTHCARE

Nuance Healthcare, a division of Nuance Communications, is the market leader in providing clinical understanding solutions that accurately capture and transform the patient story into meaningful, actionable information. These solutions are proven to increase clinician satisfaction and HIT adoption, supporting thousands of hospitals and providers to achieve Meaningful Use of EHR systems and transform to the accountable care mode. ■