

# Dismantling Barriers to EHR Adoption and Health Information Exchange

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## Executive Summary

HITECH and the Affordable Care Act deliver incentives and penalties that encourage healthcare providers to adopt health information technology and use it in a meaningful manner to deliver high-quality care.. These Acts have the admirable aims of reducing healthcare delivery costs and improving patient care.

But meeting these regulatory requirements can be formidable for IT, and ensuring physicians adopt the new technology is critical for the programs' overall success. In order to make clinical documentation more efficient—making it easier for healthcare providers and healthcare organizations to adopt new technologies as they strive to achieve Meaningful Use and transition to Accountable Care Organizations—there must be a proven and effective way to capture data and turn it into actionable information.

Speech recognition and clinical language understanding technologies plug the gap between physicians and IT systems by allowing physicians to dictate notes and create discrete, standardized information that can then be exchanged with other physicians, hospitals, regulatory bodies, and payers in a way that's natural for them. These technologies transform notes into highly structured sets of clinical facts that IT systems need and that provide extensive data about the patient visit that can be used to code the visit at the most appropriate level.

This white paper outlines the challenges facing healthcare CIOs/CMIOs today, while describing how leading healthcare providers are using Nuance's speech recognition and clinical understanding technologies to improve patient care and the financial health of their organization by more easily adopting EHR systems, demonstrating meaningful use, supporting ACOs, and meeting ICD-10 requirements.

## New Regulations: A Game Changer for Healthcare Providers

Today's healthcare environment presents the most daunting challenges to healthcare CIOs and CMIOs. Not since Y2K, when CIOs/CMIOs were forced to overhaul all of their IT has the need for healthcare IT support been so great.

CIOs and CMIOs are in the thick of responding to two major pieces of legislation from Washington D.C.—the Health Information Technology for Economic and Clinical Health (HITECH) Act, part of the American Recovery and Reinvestment Act (ARRA) of 2009, and the Patient Protection and Affordable Care Act as amended by the Healthcare and Education Reconciliation Act of 2010 (known collectively as the Affordable Care Act). These Acts aim to modernize care delivery and improve the overall quality and efficiency of patient care while reigning in spiraling costs.

Central to this legislation is the belief that electronic health information is the required backbone of a centralized, tightly managed modern healthcare system that can support standardized care services and data driven decision support to improve clinical outcomes. These Acts encourage the adoption of Health Information Technology including Electronic Health Records (EHRs), Health Information Exchanges (HIEs), and other technologies, such as normalized medical terminologies, automated order management systems, and physician-to-patient communication tools.

## Incentivizing EHR Adoption

The government has made nationwide adoption of EHRs and widespread information exchange one of its top priorities. Medicare is offering incentives of up to \$44,000 per physician and Medicaid incentives of up to \$64,000 per physician to accelerate EHR adoption by 2014, with penalties for failure to adopt HIT in a meaningful way beginning in 2015. Healthcare organizations must not only adopt technology, they must also use it to improve quality of care, enhance efficiencies, and reduce costs. As a result, healthcare providers will be required to demonstrate progressively rigorous “meaningful use” of technology over time. Stage 1 required providers to record patient information in the EHR as well as use the EHR to exchange health information and submit clinical quality measures. Stage 2, which is slated to begin in 2014, will require eligible providers to fulfill additional “core” Meaningful Use objectives as well as increase information exchange and enhance patient engagement.

## Accountable Care Organizations

Encouraging new healthcare models that pay providers for higher value in clinical care, rather than fees-for-service, is another legislative goal. A high-profile proposal introduces the accountable care organization (ACO) model in which the Centers for Medicare & Medicaid Services (CMS) will reward providers for consistently positive patient outcomes and penalize them for poor results. Since many Americans have multiple conditions requiring care by multiple providers, ACOs will need to tightly coordinate their clinical operations and heavily rely on EHRs with built-in support for data standardization and dissemination in real time. Long term, ACOs will also require data analytics and predictive modeling to support care while identifying opportunities to reduce costs.

## ICD-10

To make matters even more complex, the CMS and the Department of Health and Human Services are also requiring healthcare providers to migrate from ICD-9 to ICD-10. The aim is to enable more granular understanding of conditions, treatments, and outcomes, and more complete analysis of costs of services. ICD-10 dramatically increases documentation complexity. ICD-10 codes are longer than those for ICD-9, and there are more of them. ICD-10 uses 68,000 diagnosis codes and 87,000 procedure codes compared with 14,000 diagnosis and 4,000 procedure codes for ICD-9.

## Forward-Thinking CIOs/CMIOs Meet the Challenge

As CIOs/CMIOs strive to meet regulatory demands, one of their most formidable challenges is persuading providers to adopt health information technology. Many physicians resist using EHRs because they feel point-and-click data entry prevents them from documenting care with enough detail to accurately depict the patient encounter. Yet typing detailed notes slows many physicians down, keeping them from patient care and taking time away from their private lives.

Moreover, while physicians convey the rich, detailed information necessary to document patient encounters as a narrative, HIT systems demand data in a standard, structured format. Organizations must bridge this divide by translating detailed clinical information into a structured format so it can be used by healthcare IT technology to meet quality and reporting requirements.

Forward-thinking CIOs/CMIOs today are employing speech recognition and clinical language understanding technology to allow physicians to document in narrative and then turn narrative into

defined data. As a result, they are better able to encourage EHR adoption, demonstrate meaningful use and high-quality patient care to qualify for CMS incentives by better coordinating care and meeting ICD-10 documentation requirements.

## **SPEECH RECOGNITION**

Speech recognition technology encourages EHR adoption by allowing physicians to enter comprehensive notes into the EHR in the way they prefer – not through typing or point-and-click, but by simply dictating. Physicians can even use pre-defined templates that contain standard elements of an exam that are used repeatedly to speed data entry.

Because speech recognition systems allow physicians to document care in the manner in which they are accustomed, without changing their workflow, healthcare organizations that provide speech recognition together with the deployment of EHR technology have seen increased rates of physician adoption and satisfaction.

For example, Sharp Rees-Stealy Medical Group is one of the largest, most comprehensive medical groups in San Diego County, with 19 locations that offer primary and specialty care, laboratory, physical therapy, radiology, pharmacy, and urgent-care services. In the ten months following its rollout of Nuance Healthcare's Dragon® Medical 360 | Network Edition, the group increased the number of progress notes entered into its EHR from 6,183 to 19,020 while paper chart usage overall declined from 102,000 per month to 4,000. Speech recognition also supports the ability to achieve Stage 1 Meaningful Use requirements. Physicians can easily dictate simple statements that help populate the EHR with structured data; for example, they can dictate the necessary patient demographic or medication information into templates that populate the EHR as needed for Stage 1 Meaningful Use. In addition, Meaningful Use requires some exchange of patient information with other providers; speech recognition allows physicians to instantly dictate their notes and immediately make them available for review.

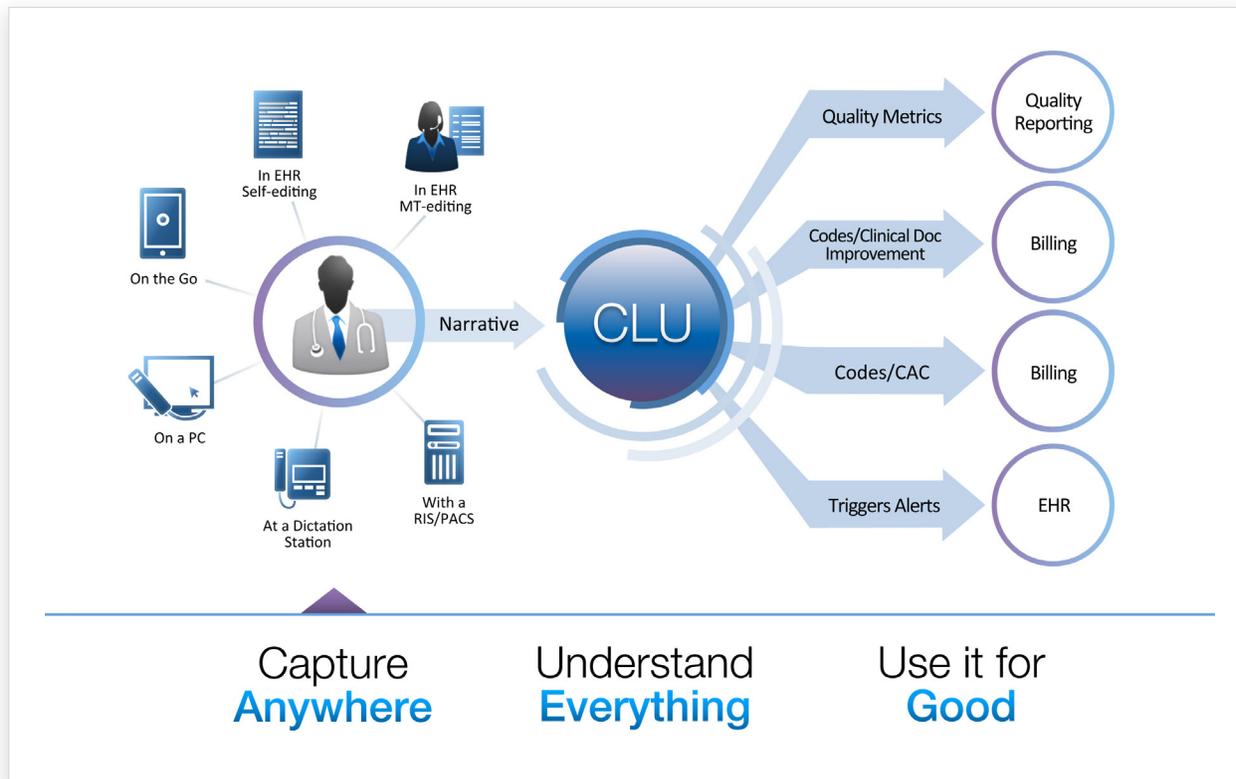
## **CLINICAL LANGUAGE UNDERSTANDING**

Entering narrative patient information into the EHR is only half the challenge. The other half is enabling the system to “understand” the information so it can identify relevant facts and determine what they mean. That's where clinical language understanding becomes critical.

Ultimately, clinical language understanding supports Meaningful Use because it transforms free-form narratives into the structured data that the CMS requires. Stage 2 of Meaningful Use also demands greater health information exchange capabilities. The structured data that clinical language understanding provides is the lifeblood of an HIE. In turn, HIE is essential to the establishment of ACOs because it allows providers to share relevant patient data instantly with other collaborating providers. This enables them to dramatically improve decision making, avoid medical errors and duplicate testing, and in the end deliver better patient care.

Clinical language understanding also supports ICD-10 coding by automatically capturing the rich information healthcare organizations need for complex coding. And it will ultimately provide the data necessary for predictive analysis and evidence-based medicine. Going forward, speech understanding will become the vehicle that guarantees high quality patient outcomes and the financial sustainability of the healthcare organization.

For example, UPMC has begun using CLU technology to transform the way patient information is captured, understood, and used to improve the quality and efficiency of care. UPMC has partnered with Nuance Healthcare to take two petabytes of data, 80 percent of which is unstructured, and extract facts from the data for CMS reporting. It is also using it for predictive analysis. To date, UPMC has been able to achieve Meaningful Use by increasing their adoption of EHR technology and ensuring that physicians capture notes in the EHR system.



## Breakthrough Technology from Nuance

Today, 450,000 physicians at 10,000 healthcare institutions worldwide leverage Nuance Healthcare solutions to capture the patient story and support physicians in the adoption of information technology. Few companies understand speech-driven technologies better than Nuance; thusly, no one is doing more to help healthcare organizations prepare for and comply with the latest regulations. Nuance also invests over \$175 million annually in the research and development of existing and future technologies; no other company in the industry comes close. And finally, we are proud to collaborate with innovative clinical partners who care deeply about clinician satisfaction, care team efficiency, higher-quality clinical documentation and, ultimately, the highest level of patient care. With their commitment to excellence as a guide, we are able to imbue in our technology a real understanding of what clinicians truly need and our robust portfolio of enterprise solutions reflect that.

Nuance is on a mission to provide clinical understanding solutions based on innovative technologies that transform the patient story into meaningful, actionable information to facilitate smart, efficient decisions across the healthcare enterprise. Using Nuance Healthcare technology, healthcare providers are able to:

- **Capture the patient story anywhere**, any time and on any device in a physician's preferred clinical workflow, supporting their adoption of new technologies.
- **Understand what is captured**, with Nuance Healthcare's Clinical Language Understanding technology, to unlock and transform unstructured clinical data into actionable information.
- **Use it for good** by providing analytics and insight for clinical good, business good and, most of all, patient good across the healthcare enterprise.

## CAPTURE ANYWHERE

Nuance's speech recognition technology allows providers to capture narrative, detailed descriptions of patient histories, encounters, and treatment plans without changing their work flow. Nuance supports virtually any Windows-based EHR; not only do we offer a software development kit to EHR partners, we also work closely with most major EHR vendors to make our joint solutions available as soon as they're needed.

Our technology also captures speech on any device, anytime, anywhere. Because our services are available through the cloud, physicians can use existing technologies or workflows, such as a landline, desktop computer, or our transcription services. Or, they can now use their mobile devices (iPhone®, Blackberry®, or Android®) for all their communication needs. Nuance technologies allow physicians to communicate with other physicians, review patient records, even look up knowledge bases to help make decisions...all at the point of care.

As physicians dictate, Nuance solutions make sure that they capture the right data for the coding department—right from the start. Healthcare organizations can create templates or use our ICD-10 coding solutions to prompt physicians to include the detailed information necessary to ensure that the business can bill at the most appropriate coding level, rather than having to down code due to insufficient documentation. These solutions ease the transition to more detailed ICD-10 coding.

## UNDERSTAND EVERYTHING

Speech to text has been the primary way for speech recognition technology to accelerate EHR adoption. That's about to change. With Nuance's clinical language understanding technology, physicians capture narrative using speech recognition software. In real time, clinical language understanding extracts key clinical facts from the narrative and transforms those facts into codified data while retaining the original richness of information.

## How do we do this?

Clinical language understanding takes advantage of a combination of four best-of-breed artificial intelligence technologies to turn speech into usable facts:

- Ontologies represent knowledge as a set of concepts in a domain and describe the relationships among those concepts.
- Syntactic parsing analyzes text to determine its grammatical structure.
- Nuance's business rule engine combines concepts and their relationships into meaningful information, ready to be used in clinical and administrative use cases.
- And statistical algorithms are capable of detecting each variation and peculiarity in the physician's narrative, in order to resolve meaning even in unclear statements.

Nuance's medical ontology contains five million distinct clinical concepts linked by descriptive relationships. This ability to connect disparate pieces of information establishes facts that enable the NLP rules engine to understand intent and convert the patient story into actionable information.

Nuance has the only technology that drills for precise facts for precise purposes; other technologies can only dredge for information, bringing up large quantities of related information through which clinicians must manually sift to find what they're looking for. Nuance technologies provide only the facts necessary for decision support and for billing and coding systems that support ICD-10.

## USE DATA FOR GOOD

Nuance solutions allow healthcare organizations to more easily adopt EHR technology and exchange information. These two outcomes alone are critical to achieving the regulatory goals of increased provider efficiency, reduced costs, and improved patient care. Who benefits from this? Everyone...the clinicians, the business, and most important, the patients.

### Clinical Good

Clinicians benefit through the ability to produce more complete, descriptive notes in their own words—while saving time. For example, Advocate Illinois Masonic Medical Center is a 408-bed hospital in Chicago with a Level 1 Trauma center and a Level II neonatal intensive care unit, with nearly 900 physicians, 300 residents, and 700 nurses using Cerner® Millennium. According to Richard J. Fantus, M.D., Chief of Trauma Surgery at the Center, “The history and physical information are far more complete when we use the Dragon Medical speech recognition solution to dictate, especially for the narrative portion. It's painful to handwrite the story—and the negative or positive findings.”

### Business Good

By providing more complete documentation, Nuance's solutions enable better and more thorough care plans while reducing errors and complications. Healthcare organizations save significant amounts of time and money by eliminating the need for transcription services.

For example, Brigham and Women's Hospital, a 730-bed, non-profit teaching affiliate of the Harvard Medical School and a founding member of the Partners' Healthcare System, saved over \$9 million

annually in transcription costs using Dragon Medical 360 | eScription™. This solution is an on-demand, enterprise-wide computer aided medical transcription (CAMT) platform that uses intelligent speech recognition software to create formatted draft documents that medical transcriptionists quickly review and edit.

At the same time, more data is available for use in business analytics. And physicians can generate higher relative value units (RVUs) by billing for all the services they deliver, rather than undercoding due to lack of documentation. Increased revenues mean that organizations generally see a three to four month return on investment.

## **Patient Good**

Most important, by allowing providers to capture and integrate the complete story into the EHR, healthcare organizations can create the most complete and accurate patient records that can be communicated instantly to other providers, thereby ensuring the highest quality patient care.

For example, the University of Utah Health Care uses PowerScribe® 360 | Reporting to enable radiologists to perform studies at one location and read them at any site. PowerScribe 360 | Reporting includes tools for report creation, multisite workflow, data capture, and communication. Because this solution reduces reporting turnaround time, clinical decisions are delivered more quickly, improving patient care. As Richard H. Wiggins, Director of Imaging Informatics at University of Utah Health Care noted, “Faster reporting enables faster clinical decisions and quicker discharge. Patients feel they are getting better care and that their physicians are better informed.”

## **A Vision for Future Good**

Nuance Healthcare is the de facto leader in speech recognition and clinical language understanding technology, but we've only just begun to innovate. New applications of our technology will include assisted diagnosis, sophisticated decision-support analytics, predictive modeling, and other evidenced-based medicine that will further improve healthcare for all.

Nuance partnered with IBM to combine IBM's Watson computing systems advanced analytic capabilities (e.g. Deep Question Answering (QA), Natural Language Processing and Machine Learning capabilities) with Nuance's speech recognition and clinical language understanding solutions. Watson's ability to analyze meaning and context of human language and quickly process information to find precise answers will help decision makers, such as physicians and nurses, unlock important knowledge and facts buried within huge volumes of information and offer answers they may not have considered, helping to validate their own ideas or hypotheses.

For example, a doctor considering a patient's diagnosis could use Watson's analytics technology, in conjunction with Nuance's speech recognition and clinical language understanding solutions to rapidly consider all the related texts, reference materials, prior cases and latest knowledge in journals and medical literature to gain evidence from many more potential sources than previously possible, helping the medical professional to confidentially determine the most likely diagnosis and treatment options. Watson has the potential to help doctors reduce the time needed to evaluate and determine the correct diagnosis for a patient, and it can help doctors provide personalized treatment options that are tailored to an individual patient's needs.

## Conclusion

Nuance is able to uniquely address many of the challenges facing CIOs and CMIOs today. With Nuance solutions, coupled with our massive investments in R&D, years of experience in developing advanced speech recognition and understanding technology, integration with EHR vendors, and innovative partnerships with industry leaders of all sizes, healthcare organizations can now meet requirements for EHR adoption and meaningful use, easily exchange healthcare information to support ACO initiatives, report on quality information to obtain CMS incentives, and address ICD-10 requirements. At the same time, CIOs and CMIOs can be confident that their investment in Nuance is helping their organization reduce healthcare costs while delivering the highest levels of patient care. In the end, isn't that what this is all about?



