

Study: Speech Recognition Technology Improves Satisfaction, Workflow and Efficiency

Peer-reviewed research conducted at Vassar Brothers Medical Center reveals positive results among providers

POUGHKEEPSIE, NY and, BURLINGTON, Mass., August 13, 2018 – A multiyear study on the adoption of speech recognition technology and its impact on provider documentation in the electronic health record software at [Health Quest's](#) flagship hospital, [Vassar Brothers Medical Center](#), revealed significant improvements in documentation quality, provider satisfaction, workflow, efficiency and reduced medical transcription costs. Vassar Brothers Medical Center uses [Nuance Communications, Inc.'s Dragon Medical speech recognition technology](#).

The study, "[Provider Adoption of Speech Recognition and its impact on Satisfaction, Documentation Quality, Efficiency, and Cost in an Inpatient EHR](#)," is available on PubMed Central, the U.S. National Institutes of Health digital archive of biomedical and life sciences journal literature. The results were presented at the Association of Medical Directors of Information Systems Conference and American Medical Informatics Association's 2018 Informatics Summit.

"This highly in-depth study reinforces the significance of accurate, quality clinical documentation in aiding the provider and supporting patient care," said Dr. Kshitij Saxena, Health Quest's chief medical information officer.

Sample Size

- 1,070,459 notes completed by 687 distinct providers studied;
- 121 providers completed an electronic pre-implementation survey;
- 108 providers (64 percent physicians, 18 percent nurse practitioners, and 18 percent physician assistants) completed a post-implementation survey with an average of 15 months use of speech recognition; and,
- 53 providers completed both the pre- and post-implementation surveys.

Results

The following qualitative and quantitative results were realized:

- 99-point positive shift in Net Promoter Score® after using speech recognition versus prior input modalities indicating a significant increase in provider satisfaction, while 95 percent of providers reported introducing speech recognition for electronic documentation was a good idea.
- 81 percent of providers reported improved documentation quality and completeness, while 60 percent reported less time spent answering questions and clarifications.
- 84 percent of providers reported significant workflow improvements.
- 57 percent of providers reported decreased time spent documenting the patient encounter, an improvement over prior studies.
- Provider adoption of electronic clinical documentation increased from 20 percent to 77 percent, with a 74 percent speech recognition adoption rate.
- The organization realized an 81 percent reduction in monthly medical transcription costs, resulting in transcription cost savings of \$1.37 million during the duration of the study.

"As we shift to a value-based payment model, it is important for providers to get credit reflective of the level of care and quality provided," said Robert Diamond, Health Quest's senior vice president and chief information officer. "Automating and optimizing the provider documentation workflow in the EHR through speech recognition has become a best practice at Health Quest."

Methodology

Health Quest teamed with Nuance to validate and share best practices for implementing speech recognition and expand upon prior research. Through this collaboration, the study also established a new baseline for the impact of speech recognition use on provider adoption, satisfaction, documentation quality, efficiency, and cost that other organizations can leverage and future research can expand upon.

The 31-month study consisted of qualitative and quantitative segments that covered pre-implementation, pilot, implementation and post-implementation phases, resulting in the analysis of more than 1 million provider notes.

- **Quantitative method:** A new methodology was developed and implemented to measure the adoption of speech recognition by detecting the co-occurrences of speech recognition sessions and EHR note change events for the same provider simultaneously active in the EHR and speech recognition systems. To facilitate the accurate measurement of note volume evolution by various clinical documentation input modalities, data was collected from the EHR, speech recognition solution, and medical transcription solution at Vassar Brothers Medical Center, which had annual transcription costs of more than \$1 million. All quantitative measurements were via retrospective, longitudinal, observational study.

- **Qualitative Method:** To measure provider satisfaction, documentation quality and efficiency, an electronic survey questionnaire was developed and deployed to assess expectations and experience regarding clinical documentation prior to the implementation of speech recognition and to evaluate the post-implementation documentation experience including speech recognition.

“Teaming with Health Quest on this extensive study brought together two like-minded organizations dedicated to the advancement of healthcare through technology,” said Satish Maripuri, executive vice president and general manager, Healthcare division, Nuance Communications. “The study outcomes reinforce the positive impact speech recognition technology can have across the care continuum and align with areas of importance for hospital CIOs, CMIOs and providers.”

For more information about Health Quest and Vassar Brothers Medical Center, visit healthquest.org.

About Health Quest

Health Quest is a family of integrated nonprofit hospitals and healthcare professionals in the Hudson Valley and northwest Connecticut. Health Quest combines talented physicians, state-of-the-art technology and compassionate caregivers dedicated to providing quality care across a variety of service lines, including Neurosciences, Oncology, Cardiovascular, Women/Children's and Orthopedics. Health Quest has a network of convenient locations throughout Columbia, Dutchess, Ulster, Orange, Putnam and northern Westchester counties in New York as well as western Connecticut, including four award-winning hospitals — Northern Dutchess Hospital in Rhinebeck, Putnam Hospital Center in Carmel, Sharon Hospital in Sharon, Conn. and Vassar Brothers Medical Center in Poughkeepsie — plus multiple Health Quest Medical Practice primary care and specialty locations, two Urgent Care locations and affiliates including the Thompson House, a 100-bed skilled nursing facility on the Northern Dutchess Hospital campus, Health Quest Home Care and The Heart Center, a leading provider of cardiology services in the region.

About Nuance Healthcare

Nuance provides intelligent systems that support a more natural and insightful approach to clinical documentation, freeing clinicians to spend more time caring for patients. Nuance healthcare solutions capture, improve and communicate more than 300 million patient stories each year, helping more than 500,000 clinicians in 10,000 global healthcare organizations to drive meaningful clinical and financial outcomes. Nuance's award-winning clinical speech recognition, medical transcription, CDI, coding, quality and medical imaging solutions provide a more complete and accurate view of patient care.

About Nuance Communications, Inc.

Nuance Communications, Inc. (NASDAQ: NUAN) is the pioneer and leader in conversational AI innovations that

bring intelligence to everyday work and life. The company delivers solutions that can understand, analyze and respond to human language to increase productivity and amplify human intelligence. With decades of domain and artificial intelligence expertise, Nuance works with thousands of organizations – in global industries that include healthcare, telecommunications, automotive, financial services, and retail – to create stronger relationships and better experiences for their customers and workforce. For more information, please visit www.nuance.com.

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