



## NUANCE SPEECH TECHNOLOGIES SUPPORT WORLD-CLASS PATIENT CARE

**The Sheikh Khalifa Medical City (SKMC) is Abu Dhabi's premier healthcare facility managed by the Cleveland Clinic. It is the first organization in the region to base the delivery of its care on a hospital-wide electronic speech infrastructure built from a blend of Nuance's speech-based clinical documentation solutions: digital dictation and transcription, desktop speech recognition and speech-based radiology reporting. The result: the right information for each patient – where and when needed. SKMC today delivers information management at its best and fully exploits the “power of knowing” for its patients.**

Gagan Goel is the Application Development Manager of SKMC, responsible for all new development of applications which can improve patient care and optimize the workflow.

“We are digitizing the clinical workflow,” he says and, with the going-live of Cerner Millennium HIS in November 2010, paper charts are a thing of the past. Now, everything needs to be documented electronically. SKMC introduced a blend of speech-based clinical documentation solutions from Nuance Healthcare, to help doctors capture information in the electronic system – fast, convenient and accurate.

### KEY PERFORMANCE INDICATORS FOR SKMC'S SPEECH INFRASTRUCTURE:

- Reduce amount of transcription
- Reduce volume of typing by doctors
- Improve quality of electronic patient chart and raise level of detail

“With regards to information, time and accuracy matter most in patient care,” says Gagan and, with this in mind, SKMC's electronic speech infrastructure now serves all of the hospital's 500 doctors and is comprised of three components:

- **Enterprise Express** provides a phone-based digital dictation and transcription service across SKMC to ensure top-end transcription productivity and super-fast turnaround times.
- **PowerScribe** offers radiologists at SKMC front-end speech recognition and integrated productivity tools that allow them to create and turn around diagnostic imaging interpretations faster than ever before
- **Dragon Medical** allows individual physicians with a high documentation volume, e.g pathologists, to dictate in “real-time” into their electronic health record.

### ROLLING-OUT A LEADING-EDGE SPEECH INFRASTRUCTURE

SKMC first replaced its old digital dictation system with Nuance's Enterprise Express. They worked with Abu-Dhabi based Emerging Technologies on this. Emerging Technologies are Nuance's distribution and implementation premier partner for the Middle East.

Doctors now start their dictation within the Cerner HIS. Transcriptionists are provided the audio file with basic patient demographics and are transcribing the dictation directly into Cerner.

In the next step, Gagan Goel and his team turned to speech recognition. They identified speech recognition candidates based upon their dictation volume and their openness to adopt new technologies as well as previous experience with speech recognition. 72 doctors have made the switch so far and the roll-out is continuing in small batches of 14 doctors a month – as long as all physician requests have been satisfied. With Dragon they can either dictate into Cerner Millennium HIS or in Word.

“Not all doctors will be comfortable with speech recognition and therefore we must provide them with the flexibility to choose their preferred workflow – this includes access to both, digital dictation and speech recognition”, explains Gagan Goel.

“Digital dictation and speech recognition have to go hand in hand”, he adds.

With one exception: in radiology, all physicians use front-end speech recognition through Nuance's PowerScribe radiology reporting workflow. The same as in pathology, where they use Dragon Medical, none of their reports run through the transcription office anymore, they dictate, review and validate in real-time.

SKMC and Emerging Technologies decided to take a soft approach when rolling out the electronic speech infrastructure and not to enforce the technology on users. Instead, they proved the concept works and with every happy and successful user, the excitement increased.

“Today we are getting requests for speech recognition licenses”, says Gagan Goel, pointing out that only if users ask for a specific technology will they also adopt it.

### **RADIOLOGY: 100% ONLINE SPEECH RECOGNITION WORKFLOW WITHIN DAYS**

Dr. Peter Lange is the Ex-Chair of the Radiology Institute at SKMC. PowerScribe, he says, is essential to speed up report availability and to simplify the verification and approval process for final reports.

“We can now see immediately the text that is to go into the final report – changes or corrections can be made right on the spot, without the back-and forth which comes with a transcription-based process,” Peter Lange highlights. Compared to digital dictation times the reporting process in radiology is much faster now.

When planning the PowerScribe roll-out they predicted a gradual decrease in transcription, but it went down within days. In the first month the volume of radiology reports transcribed by transcriptionists dropped from an average of 10,000 to 150 only!

While this decisive adoption of speech recognition in radiology freed resources in the transcription department, it also affected the quality of patient care. Previously, radiologists had to hand out hand-written reports for acute cases in emergency. This is no longer the case. If intensive care, for example, requests a chest x-ray in one of their ward rounds at 4am, the report will be available latest at 8am.

Dr. Peter Lange says that another major benefit of speech recognition is that the system does not use abbreviations. This helps SKMC comply with the strict quality guidelines of the Joint Commission International (JCI) – a hospital accreditation provider working with healthcare organizations,

### **CONSIDERATIONS FOR THE SUCCESSFUL IMPLEMENTATION OF A SPEECH RECOGNITION SYSTEM IN RADIOLOGY**

**Dr. Yousif Makawi, nuclear medicine physician, PACS administrator**

1. Know your workflow and choose a system that is able to serve this workflow. The system should do what you want and not vice versa.
2. Look at the support from your supplier – including installation, integration, training, maintenance. The best system in the world is useless without the right support.
3. As with any other program, training is key. With speech recognition you have to stress that users should speak naturally.
4. Consider the environmental factors while designing the reading room. Although the new technology can eliminate much of the background noise, a speech recognition system is audio sensitive and benefits from quiet surroundings.
5. Structure longer reports into sequences and check every sequence individually when finished.
6. Ensure system integration. Working without integration means using only one feature: speech recognition. But, there is a lot more to it.



ministries of health, and global organizations in over 80 countries to improve patient care and safety. SKMC's 568 bed acute care hospital, its 14 outpatient specialty clinics and a blood bank are all JCI accredited.

### **FAST AND SAFE DECISIONS FOR THE PATIENTS**

Dr. Yousif Makkawi, nuclear medicine physician and PACS administrator, says that in order to exploit the full potential of PACS, front-end speech recognition is a prerequisite. He managed the speech recognition implementation in radiology. He says that the EMR, PACS and reporting solution must work hand-in-hand to ensure consistency between patient, image and report. They use an HL7 interface to do so. The results speak for themselves.

“The turnaround times for radiology reports went down from 3 days to a few hours. Most of the physicians converted to speech recognition within a week. We are paper-less and have total control of the outcomes of our radiology services,” says Dr. Yousif Makkawi.

The nicest feature of PowerScribe is its recognition accuracy according to the physician.

“We have a multi-cultural, multi-linguistic environment. Nevertheless, 90% of my colleagues have acquired recognition accuracy in English of 85 to 90% accuracy within one week. And the system keeps on learning and adapting. That is the most important part”, says Dr. Yousif Makkawi. Another aspect is data privacy.

“Electronic systems are easier to secure because it is very simple to control and restrict the access to information that affects patient health.

### **PATHOLOGY: REDISCOVERING THE BENEFITS OF DICTATION**

Dr. Lois Richard, a pathologist at SKMC, is using Dragon Medical for her reports. She has become somewhat of a “super-user” – she knows the software in-and-out. Her excitement comes from the fact that with Dragon Medical she was able to return to dictating her reports – which made a “revolutionary change to her work”.

“In my case Dragon was absolutely revolutionary. I got back to dictating my reports”, Dr. Lois Richard says. She had stopped doing so, because of the time and amount of correction that are attached to a dictation-transcription process and preferred typing herself instead. Today, all her reports run through speech recognition.

“I am reporting all day. Dictate, proof-read, edit, sign – it’s that simple and straight forward”, Dr. Richard says.

One year “on Dragon”, Dr. Richard uses a lot more of the functionalities that come with the program. Voice commands for example allow her to open Word or Internet Explorer without the touch of a mouse or a keyboard. She even created her own templates for consultation letters. “There is nothing difficult about Dragon”, she says today, but admits that while the initial contact with Dragon Medical is “super exciting the first week is not as good – because you get a raw system that needs to adapt to your voice and style. But once the adaption kicks in, it’s a learn-as-you-go process without any set-backs.

All 14 pathologists at SKMC are now using Dragon Medical and there are no pathology reports being sent to transcription anymore; a result which also goes on the account of Emerging Technologies: “Their support was essential in making us so successful”, Dr. Lois Richard says.

### **MAIN BENEFITS OF DRAGON MEDICAL IN PATHOLOGY**

#### **Dr. Louis Richard, pathologist**

1. Accuracy: reports are more accurate compared to a process involving digital dictation and transcription
2. Efficiency: fewer spelling errors, no waiting time and instantaneous report creation result in a highly efficient workflow
3. Patient care: turnaround time (TAT) in pathology is very important for the continuity of care. TAT has improved. It helps reduce the length of hospital stays and send patients back to their familiar environment as quickly as possible.



### **TRANSCRIPTION AS IT SHOULD BE: ACHIEVING THE TARGETS**

Tanya Gagnon is the transcription supervisor for SKMC’s health information management services unit. She and her team are using Enterprise Express to transcribe dictations from clinicians. Thanks to the hospital information system everybody is “now”, Tanya Gagnon says – and “now” is the benchmark for her unit, too.

“Turnaround times are simply amazing. We are doing very well now,” she says. “We have been cleaning up the backlog. It is now at 2 hours and 12 minutes of dictation or 51 jobs – which basically mean that we are transcribing almost in real-time.” At SKMC they transcribe up to 3800 jobs per month.

What Tanya likes most about Enterprise Express is that it helps her keep an eye on the quality of the documents.

**Transcription Performance in January 2011**

Work Type	Target TAT in hrs	% within target
Operative Note	24	90.89
Electrophysiology	24	100
Medical Evaluation	72	99.93
Discharge Summary	24	97.06
Consultation	168	100.00
EMG	24	100.00
U/S Guided Thyroid Biopsy	24	100.00
Progress Note	168	100.00
EEG	24	100.00
Cardiac Cath	24	100.00
Stress Test	24	100.00
Tilt Test	24	100.00
H&P	24	94.12
Pathology	24	98.09
Radiology	24	100.00

“Many of our patients receive treatment abroad. Our medical evaluations are therefore seen by doctors all over the world. I want them to look good,” she says. Enterprise Express therefore delivers 5% of all transcriptions to her for random quality checks. As for most transcriptionists on her team English is the second language, this allows her to keep a close eye on grammar and spelling.

The central job list in Enterprise Express delivers statistics for the performance of the department, easing team management and resource planning. The constant evaluation of performance versus hospital targets ensures that the doctors receive a “best-in-class” service.

“If you want doctors to perform, to see more patients and bring in more revenue, they need support. We provide that support,” Tanya Gagnon points out. And she wants to go even further. “Ideally, we want to not only transcribe but edit the dictations”, she says.

Tanya thinks this is the way forward. Doctors should be enabled to send speech-recognized documents for editing through the transcriptionists. For dictations from clinicians this might be an ideal option because it gives them more flexibility: No matter if a dictation comes as an audio file or a text draft, transcriptionists will be able to process whatever is being sent and apply their skills and experience to support the physicians. Following the transcription department’s efficiency improvements since the implementation of speech recognition in Pathology and Radiology, four members of her team have been redeployed within SKMC; she now manages eight transcriptionists.

An important aspect in transcription management is the support of the system vendor, Tanya Gagnon points out. Emerging Technologies have helped migrate from their old system to Enterprise Express; all reports have been transferred. They have built a reporting model to reflect the needs at SKMC and provided competent training.

“I am so glad they chose Emerging Technologies”, Tanya says.

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**ABOUT THE SHEIKH KHALIFA MEDICAL CITY (SKMC)**

Encompassing several ‘Centers of Excellence’, Sheikh Khalifa Medical City, managed by Cleveland Clinic, serves as the flagship institution for Abu Dhabi’s healthcare system (SEHA). Sheikh Khalifa Medical City consists of a 568 bed Acute Care Hospital, 14 Outpatient Specialty Clinics and a Blood Bank. Additionally, SKMC manages a 125 bed Behavioral Sciences Pavilion, six Family Medicine Clinics, two Urgent Care Centers and two Dental Centers located within the city of Abu Dhabi. It is governed by its commitment to practice modern medicine to the same high standards as the best medical facilities in the world.



**ABOUT NUANCE HEALTHCARE**

Nuance Healthcare is a division of Nuance Communications, the world’s leading provider of speech and imaging solutions. Today, Nuance Healthcare provides the most comprehensive family of speech-driven clinical documentation solutions available anywhere. Our vision is to accelerate the adoption of Medical Information Systems, helping providers maximise the return on their technology investments.

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