

Manly Emergency Department Voice Recognition Evaluation

NSLHD/NSW Ministry of Health/Cerner/Nuance

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NAME	TITLE	INITIALS	DATE
Wendy Loomes	Manager, Clinical Informatics		

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Executive Summary

1. Introduction

a. *Background information about the project*

The genesis for this proof of concept comes from many different needs. The Cerner FirstNet application began implementation in NSW Emergency Departments, in 2005. As the replacement for EDIS; implementation of FirstNet brought generational change, and improvements, such as the capability for clinical and nursing on-line documentation, enabling the integration of this clinical information with the electronic Medical Record (eMR).

The clinical workflow in an Emergency Department (ED) operates with a sense of urgency and the criticality of the presentation has the potential to impact on time for clinicians to access the eMR and complete electronic documentation. The significant change in clinical practice from paper based documentation to full electronic documentation in the emergency department has resulted in considerable pressure amongst clinicians in Northern Sydney and Central Coast Local Health Districts. In particular, to the increased time required to record information, taking clinical staff away from the patient.

The international research group - KLAS (www.klasresearch.com) found that the average physician spends up to 15 hours a week documenting encounters. The average encounter takes 3-4 times as long to document in an eMR using keyboard and mouse as it does to dictate.

An independent review of the effectiveness of the implementation of the Cerner FirstNet Emergency Department system throughout NSW hospitals was commissioned in 2011 and undertaken by Deloitte. The review found that several ED Directors and other ED staff reported a reduction in ED efficiency as a result of the introduction of FirstNet. Enhancements are currently being reviewed as part of the FirstNet Remediation work.

The National Emergency Access Target (NEAT) is one of the measures the National Partnership Agreement on Improving Hospital Services requires, which states that by 2015, 90% of patients presenting to a public hospital ED will either physically leave the ED for admission to hospital, be referred to another hospital for treatment or be discharged within 4 hours.

A whole of hospital response is required to meet this target – it is not an ED target alone, however efficient ED processes are required to ensure the ED portion of the patient journey is completed in a timely manner.

It is hoped that the use of new technology, and applications, will help EDs, and potentially other hospital departments, meet the needs of these requirements, increase the efficiency of clinicians and improve the content and accuracy of ED clinical documentation. Voice recognition systems reduce time-on-documentation by as much as 50% - potentially freeing up the physician to spend more time with patients and managing the emergency department.

Integrated Voice Recognition (VR) software, with a clinical application in the Emergency Department, is currently not available in NSW. Internationally, FirstNet and the Nuance Dragon

Voice Recognition applications have been implemented in the United States and the United Kingdom, enabling lessons to be learned with its implementation into the Australian health care system.

KLAS also identified that just over three-quarters (76%) of the clinicians using “desktop” voice recognition – directly controlling an eMR system via speech – report faster turn-around time as the largest benefit with better service to patients and faster reimbursement.

Review of the Nuance Dragon Voice Recognition application working in conjunction with Cerner FirstNet reveals an accuracy level of 98%. The development of a Dragon Medical Library (UK edition), as opposed to a standard library of terms, has also improved the adoption and use of this application. Nearly 3 in 10 cited sharply reduced costs and increased productivity (13%) as other benefits. Cost-savings from eMRs are realized by both reductions in overhead associated with the billings and collection process.

Voice recognition offers clinicians the opportunity to drive change management processes associated with eMR systems. This technology demonstrates how clinical staff can use eMR systems without changing their documentation methods and convert eMR systems into a cost-saving and revenue-enhancing technology.

An investigation into VR technology was seen as a potential improvement for the use of FirstNet by clinicians in Northern Sydney and Central Coast LHDs. The NSW Ministry of Health requested a Proof of Concept (PoC) be undertaken, with Manly Hospital Emergency Department as the pilot site. The evaluation of the VR PoC will be used to inform decisions about the viability of state-wide rollout of VR technology in NSW.

2. Goals and Objectives

a. *Proof of Concept goals*

1. Medical Legal – to ensure compliance to the NSW Ministry of Health’s Privacy legislation and Documentation policies
2. Patient Safety – to ensure that there are safeguards to supporting patient safety such as the recording of clinical incidents and effective clinical handover
3. Financial – to support casemix implementation enabling correct DRG assignment evidenced through costing analysis
4. Quality of electronic Medical Record – evaluation of the quality of electronic documentation versus paper documentation
5. Efficiency – to determine:
 - a. Time spent on computer– Medical, Nursing, Pharmacy & Medical Records
 - b. If clinician consultation time with the patient could be increased

- c. If potential decrease in Length of Stay (LOS) of a patient – an indicator of hospital performance and efficiency

6. Adoption – to investigate:

- a. User Acceptance and support
- b. Conformance and consistency of medical note reporting

b. *Expected Benefits*

1. Increase legibility and accuracy of the record (Quality)

- a. 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.
- b. Improved clinical coding through the provision of electronic narrative clinical descriptions that facilitate the abstraction process

2. Reduce avoidable errors (Patient Safety)

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

3. Increase in the accuracy of Coding Medical Records. Historically, clinical coding has faced long term challenges associated with incomplete, illegible and missing documentation. This predicament leads to missing codes for co-morbidities that may potentially drive the patient into a higher DRG split such as an “A” or “B” split attracting more funding. The availability of electronic documentation obviates the issue of illegible handwriting and presents opportunities for coders to abstract from a richer source of narrative clinical descriptions.

4. Improve Medical and Nursing staff satisfaction with documentation/work-flow (Adoption)

5. Reduce the amount of time of clinicians, in an Emergency Department, documenting in the eMR (Efficiency)

6. Improve patient satisfaction with the department

7. Increased patient involvement in care as clinicians dictate their clinical notes at the bedside into the voice recognition technology

8. Proof of concept evaluation to be used as a basis for a potential state wide roll-out.

3. Project Scope

a. *Scope of the Proof of Concept*

The implementation of voice recognition Proof of Concept project in the Emergency Department of Manly Hospital:

1. Configuration of Dragon voice recognition software (local installation) for 14 clinical end users on 19 workstations in the Manly Hospital Emergency Department;
2. Creation and scripting of up to 25 custom voice recognition commands, similar to those indicated by Manly Hospital Emergency Department Clinicians;
3. Creation of individual user profiles for up to 14 clinical end users;
4. Training of up to 14 clinical end users on the use of Dragon voice recognition software.
5. Evaluation of the Proof of Concept in terms of quantitative and qualitative metrics.
6. The use of voice recognition during the Proof of Concept fell into three categories;
 - i. Voice to text – spoken word into the microphone undergoes recognition and presents as dictated text either directly into the FirstNet application or into a clipboard (notepad)
 - ii. Voice commands for navigation – where small verbal triggers performed application navigation to reduce the number of clicks and time taken. For example, 'Open Progress Note' from the tracking list navigates to a 'Progress note' for the selected patient
 - iii. Voice controlled macros – where a verbal string including the macro shortcut name and required parameters would invoke precompiled and standardised, text interspersed with specific information. For example, "wound 7 2%" would invoke a standard report for the treatment of a wound with the specific information of '7 stitches' and the use of 2% lignocaine.

b. *Constraints*

1. Timeframe of the Proof of Concept

- a. Pilot project was six (6) weeks commencing following completion of training.
- b. Training was undertaken in two (2) phases:
 - i. Initial training on voice commands, profile creation and tips and tricks utilising a one-on-one type of training model for approximately two (2) hours per clinician;

- ii. Second phase advanced training involved individual follow-up with each clinician including advanced tips and tricks and commands. This training took place in the second week after completion of the initial training.

2. Infrastructure

- a. Dragon Network edition was not available for the Proof of Concept;
- b. With the exception of Microphones, existing infrastructure was used- including PCs, Computers on Wheels (CoWs), servers and network.

c. *Project Dependencies*

1. Risk & Issue Management (all issues closed)

#	Issue	Resolution	Issue for PoC?	Consideration for future
1	Manly Computer on Wheels (COW) with Dragon on it that can't be used because "activate now" comes up and won't let us proceed to open it.	Correct activation code used	Yes	Obtain licence keys in a timely manner. Obtain an 'Open License Key', that does not require internet activation.
2	The Dragon software has not been able to have a stable platform for the pilot.	Issues with system slowness resolved. Actual resolution unknown	Yes	PoC extended once stability was obtained. There were 8 commands that had to be rewritten because of the instability issues.
3	How Dragon is integrated into Cerner will be a complex task.	Managed through dedicated workstations for clinicians.	Minor	Closer integration between HNA Millennium and Dragon.
4	Computer and work-space for each practitioner is an issue at Manly ED; users are repeatedly going from one computer to another. Ancillary services, like Psychiatry, ASET, Physiotherapy, etc. come into ED and often sit down at one of the doctors /nurses computers, displacing them. "The time-wasting with the computer-hopping is staggering		Yes	Correct clinician to device ratio. ED Department will need to be remodelled to allow a 1-to-1 PC/User work space.
5	Concern that identifying individual PCs/CoWs for use during a shift won't work at the large Trauma centres.		No	Correct clinician to device ratio in all size EDs and appropriate access by clinicians to Dragon.

6	Potential for user profile corruption when you have to have the profile open on more than one machine at a time.	Known issue with standalone version	Yes	Use Dragon Medical 360 Network edition. Place the Dragon profiles on the Citrix farm and the Dragon profiles on network storage in Liverpool DataCentre.
7	Would like to control of the user profile so that it's not so easily corrupted.	Known issue with standalone version. Profile management practices implemented in ED (restore Profiles from backup).	Minor	Use Dragon Medical 360 Network edition.
8	For profile corruption, we will need to be able have a way to backup and manage profiles and try and minimise network latency as contributor	So the best place to have Dragon and the profiles is in Liverpool and on the Citrix servers, this will give the best response times for Dragon loading and pulling the profiles.	Minor	Profile management through Dragon network addition.
9	Sometimes Dragon (or something on the system) locks the user out and won't allow him/her to open the program again until the instances of the user profile are shut down at the other computer(s).	Known issue with standalone version. Profile management practices implemented in ED (restore Profiles from backup).	Yes	Use Dragon Medical 360 Network edition.
10	What happens if someone shuts down a couple of user profiles at once or tries to save two copies to the server at the same time for the same user?	Ensure that the profile is closed when moving away from the device or implement additional devices.	Yes	Use Dragon Medical 360 Network edition.
11	Dragon profile authentication and iteration, under the current pilot setup all dragon users can see (and load) each other profiles, we will need to have a way ensure a user only see's and loads their profile	"There is a Nuance product called the Nuance enterprise server that may enable us to integrate with Active directory to achieve this."	Yes	Use Dragon Medical 360 Network edition. Closer integration with HNA Millennium - Single sign-on to be tested; could be of benefit to everybody – yet to be proven.'
12	Size of profiles	Ensure that there is enough disk capacity to store the User Profiles.	Yes	Storage capacity for user profiles and bandwidth for the network delivery of profiles

13	Need to have support resources allocated to an enterprise wide implementation on an ongoing basis		No	Training for Area Wide Support. On-going support for the provision of User Profile creation and support. (Some one like Dr. Sterret at each site)
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d. *Vendor relationship – Installation*

1. Lessons Learned – would we do anything differently, if we did this over again
2. Implement to our other Emergency Departments – how would we change this?

Finding	Recommendation
Support training is currently held locally with the site champions	Application support training for State Wide Service Desk, onsite and IM&T support personnel will be required.
Commands currently managed manually on local machines	Consider automation options for managing of commands to machines
One on one initial training, a week of practice with some follow up training worked well	Although resource intense, consider options for this type of training This can be coupled with determining the most useful commands that are being used and focusing training on these areas
Site champions (doctor and nurse) worked well. These roles also provided a good first point of contact for support	Consider similar strong choices for local champions
Cheat sheets for commands worked well	Continue using cheat sheets with a consideration for managing updates
Although possibly in use during this proof of concept, the use of Order Sets may further improve efficiencies in ordering	Consider the use of Order Sets and creating voice commands to support this navigation
Introduction of the pharmacist into the proof of concept was seen as worthwhile as it added an improvement to fuller clinical cycle	Consider other local requirements where overall workflow could be improved with voice commands
There was initial concern that the ability of the microphones to function properly would be hindered with the high level of ambient noise of an ED	To date, ambient noise has not presented a problem with the use of the microphones.

e. *Hardware, network, infrastructure*

1. Lessons Learned

Finding	Recommendation
Current proof of concept working with a file share for profiles and limited management tools	<p>Allocate the disk space based on closest to emergency departments network</p> <p>Plan on 500 megabyte per user for Dragon profile on the file share</p> <p>Consider time for application to launch and load profile from start to assess impact on clinicians time</p> <p>Consider impact to manage peak staff movement times such as intakes and Junior Medical Officer rotation</p> <p>The location for the roaming profiles will need to be backed up every night.</p>
Provisioning & control roaming profiles	<p>For the Manly pilot site showing a list of the profiles and selecting the user's desired profile was manageable but for larger sites this will be an issue if not restricted. The current setup cannot be utilised for a full deployment</p> <p>For expanding into other sites, look to use script to map individuals to their profile.</p> <p>The users should not be able to accidentally update another user profiles or delete by mistake.</p>
Citrix Integration	<p>Consider impacts to Health Support Services citrix servers of Dragon application running on them for CPU, memory, disk space and disk I/O transaction processing.</p> <p>Running Dragon on the HSS Citrix servers will utilise (during dictation) two CPU cores, one megabits of network bandwidth and 160 megabytes of memory per user session.</p> <p>With more resources in use by each session, the number of users per each citrix server will be significantly reduced.</p>
Time to issue of licence keys exceeded initial expectation which made installation less efficient	<p>Identify the lead time for the distribution of licence keys and build timeline for build accordingly.</p> <p>The license key provided required activation manually for each PC that Dragon was installed on. After 5 uses the PC became unusable (for Dragon) until the manual activation occurred.</p>

	An open license key should be purchased in future that does not require activation via the internet.
Installation done manually	For further deployments to Manly or other sites the installation will need to have an automated package developed. The pilot installation process requires too much manual work effort to be sustainable.
Local PC clipboard Chaining with Citrix. This did however introduce the anomaly where a previous text within the citrix session would be copied to the note when a "transfer text" command failed to copy correctly .	Update Citrix client configuration to resolve chaining issue Provide Training for Clinicians to always check dictation that is copied into Cerner millennium before saving Continue with the Current version of "tagging" a pc during shift for a specific clinician
Access to workstations for staff numbers	The number of workstations, mobile devices and microphones in an area will need to be increased to be inline the number of staff rostered on that will be utilising the Dragon product

4. Governance and Reporting

- a. Financial Management – Undertaking a costings analysis project examining the top ten DRGs for the time period of the proof of concept compared to the same time period of the previous financial year.
- b. Medical Records Reporting – Conduct electronic documentation audit four weeks into the PoC, to determine compliance and documentation quality based on set criteria. This data could also be used in a comparative analysis with samples audited pre-Voice recognition software implementation. The selected doctors participating in the trial could be evaluated for their documentation practices.

5. Evaluation Criteria

a. User evaluation

Doctor – 8 Medical Officers
 Nurse – 5 Nurses
 Pharmacist – 1 Pharmacist
 Health Information Management – 2 Health Information Managers (did not use VR)
 Patient Satisfaction

b. Metrics

Baseline metrics

- a. Rating of training
- b. Difficulty of training
- c. Use of commands
- d. Navigation within FirstNet
- e. Has use of Dragon made documentation easier

- f. Did you dictate in areas that you would consider very noisy
- g. Was background noise a significant impact
- h. Individual computer
- i. Future documenting
- j. Use of computers in work context
- k. Satisfaction of using FirstNet with Dragon
- l. Satisfaction of work overall with Dragon
- m. What are Dragon's main advantages
- n. What are the barriers with Dragon
- o. Suggestions to improve training
- p. Patient survey – What was your comfort level with Voice Recognition used
- q. Patient survey – Did hearing the Dictation make you more certain that the Clinician got your information correct
- r. Patient survey – Did using Voice Recognition give you a better understanding
- s. Transcription versus Dictation timings
- t. Health Information Services Evaluation

6. Results (collected by survey, interview and audit)

a. Rating of training

i. Doctors

Excellent	Good	Average	Below Average	Poor
44%	55%	-	-	-

ii. Nurses

Excellent	Good	Average	Below Average	Poor
40%	-	60%	-	-

b. Difficulty of training

i. Doctors

Very Easy	Easy	Moderate	Difficult	Very Difficult
22%	77%	-	-	-

ii. Nurses

Very Easy	Easy	Moderate	Difficult	Very Difficult
-	60%	40%	-	-

c. Use of commands in FirstNet with Voice Recognition

i. Doctors

Yes	No
66%	33%

ii. Nurses

Yes	No
60%	40%

d. Navigation within FirstNet with Voice Recognition

i. Doctors

Very Easy	Easy	Moderate	Difficult	Very Difficult
11%	44.5%	44.5%	-	-

ii. Nurses

Very Easy	Easy	Moderate	Difficult	Very Difficult
-	20%	80%	-	-

e. Has the use of Dragon made documentation easier?

i. Doctors

Yes	No
100%	-

ii. Nurses

Yes	No
60%	40%

f. Did you dictate in areas that you would consider very noisy?

i. Doctors and Nurses (including ED Pharmacist)

Yes	No
100%	-

g. Was background noise a significant impact

i. Doctors and Nurses

Yes	No	Unsure
11%	77%	11%

h. Would your use of dictation have been improved with an individual computer

i. Doctors, Nurses and ED Pharmacist

Yes	No
100%	-

i. Future documenting

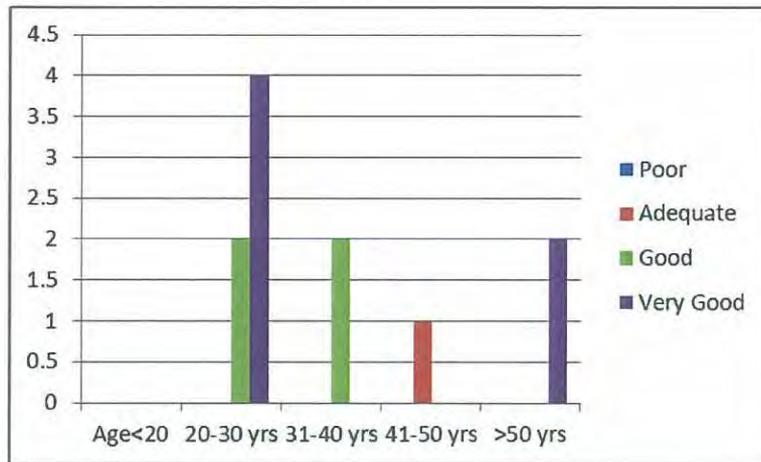
i. Doctors

Dictation	No Preference	Type
77%	11%	11%

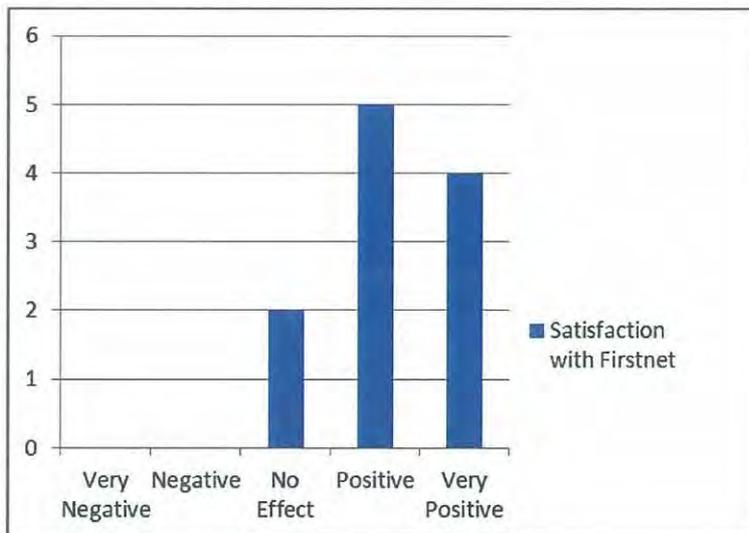
ii. Nurses

Dictation	No Preference	Type
25%	25%	55%

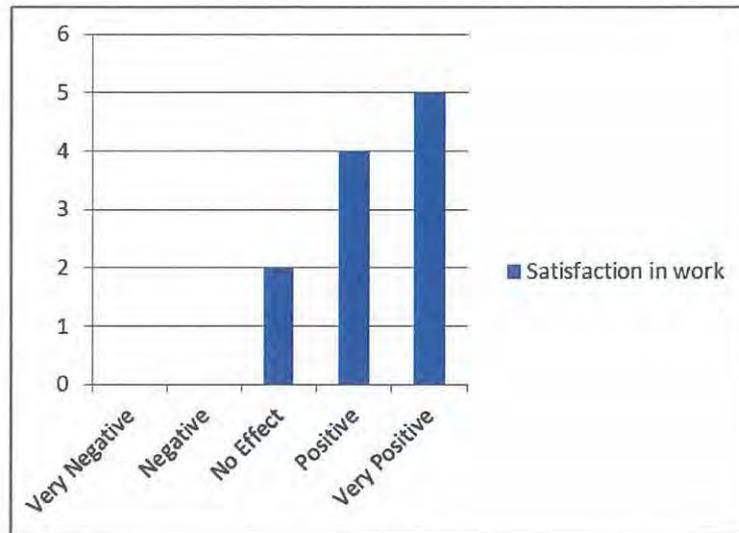
j. How would you rate your proficiency with the use of computers in the context of what you are expected to do at work? (Doctors only)



k. Rate the effect you feel using Dragon has had on your satisfaction with your use of FirstNet? (Doctors only)



- l. Rate the effect you feel using Dragon has had on your satisfaction with your day to day work? (Doctors only)



- m. What are Dragon's main advantages

i. Doctors

- i. Using templates and speech recognition to increase the speed of documentation and make more complete notes
- ii. Increased accuracy of notes
- iii. Better discharge letters
- iv. Can more quickly, and accurately, describe the patient encounter, as well as navigate in FirstNet

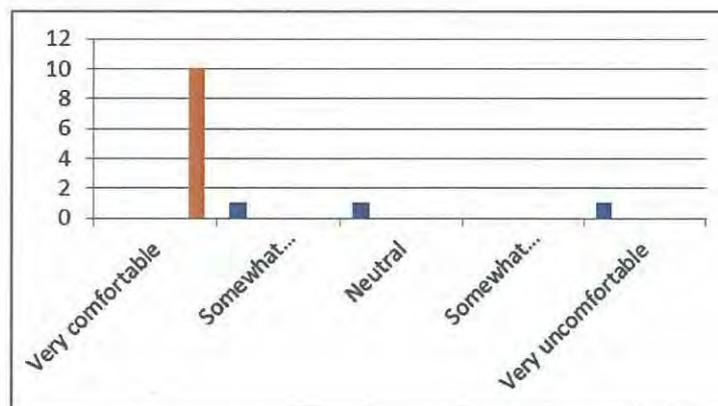
ii. Nurses

- i. Quicker when documenting large notes- useful for spelling and grammar
- ii. Able to use more detail when dictation because it's faster than typing
- iii. Templates are time-savers for large notes

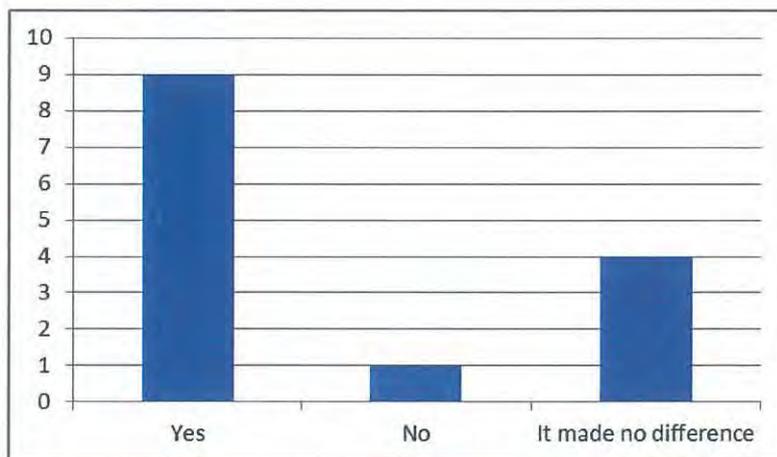
- n. What are the barriers with Dragon

i. Doctors

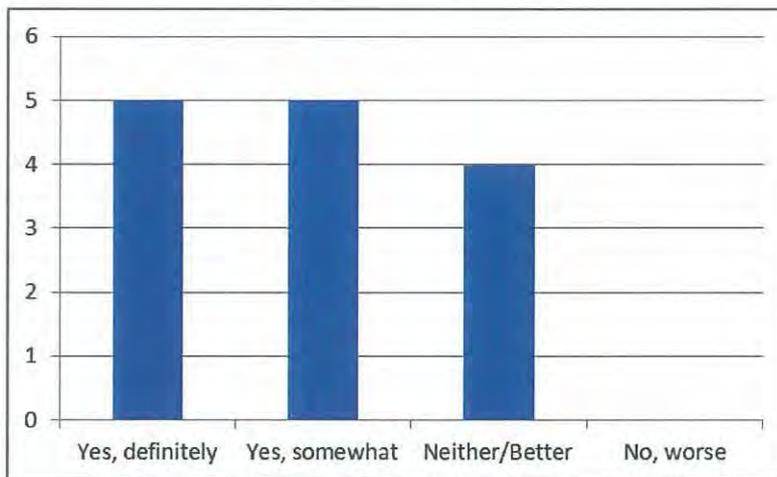
- i. Technical issues- slow server
 - ii. Challenging to dictate short management plans with numbers and punctuation
 - iii. Does not 'hear' accurately 100% of the time
 - iv. Delayed time starting up on a different computer- works better if you can keep your own computer
 - v. Very frustrating if it continues to mistake words after training
- ii. Nurses
 - i. Privacy issues if speaking in front of patients on sensitive matters
 - ii. Time taken to log in
 - iii. On shorter documentation it is quicker to type at times
 - iv. Time pressures sometimes do not all allow training Dragon
- o. Suggestions to improve training
 - i. Sixty (60%) percent said 'No'
 - ii. More time with instructors and more time to practice while instructor is available
 - iii. Would add a third session 'on the floor' as the practitioner is doing her/his notes
 - p. Patient survey – What was your comfort level with Voice Recognition used



- q. Patient survey – Did hearing the Dictation make you more certain that the Clinician got your information correct



- r. Patient survey – Did using the Voice Recognition give a better understanding



- s. Transcription versus Dictation timings

The idea of these timings, was to compare the speed and accuracy of typing, which most clinicians have been doing for many years and are presumably “as good as we’re are going to get”, with dictation after only 5 minutes of formal training in the use of Dragon Medical. The training in dictation was purposely kept at a minimum to attempt to demonstrate that the product has an attractive and useful “off the shelf” quality for even inexperienced users. It is noted that only two of the study participants had ever used dictation before, as it is an uncommon practice in EDs in Australia.

Methods

Twelve providers (doctors and nurses) took part in these timings. All were introduced to the Dragon software and hardware for the first time and undertook the process as individuals with Dr. Sterrett as the facilitator. They were taken through a tutorial and training for the study which took about 10 minutes. This involved a brief explanation of the Dragon product, including the software and handset, a one minute process to adjust their microphone sound level and audio check, and a four-minute text reading on Dragon for initial voice recognition training. The final part of the 10-minute period was used to show them the text that they would be dictating and transcribing and to give an explanation about how the text was abbreviated in the second example to save time while giving the same basic medical information.

Following the above, the participants were randomly assigned to two groups – there were six in each group.

One group first dictated the normal and abbreviated histories and their times were recorded. They then transcribed (typed) the normal history while it was dictated to them. They were allowed to take as long as they wanted in both instances to make the document as accurate as possible, even if it meant going back and changing a misspelled or mis-transcribed word(s).

The second group reversed the order, first transcribing the normal history while it was dictated to them, then dictating the two versions of the medical history using Dragon.

Transcription / Dictation Study Pre-Formal Training			
	Dictation 1 (normal)	Dictation 2 (abbreviated)	Transcription (normal)
Provider 1	1:32:00	1:00:00	3:30:00
Provider 2	1:00:00	0:55:00	3:25:00
Provider 3	0:55:00	0:46:00	2:45:00
Provider 4	1:10:00	0:55:00	2:45:00
Provider 5	1:20:00	0:55:00	4:35:00
Provider 6	1:15:00	1:00:00	4:08:00
Provider 7	0:55:00	0:40:00	3:00:00
Provider 8	1:03:00	1:00:00	4:00:00
Provider 9	1:15:00	1:00:00	3:40:00
Provider 10	1:15:00	0:55:00	4:15:00
Provider 11	1:05:00	0:49:00	3:25:00
Provider 12	0:46:00	0:40:00	3:05:00
AVERAGE TIME	1:07:35	0:52:55	3:32:45

Comments:

As can be seen in the table, all providers were able to dictate the normal medical history much more quickly than they were able to type it. The dictation using Dragon took between 46 seconds and 1 minute, 32 seconds (average 1 minute, 7 seconds). To type the same document took between 2 minutes, 45 seconds and 4 minutes, 35 seconds (average 3 minutes, 32 seconds). In all cases the documents were readable and understandable, though the typed documents contained occasional misspelled words and punctuation mistakes. The dictated documents had no misspelled words, but did have occasional misplaced words, such as "brackets" which were meant to be font brackets around a pulse rate value.

*NOTE: See Appendix A for Dictation versus Transcript Study Scripts

*NOTE: See Appendix B for Comparison Doctor Notes Pre and Post Dictation

t. Health Information Services Findings

Methods

The criteria used in the evaluation was inclusive of medico-legal requirements, subjective impressions from coders abstracting clinical information for coding purposes as well as completeness and value for ongoing, follow-up care.

The electronic documentation of 5 Emergency doctors was examined before the trial of Dragon Voice Recognition software

The electronic documentation of 4 Emergency doctors was examined during the trial of Dragon Voice Recognition software at the 4th week interval of the trial

Pre-VR Trial

Electronic documentation from 16 patient encounters were examined by Health Information Managers.

The patient encounters were a combination of inpatient and outpatient episodes. In frequent instances, the doctor may have only completed 1 electronic document such as the Emergency Assessment form and not the Progress Notes or the Discharge Summary

4th Week Interval VR Trial

Electronic documentation from 12 patient encounters were examined

The patient encounters were a combination of inpatient and outpatient episodes. In frequent instances, the doctor may have only completed 1 electronic document such as the Emergency Assessment form and not the Progress Notes or the Discharge Summary

Pre-VR PoC & 4th Week Interval VR PoC

	Pre VR				4 th Week				Delta	
	Y	N	N/A	Y%	Y	N	N/A	Y%		
1	ED Assessment									
1.01	Medical History	8	6	2	57%	5	5	2	50%	-7
1.02	Social History	2	6	1	25%	3	5	2	38%	13
1.03	Physical Examination	7	1	1	88%	8	0	2	100%	12
1.04	Investigations/Test Results	1	4	5	20%	7	1	2	88%	68
1.05	Impression	4	4	1	50%	7	1	2	88%	38
1.06	Plan of Management	8	0	1	100%	8	0	2	100%	0
2	First Net Progress Notes									
2.01	Is the date clearly identified for each entry?	6	6	1	50%	4	5	3	44%	-6
2.02	Is the time clearly identified for each entry using 24 hr clock?	6	0	1	100%	4	0	3	100%	0
2.03	Do all entries have a signature?	3	3	1	50%	3	1	3	75%	25
2.04	Do all entries have the staff name printed?	6	0	1	100%	4	0	3	100%	0
2.05	Do all entries clearly identify the designation of staff member completing the entry (eg. Registrar, Psychiatrist etc)?	1	5	1	17%	1	3	3	25%	8
2.06	Have all abbreviations and symbols used in the Progress Notes been approved by NSCCAHS? (<i>Abbreviation list currently under development</i>)	6	0	1	100%	4	0	3	100%	0
2.07	Are entries contemporaneous?	6	0	1	100%	4	0	3	100%	0
2.08	Are errors deleted appropriately?	0	0	7	0%	0	0	7	0%	0
2.09	Evidence of discharge planning?	3	3	1	50%	1	2	4	33%	-17
2.10	A provisional diagnosis has been documented?	2	4	1	33%	1	3	3	25%	-8
3	Discharge Referral									
3.00	Does documentation relate to the correct patient?	10	3	0	77%	7	4	1	64%	-13
3.01	Is the patient's Alert or Allergy documented or stated as nil known (N/A or NKA)?	7	3	0	70%	5	2	1	71%	1
3.02	Has a medical history been documented?	5	5	0	50%	6	1	1	86%	36
3.03	Has a discharge summary been completed?	7	3	0	70%	6	1	1	86%	16
3.04	Does the discharge summary	9	1	0	90%	7	0	1	100%	10

document principal diagnosis?										
3.05	Is the documentation grammatically correct? Is there should be no grammatical or punctuation errors. Does the documentation make sense?	10	0	0	100%	7	0	1	100%	0
3.06	Have all fields in the template been completed? Eg there should be no missing text. N/A should be used where appropriate	4	0	6	100%	2	2	4	50%	-50
3.07	Are the correct terms in the correct field? Eg Principal diagnosis is in the principal diagnosis section of the template	10	0	0	100%	7	0	1	100%	0
3.08	Only one PDx is listed in the PDx field	8	2	0	80%	6	1	1	86%	6
3.09	Is there appropriate documentation in the confirmed diagnosis field?	8	1	1	89%	7	0	1	100%	11
3.10	Does the discharge referral document co-morbidities and interventions?	2	2	6	50%	4	0	4	100%	50
3.11	Does the discharge summary document discharge medications?	7	0	4	100%	5	1	2	83%	-17
3.12	Does the discharge summary document follow-up instructions for the GP?	3	4	4	43%	3	2	3	60%	17

COMMENTS

General feedback from the auditing participants (coders) generally found it difficult to distinguish between pre and post-trial VR electronic documentation. However, impressions from the Staff Specialist indicate that a reduction in typing errors provides some evidence of improved post-trial VR electronic documentation and a reduction in typing errors was confirmed from the audit's findings.

Given that Dragon VR software commenced trials in early March, the audit's findings may be suggestive of clinician's initial adaptation to the changed approach to producing electronic documentation.

It is very difficult to determine the benefits to clinical coding in the initial stages and recommendations for an additional post-implementation VR audit are expressed at the conclusion of the trial.

*NOTE: See Appendix C - for Health Information Services Evaluation Report

7. Other Considerations

1. *Implementation/Resourcing*

There were four roles needed for the Proof of Concept to be successful:

- i. Training - initial training on Voice Recognition was done by experts from Nuance
- ii. Application Specialist FirstNet – an experienced FirstNet application specialist helped with the use of FirstNet with Dragon
- iii. Technology support – an experienced technology person was needed as many different types of technical issues arose during the proof of concept
- iv. Clinical Lead – a Staff Specialist was critical in identifying the commands that would be useful for doctors and incorporating Dragon in to the workflow of fellow clinicians. Their time and leadership will make rolling out to other Emergency Departments essential.

2. *Technology & Support*

The technical implementation was a baseline configuration that was just for the initial proof of concept, in order to expand the use of the software there will need to be consideration for changes and impact to the network and server infrastructure as well the possible use of virtual desktops rather than looking to implement with a Citrix server platform at Liverpool in order to achieve economies of scale.

8. Conclusions

In reviewing these results, it was found that Doctors and Pharmacists felt the use of Voice Recognition to be of great benefit to their clinical documentation, and use of FirstNet. Doctors completed clinical documentation up to three (3) times faster than they did previously and the medical records were more complete and more accurate using Voice Recognition. Overall, clinicians found Voice recognition easy to use, which in turn, helped to interest more clinicians in using FirstNet- with Voice Recognition.

Because of an ED Nurses' workflow (short, ad hoc clinical reporting), Voice Recognition may not assist ED Nurses as much as ED Doctors. Nursing workflows in other areas or departments, with different documentation requirements, may obtain benefits from Voice Recognition over those for ED Nursing workflows.

The use of Voice Recognition, within FirstNet, lead to an improvement in the quality of the patients' medical record. This then lead to an increase in the ability of Health Information Managers to code medical records. It was also shown to meet the medico-legal requirements for quality and accuracy of clinical information in the medical record.

In summary, there are three recommendations to be made:

Recommendation 1:

Accept Dragon Voice Recognition software for use in Manly Emergency Department

Recommendation 2:

Roll out Dragon Voice Recognition software to the six other Emergency Departments in Northern Sydney and Central Coast Local Health Districts

Recommendation 3:

Submit to New South Wales, Ministry of Health, the findings of the proof of concept with a recommendation of the preparation of a Business Case to support a state wide rollout

Appendix A – Dictation versus Transcription Study Scripts

Medical History (normal)

Chief Complaint: Shortness of breath on exertion

HPI:

A 70-year-old woman presents with progressive weakness and fatigue. The symptoms began about a month ago, and she no longer feels well enough to do her housework or take her daily walk. Although her breathing is normal at rest, she is now too short of breath to walk more than two or three blocks. She also notices that her legs are more swollen than usual. She denies chest pain, cough, cough, fevers, and any recent bleeding.

Findings on the physical examination were unremarkable except for mild tachycardia at rest, 96 bpm, a blood pressure of 166/94, pallor, respiratory rate 22 at rest, temperature 37 C, and oxygen saturation of 93% on room air.

Medical History (abbreviated)

Chief Complaint: Shortness of breath on exertion

HPI:

70-year-old woman presents with progressive weakness and fatigue for the past month. Breathing is normal at rest, but no longer feels well enough to do her housework or take her daily walk. Now too short of breath to walk more than two or three blocks. Legs are more swollen than usual, but denies chest pain, cough, cough, fevers, and any recent bleeding.

Physical exam unremarkable except for pallor, heart rate 96 bpm, BP of 166/94, respiratory rate 22 at rest, temperature 37 C, and oxygen saturation of 93% on room air.

Comparison of Doctors Notes With Typing and Dictation

The following is a comparison of actual medical notes with identifying factors removed which was done as a part of the Proof of Concept of the Dragon Medical Dictation Study at Manly Hospital Emergency Department. The format below is such that each doctor's typed and dictated notes are compared one on one for appearance and readability. There are obvious differences between the two, since Dragon will not misspell words, but instead might choose the incorrect word in response to a dictation. In one case below, dictation was used primarily, but some words were typed in (misspelled).

It is possible to use templates with the typed patient notes in FirstNet, and it is probable that a template was used in at least one of the typed examples below, since that has become a practice at Manly Hospital ED. It is much easier to use a template with dictation as it involves only a brief verbal command to enact, and then becomes a very rapid process to dictate a comprehensive note by using a handset with multifunction buttons.

A word count was done on all of the documents you will see below, and then an estimate of the time it would take to either type or dictate the document is included. This is based on our initial study that showed it took an average of 3 minutes, 32 seconds to type a 121-word patient history (35 words per minute), and 1 minute, 7 seconds to dictate the same document (108 words per minute). While this is a somewhat artificial comparison, given that the document is proscribed, it serves as an illustration of the potential difference in time to complete documentation of the medical record. Indeed it could be argued that, using templates available with proper use and development of Dragon Medical, the differences in speed of typing versus dictation could be even greater and documentation would have the potential to be even more readable, comprehensive, and medically useful and defensible by using dictation instead of typing.

Doctor 1 - Typed

ED Assessment

Chief Complaint

Present Complaint

35 Year old .Diarrhoea for 6 days.13 loose brown stools today.

Abdominal cramps.

any fluid passes astraight through him.

Feels thirsty.

Headache,no cough,feels feverish,has not measured his temperature.

No rigors.

History of Present Illness

No history of bowel problems.

No recent travel.

Cannot recall eating any food which may have caused it.

Histories

Medications: .

No new, changed or ceased medications during this visit

Past Medical History

nil

Drug History

Given tinidazole by GP.

Allergies and Adverse ReactionsAllergic Reactions (Selected)

No Known Allergies

Physical Examination**Examination**

Aleer, cooperative, oriented.

Tongue dry.

Abdomen not distended, mild general tenderness, soft, no guarding.

Bowel sounds normal.

Chest percussion normal, breath sounds normal, nil added.

Heart sounds normal, no murmurs. no leg oedema.

Impression and Plan**Impression**

Gastroenteritis

Dehydration

Diagnosis:

Acute gastroenteritis : SNMCT 115902018, Discharge, Medical

.

Plan

iv cannula.

Fbe, euc, lft, cmp, crp

stool for culture and clostridium difficile enterotoxin.

Iv fluids, buscopan, ondansetron.

Word Count 145

Typed: 4 minutes, 8 seconds

Dictated: 1 min, 20 secs

Doctor 1 - Dictated**ED Assessment****Chief Complaint****Present Complaint**

difficulty breathing.

History of Present Illness

previously well. Cough for 2 days. Runny nose.

Laboured breathing began this afternoon. He is heard by mother.

No fever. No vomiting.

No previous episodes of wheeze.

His aunt has asthma.

Histories

Past Medical History

grommet's

Drug History

none

Family and Social History

lives with his parents and 3-year-old sibling

Physical Examination**Examination**

sitting in his mother's lap. Appears unhappy.

Respiratory rate 40 breaths per minute. Temperature 36.8. Pulse rate 170. Oxygen saturation 100% on room air.

No cyanosis, no pallor.

Trachea return, subcostal recession. Intercostal recession.

Chest appears hyperexpanded.

Moderate air entry on both sides. Some expiratory wheeze. Breath sounds vesicular, no crepitations.

Heart sounds normal, no murmur.

Abdomen soft non-tender no masses.

Tympanic membranes not inflamed. Grommets in situ.

Vital signs for this visit : Vital Signs

25/03/2012 17:49	Temperature Tympanic	36.8 DegC
	Peripheral Pulse Rate	170 bpm
	Peripheral Pulse Rate Regularity	Regular
	Respiratory Rate	40 brpm
	Oxygen Saturation	100 %

Impression and Plan**Impression**

Respiratory distress.

Possible bronchiolitis.

Possible asthma

Plan

salbutamol 2.5 mg and ipratropium 250 µg via nebuliser

Pediatric registrar to review

Progress Note

Review. He had less respiratory distress.

No pallor, No cyanosis.

Alert, playing with toys.

Playing with toys

Good air entry, few wheezes.

Safe to transfer to XXX XXXXX hospital.

Word Count 217

Typed: 6 minutes, 12 seconds

Dictated: 2 minutes

Doctor 2 – Typed

Doctor Progress Note: XXXXXX presents to our department with PV bleeding since this afternoon

She is G3P2 and 9 weeks by U/S

She had a bleed last week Saturday and had U/S on Wednesday which showed subplacental haematoma
The bleeding had resolved and HR was visible about 160bpm

Blood group A+

Today she started having heavy bleeding with blood clots around 1500

She also noticed some lower abdominal cramping pain

No LOC

Says she has probably used 5-6 light pads

Bleeding now easing off, but still present

O/E

Vitals stable

Not pale

Awake and alert

Not distressed

Abdomen: soft, not distended

no guarding/rebound or tenderness

B/S present

PV: external inspection only done

Slight ooze, not heavy

A: ?Threatened/Incomplete miscarriage

P: Bloods

For D/C and outpatient U/S with GP follow up tomorrow

Summary of Care

XXXXXX presents to our department with PV bleeding since this afternoon

She is G3P2 and 9 weeks by U/S

She had a bleed last week Saturday and had U/S on Wednesday which showed subplacental haematoma

The bleeding had resolved and HR was visible about 160bpm

Blood group A+

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Vitals stable
Not pale
Awake and alert
Not distressed

Abdomen: soft, not distended
no guarding/rebound or tenderness
B/S present

PV: external inspection only done
Slight ooze, not heavy

A: ?Threatened/Incomplete miscarriage

Hb108 WCC7.8 Plt 208
B-HCG still pending - to be followed up by LMO please

P: Pt given referral to U/S mane
For follow up with LMO after
Bleeding advice sheet given

Health Status

Principal and Other Diagnosis

Threatened miscarriage : SNMCT 496840015, Discharge, Medical.

Word Count 295

Typed: 8 min, 24 seconds

Dictated: 2 min, 24 seconds

Doctor 2 – Dictated (with Template)

Chief Presenting Complaint: *This 27-year-old female presents to our department tonight complaining of 5 days of worsening abdominal pain.*

She admits that she has had ongoing abdominal pain issues for the last 5 years. Previous workup has included CT scan of her abdomen, with a few ultrasounds. All of this has been inconclusive. She has not seen a specialist for this.

She describes intermittent central/epigastric abdominal pain, which seems to get worse after eating or drinking. She has had bad appetite all week, and has had a few episodes of vomiting and dry retching today. No haematemesis, no melena or blood in stool. She notes that she does not open her bowels since Tuesday, as she has not really been eating. No episodes of diarrhoea, no constipation.

Pain is not radiating to the flanks, back

Sore GP today who did routine blood tests which were normal. She had a pregnancy test which was negative.

Past Medical/Surgical History: 5 year history of intermittent abdominal pain, undiagnosed

Medications: None

Allergies: None

Family History: History of hypertension and hypercholesterolaemia and family

Social History: Patient is a smoker currently

She admits to social drinking, no recent binges

Occasional marijuana use. Denies any other illicit substance use

Admits to drinking energy drinks containing caffeine

Admits to having a stressed personality

Review of Systems:

No shortness of breath, cough, fevers

No urinary frequency or dysuria, haematuria

No chest pain palpitations

No neurological complaints

Physical Examination:

Vital signs: Normal and stable

Walks into department in no apparent distress, holding abdomen

Nose: Normal and patent

Mouth: Moist without lesions, pharynx clear, tonsils normal

Neck: Soft, non-tender, no lymphadenopathy, no nuchal rigidity

Abdomen: Soft, not distended

Bowel sounds present. Tenderness and guarding in the epigastrium and right upper quadrant. No rebound or rigidity. No hernia is visible

Extremities: Normal pulses, no cyanosis, no oedema

Impression:

Likely gastritis/peptic ulcer disease

2 rule out pancreatitis/biliary disease

Plan:

Labs sent

Urine analysis

Gastro gel and pantoprazole given

Word Count 325

Typed: 9 min, 17 secs

Dictated: 3 minutes

Doctor 3 – Typed

Doctor Progress Note: Patient was reaching for wine glass -- slipped and fell on counter shattering and somehow hitting the base of her left thumb. Laceration occurred at base of thumb, no other injuries except for possible bruise to palm side of thumb (thenar eminence).

PMHx: healthy

O/E:

C-shaped laceration to base of thumb overlying the MCP joint on volar surface. Total length of lac 3m in linear terms, resulting in flap of skin bevelled distally. Well-perfused. Tendons and nerves all tested and intact to thumb. No other injuries.

X-ray: no foreign body seen.

Interventions: Sterile prep and drape, 1% lignocaine for local anesthesia, thorough irrigation through drawing up needle. 6-7 simple interrupted stiches with 6-0 nylon -- excellent closure. Ointment and dressing applied.

Stitches out in 7-10 days, return for redness, swelling, drainage of pus, or other signs of infection.

Summary of Care

Patient was reaching for wine glass -- slipped and fell on counter shattering and somehow hitting the base of her left thumb. Laceration occurred at base of thumb, no other injuries except for possible bruise to palm side of thumb (thenar eminence).

PMHx: healthy

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C-shaped laceration to base of thumb overlying the MCP joint on volar surface. Total length of lac 3m in linear terms, resulting in flap of skin bevelled distally. Well-perfused. Tendons and nerves all tested and intact to thumb. No other injuries.

X-ray: no foreign body seen.

Interventions: Sterile prep and drape, 1% lignocaine for local anesthesia, thorough irrigation through drawing up needle. 6-7 simple interrupted stiches with 6-0 nylon -- excellent closure. Ointment and dressing applied.

Stitches out in 7-10 days, return for redness, swelling, drainage of pus, or other signs of infection.

Health Status

Principal and Other Diagnosis

Laceration of thumb : SNMCT 409944011, Discharge, Medical.

Allergies and Adverse Reactions

No active allergies have been recorded.

Medications .

No new, changed or ceased medications during this visit

Word Count 317
Typed: 9 min, 3 secs
Dictated: 2min, 56 secs

Doctor 3 – Dictated (with Template)

Progress Note

Chief Complaint: Seizure and fevers

History of Present Illness: This patient was brought in by ambulance today while having a seizure. History prior to this is not well known that the patient was noted to be unwell for the past several days. He apparently been having abdominal pain and vomiting and had not been eating well. He was seen at Royal XXXXX XXXXX Hospital emergency department yesterday for central abdominal pain which was apparently colicky, and associated with anorexia and weight loss. At the time he was afebrile the temp 36.6 and had normal vital signs. His abdomen was soft but tender in the right lower quadrant, and was tender to percussion as well.

Well-known patient also had a urinalysis which showed 3+ blood and 3+ protein had a CT scan of the abdomen and pelvis with contrast which was reported as no evidence of appendicitis, no splenic abscess, and only non-specific changes around the sigmoid colon. He was seen by the surgical registrar, received analgesia and IV fluids, and was discharged home.

Today he was noted to have a fever and was unresponsive having a seizure with his eyes deviated toward the right. Prior to arrival he had received midazolam 5 mg intramuscularly, and 2.5 mg IV. There was a small IV in the patient's left hand.

Past Medical/Surgical History: Significant for haemophilia A, HIV positivity following a blood transfusion, hepatitis C, ex-IV drug use. He has also had a history of an intracranial haemorrhage requiring craniotomy. I believe he also has a seizure disorder although this is not on his most recent problem list.

Medications: Medical marijuana, OxyContin, Keppra, OxyNorm, Trizivir, and Resprim

Allergies: Aspirin

Family History: unknown

Social History: Unknown except for above

Review of Systems: Unavailable except for above

Physical Examination:

Vital signs: Heart rate 160, blood pressure between the 120s and 160s systolic, afebrile with temp of between 38 and 39 Celsius, O2 sat is 98% on supplemental oxygen, respiratory rate 25

Unresponsive and staring up to the right initially, appears to be seizing

Eyes: PERRL, eyes are deviated to the right

Ears: Not examined

Nose: Not examined

Mouth: Moist without lesions, pharynx clear, tonsils normal

Neck: Trachea midline, no obvious lymphadenopathy

Lungs: Rhonchus breath sounds in the right base in particular, though present throughout

Heart: Rapid and regular

Abdomen: Scaphoid, not apparently tender, difficult to assess

Extremities: Normal pulses, no cyanosis, multiple tattoos, multiple attempts at IV access in the past

Neurologic: Initially unresponsive while seizing, but later becomes more responsive and will move in response to pain purposefully.

Impression: Patient with a history of HIV, haemophilia A, with no recent gastrointestinal illness who is now febrile and seizing. The possibility could be that the patient has a lower seizure threshold because of his illness, but it may be that he has intracranial pathology such as bleeding or infection. An EKG now shows sinus tachycardia, though the rate has slowed considerably since arrival.

Plan: The patient was given midazolam in the emergency department to stop his seizing. He was given supplemental oxygen and intravenous fluids. He continued this shivering was responsive only to deep pain and so became necessary to intubate him. This was done using rapid sequence induction and gentle technique and was successful on the 1st pass. A nasogastric tube was also placed.

The patient was given Tazocin IV and metronidazole has been ordered as well. He has been placed on a propofol infusion and has required further doses of midazolam for sedation. He was also given Dilantin IV for seizures.

I discussed the case with the Royal XXXX XXXX Hospital haematology registrar, Dr xxxxxxx, who recommends 3000 units of factor VIII. I also discussed the case with the Royal XXXXX XXXXX Hospital immunology consultant, Dr xxxxxxx (?spelling). He was agreeable with initial antibiotic choices and would be available to offer further advice depending on what was found on the head CT in any further diagnostic studies.

Word Count 660

Typed: 18 min, 51 secs

Dictated: 6 min, 7 secs

Doctor 4 – Typed

Summary of Care

XXXXXX was sleeping at daycare and had a nosebleed. Daycare staff performed first aid but told mom to present to ED.

No witnessed foreign body insertion

No prev nosebleeds

has been well

Had a good day at daycare, ate, slept and played well

PMHx; enlarged tonsils

No snoring or adenoidal problems

No bleeding tendency in family

Exam:

Well active happy child picking his nose

Obs are all stable : not tachycardic, tachypnoea,,(rr22) not hypertensive and not pyrexial

No cyanosis, anaemia/pallor, clubbing, lymphadenopathy or oedema

Oral: no petechia

enlarged uninfected tonsils

Ears; normal

Nose: areas of blood, no fresh bleeding left nostril >right

No polyps

No foreign body

resp: Gaeb

CVS; S1S2 no murmurs

Abd: SNT no HSMG

no bruising, petechia or purpura

Impression:

Well child with first episode nosebleed

? trauma

Plan:

discharge

advised ice and sustained compression if it recurs

Health Status

Principal and Other Diagnosis

Nosebleed : SNMCT 1220696019, Discharge, Medical.

Allergies and Adverse Reactions

No active allergies have been recorded.

Immunisation Status

Complete for Age.

Medications .

No new, changed or ceased medications during this visit

Word Count 182

Typed: 5 min, 12 secs

Dictated: 1 min, 41 secs

Doctor 4 – Dictated (with Template)

Summary of Care

Chief Presenting Complaint: Abscess to left thumb, told to present by GP

History of Present Illness: Nicked her thumb while cutting her nails 5 days ago, it is her son becoming more red and swollen with an area of blackness this morning. Her GP lanced abscess with success. Told to present for IV antibiotics. Systemically well no record of fever ? rigors

Past Medical/Surgical History: Diabetes not on any treatment, ischaemic heart disease, hypertension, high cholesterol, left facial palsy, moderate aortic stenosis, mild coronary artery disease, sleep apnoea but does not tolerate CPAP, asthma, glaucoma, mastectomy in 1976, 2008 bilateral renal angioplasty, right hip replacement 1994, laparoscopic colecystectomy, right inguinal hernia repair, abdominal wall hernia repair, left hip replacement, 2000 and balloon angioplasty

Medications: See ad hoc chart

Allergies: None

Family History: None significant

Social History: Lives alone currently here with 2 daughters

DVA

Review of Systems: No fever or Rigors

Physical Examination:

Vital signs: Normal and stable

Alert, oriented; not in distress

Eyes: PERRLA, EOMI, sclerae non-icteric, minor bruise to left eyelid walked into a door handle yesterday globe normal, normal vision

Ears: Normal, TMs clear

Nose: Normal and patent

Mouth: Not done

Neck: Soft, non-tender, no lymphadenopathy, no nuchal rigidity

Lungs: Clear to auscultation throughout; percussion normal

Heart: Pansystolic ejection murmur

Abdomen: Active bowel sounds, soft, non-tender, no gross organomegaly or masses, no hernias

Extremities: Left thumb red, lateral paronychia with black discolouration, good cap refill, start of tracking up arm in red blotches? not currently draining.

Neurologic: Moves all extremities, normal power and sensation; non-focal exam

Impression: Abscess left thumb

Plan: IV antibiotics, bloods, APAC morne with ?surgical review

Health Status

Principal and Other Diagnosis

Cellulitis and abscess of finger : SNMCT 308269011, Discharge, Medical.

Allergies and Adverse Reactions

No active allergies have been recorded.

Medications .

No new, changed or ceased medications during this visit

Word Count 275

Typed: 7 min, 51 secs

Dictated: 2 min, 32 secs

Appendix C – Health Information Services Evaluation Report

TITLE

Health Information Services (HIS) Evaluation Report on electronic documentation pre and post-trialing of Dragon Nuance Voice Recognition (VR) software

PURPOSE

To provide advice on the evaluation of electronic documentation for selected Emergency clinicians using FirstNet and Dragon Nuance Voice Recognition

BACKGROUND

Selected Emergency doctors commenced trialing Dragon Nuance Voice Recognition software during the first week of March 2012. This trial is conducted for approximately 8 weeks and offers clinicians an alternative to data entering electronic documentation through typing - instead using dictation software.

METHOD

1. The criteria used in the evaluation was inclusive of medico-legal requirements, subjective impressions from coders abstracting clinical information for coding purposes as well as completeness and value for ongoing, follow-up care.
2. The electronic documentation of 5 Emergency doctors was examined before the trial of Dragon Nuance Voice Recognition software
3. The electronic documentation of 4 Emergency doctors was examined during the trial of Dragon Nuance Voice Recognition software

Pre-VR Trial

- Electronic documentation from 16 patient encounters were examined
- The patient encounters were a combination of inpatient and outpatient episodes
- In frequent instances, the doctor may have only completed 1 electronic document such as the Emergency Assessment form and not the Progress Notes or the Discharge Summary

4th Week Interval VR Trial

- Electronic documentation from 12 patient encounters were examined
- The patient encounters were a combination of inpatient and outpatient episodes
- In frequent instances, the doctor may have only completed 1 electronic document such as the Emergency Assessment form and not the Progress Notes or the Discharge Summary

FINDINGS

Pre-VR Trial

<u>Select criteria</u>	<u>Document type</u>	<u>Documented</u>	<u>Comments</u>
Medical History	ED Assessment	8 cases audited	8 cases did not complete this electronic document or another doctor completed the

			documentation
Evidence of D/C Planning	Progress Notes	4 cases	12 cases did not complete this electronic document or another doctor completed the documentation
PDx	D/S	9 cases	6 cases did not complete this electronic document or another doctor completed the documentation and 1 case documented ? MVA
Documentation comments	Spelling errors noted, electronic documents inserted under the wrong document type and entries cut and pasted into the documents making it difficult to discern between clinician entries		

4th Week Interval VR Trial

<u>Select criteria</u>	<u>Document type</u>	<u>Documented</u>	<u>Comments</u>
Medical History	ED Assessment	5 cases	4 cases not completed this electronic document or another doctor completed the documentation 1 case had nil significant Hx
Evidence of D/C Planning	Progress Notes	1 case	The remaining cases either did not have this document completed or N/A selected because of the hospital transfer
PDx	D/S	7cases	The remaining cases either did not have this document completed
Documentation comments	Documentation clear and concise. Documentation well structured under field headings. Instances where PDx MVA. Documents filed under the incorrect document type		

COMMENTS

General feedback from the auditing participants (coders) generally found it difficult to distinguish between pre and post-trial VR electronic documentation. However, impressions from the Staff Specialist indicate that a reduction in typing errors provides some evidence of post-trial VR electronic documentation and this was confirmed from the audit's findings.

Given that Dragon Nuance VR software commenced trials in early March, the audit's findings may be suggestive of clinician's initial adaptation to the changed approach to producing electronic documentation.

It is very difficult to determine the benefits to clinical coding in the initial stages and recommendations for a post- implementation VR audit are expressed at the conclusion of the trial.

CONSULTATION

Staff Specialist of Emergency, District HIS Manager, Clinical Coders and Project Manager

Date: 19/4/12