



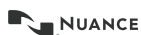
The Role of Speech Recognition in Clinical Documentation

Dr Simon Wallace, Chief Clinical Information Officer, Nuance International
15th May 2018

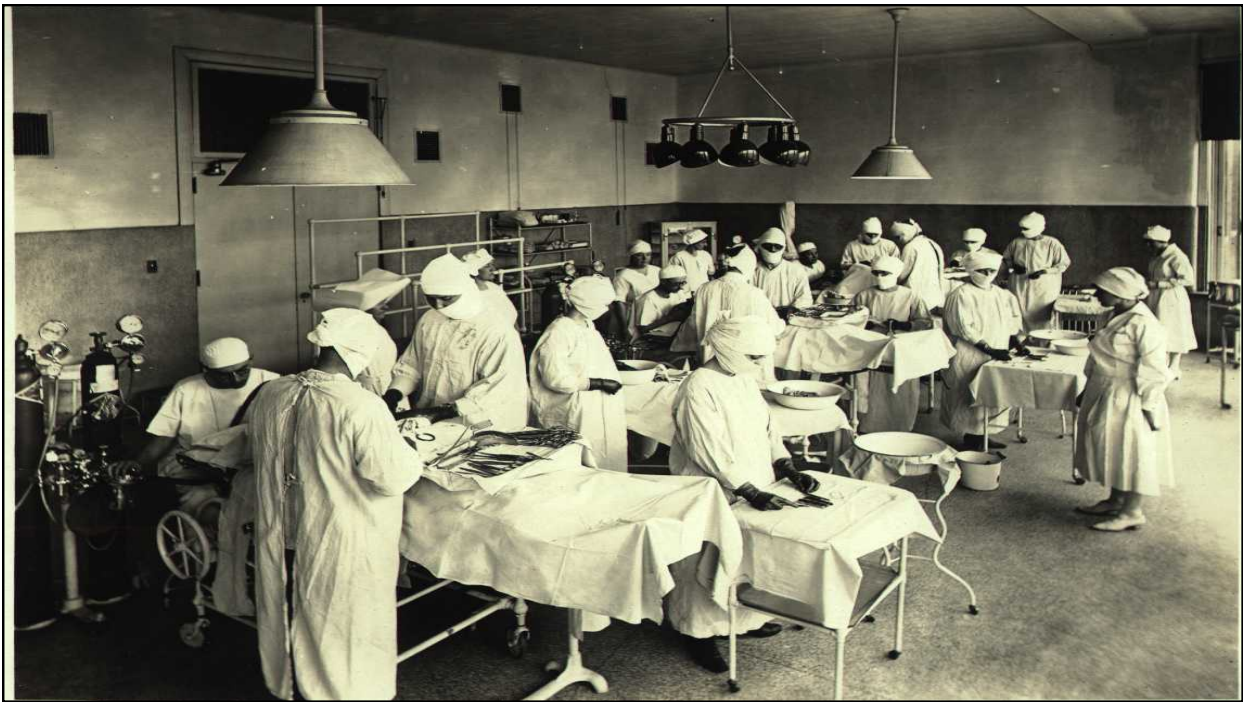
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Agenda

- Introduction
- The Complexity of Healthcare
- The Clinical Documentation Challenge
- The Digital Documentation Journey
- Live Demo using Dragon Medical Direct
- Myth or reality – does it work?
- The Power of Clinical Engagement - Case Studies
- Benefits of Speech Recognition
- Links to further reading material
- Questions



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The Complexity of Healthcare

“Medicine used to be simple,
ineffective and relatively safe”

“Now it is complex, effective and
potentially dangerous”

Professor Sir Cyril Chantler
Honorary Fellow, ULC Partners
Former Chair of General Medical Council Standards Committee – stated in 1998



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The Busy Life of Australian Healthcare

- 381,000 visits to a GP each day (2016)¹
- 79,000 visits to a specialist each day (2016)¹
- 20,000 public hospital ED visits per day (2016)¹
 - 30% end up being admitted to hospital²
- 10.6 million episodes of admitted patient care per annum (2015-16)²
 - About 59% in public hospitals (2015-16)²
- 2.2 million separations for elective surgery per annum (2015-16)²
 - 33% were public and 67% in private hospitals (2015-16)²
- 27,000 allied health services provided per day¹
- 24,000 community mental health service contacts per day¹
- 246,000 laboratory tests per day (2016)²
- **LOTS AND LOTS OF CLINICAL DOCUMENTATION**

1. <https://www.aihw.gov.au/reports/australias-health/australias-health-2016-in-brief/contents/what-services-do-we-use> <https://www.aihw.gov.au/getmedia/3e1d7d7e-26d9-44fb-8549-aa30ccff100a/20742.pdf.aspx?inline=true>



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The Busy Life of NZ Healthcare

- 12.6 million daytime visits to GPs per year¹
- 2.8 million visits to general practice nurses per year¹
- 1 million ED visits per year¹
 - Short stay emergency admissions – 5-20,000 (varies by DHB)²
- 1.1 million discharges from public hospitals (2013-14)²
 - 91,000 discharges from private hospitals (2013-14)²
- Surgical procedures +++ - data broken down by DHB²
- Outpatient referrals and consultations +++
- 65 million pharmaceutical items dispensed¹
- 24 million laboratory tests¹
- **LOTS AND LOTS OF CLINICAL DOCUMENTATION**

1. <https://www.health.govt.nz/system/files/documents/publications/new-zealand-health-strategy-futuredirection-2016-apr16.pdf>
 2. <http://www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets/hospital-event-data-and-stats>



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Australia's Clinical Documentation Challenge

Good news for speech recognition:

- 10.6 million discharge summaries per annum:
 - 59% in public hospitals & 41% in private hospitals
- Around 28 million medical specialists visits per annum:
 - This equates to a minimum of 28 million reports/letters.
- Around 2.2 million procedure notes per annum.
 - 33% in public hospitals & 67% in private hospitals.
- Around 9.9 million reports/letters by allied health professionals per annum.
- Around 8.8 million reports/letters by community mental health professionals per annum.



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NZ's Clinical Documentation Challenge

Good news for speech recognition:

- 1,191,000 discharge summaries per annum:
 - 1,100,000: public hospitals & 91,000: private hospitals
- Around 2.2 M medical specialists visits per annum:
 - This equates to a minimum of 2,200,000 reports/letters.
- Around 326,580 surgical services per annum – varies by DHBs
 - Equates to a minimum of 326,580 clinical operations notes.
- Equates to 3,717,580 documents/letters to be either transcribed (internally or externally), generated by front end SR solutions or back end SR involving medical editors.
- Available market AUD 30,930,265 (26 lines per report, 96,657,080 lines & 0.32 AUD per line).



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The Paper Conundrum

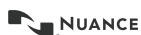
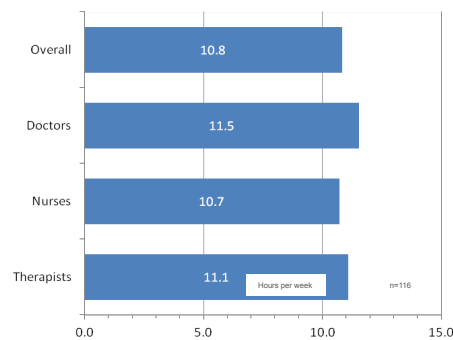


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Time spent adding to Clinical Documents

Clinicians were asked to assess the average amount of time they spend per week adding to clinical documentation across the different clinical settings ...

- Across all groups the weighted average (WTE adjusted) time spent adding to ClinDocs per clinician per week was **10.8 hours**
- For doctors this was a little higher at **11.5 hours**, nurses at **10.7 hours** and therapists at **11.1 hours**.
- Against a nominal 37.5 hour week, this of course is **c28% of working time**.



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Clinicians

Overwhelmed and de-motivated by clinical documentation



The time doctors dedicate to interacting directly with patients accounts for **less than 13%** of their day



Motivating clinicians:

- Helping patients (32%)
- Medical challenges (23%)
- Respect (22%)



De-motivating clinicians

- Workload (36%)
- Administrative tasks (27%)
- Lack of leisure time (13%)

Sources:

The art of medicine in a digital world (Healthcare from the patient perspective) April 2015, Nuance

2015 Stress Burnout Report, VITAL WorkLife & Cejka Search

4000 Clicks: a productivity analysis of EMRs in a community hospital ED, Hill, Robert G. et al., The American Journal of Emergency Medicine, Volume 31, Issue 11, 1591 – 1594



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Clinicians

Struggling to utilise technology (eg. EHR) to improve patient outcomes, clinician efficiency and control of budgets



50% of a healthcare professional's time spent on clinical documentation

2/3rd of documentation is narrative, 1/3rd is structured.

Adoption of EHR's increases the workload of physicians with **30-40 minutes per day**



3 wasted outpatient clinic appts per doctor per week

EHR structure makes it **difficult for clinician to enter the narrative** story of the patient



£20,000 per doctor per year spent searching for information

Sources:

Accuracy & completeness of clinical documentation: Understanding the clinician, patient and economic implications in NHS England acute trusts. Ignetica June 2015

Clinical Documentation: Underestimated and overlooked. HIMSS Analytics Europe, March 2015



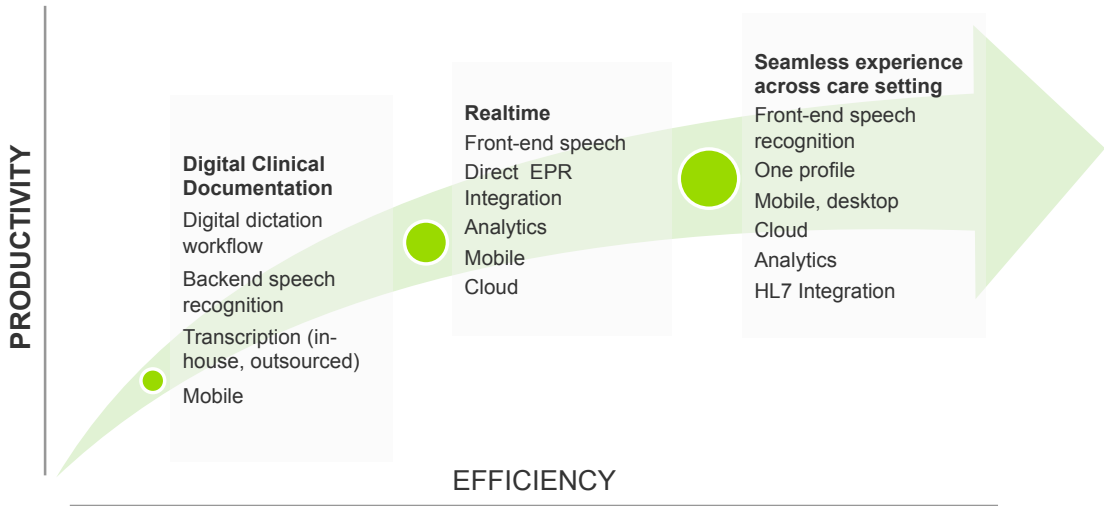
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To Speak or not to Speak.....



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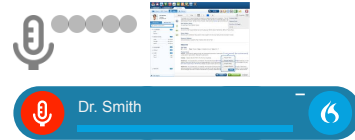
Your clinical documentation journey



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Dragon Medical

- Clinical speech recognition for dictating in EPRs and other clinical applications eg. Order comms
- Mature proven technology used at scale – 99% accurate
- Comprehensive medical dictionary - Excellent word recognition
- Faster than typing or digital dictation - speak 3x faster than type
- Installs in minutes on any clinical workstation or laptop
- NO initial speech profile training required
- Single voice profile – accessible on different devices in different locations
- Use of macros to improve quality and speed of documentation
- Microphone can be on smartphone - iOS or android
- Built-in analytics provide usage and adoption dashboards, detailed user metrics
- Opportunity to reduce the need of backend workflow – one-stop shop for doctors
- Support the 'paperless' journey



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Live Demo of Dragon Medical

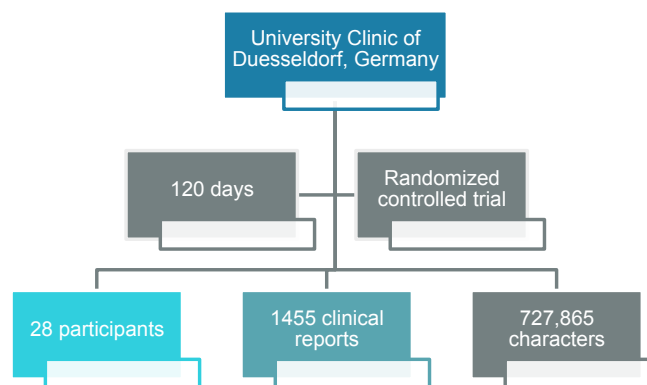


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Myth or Reality?

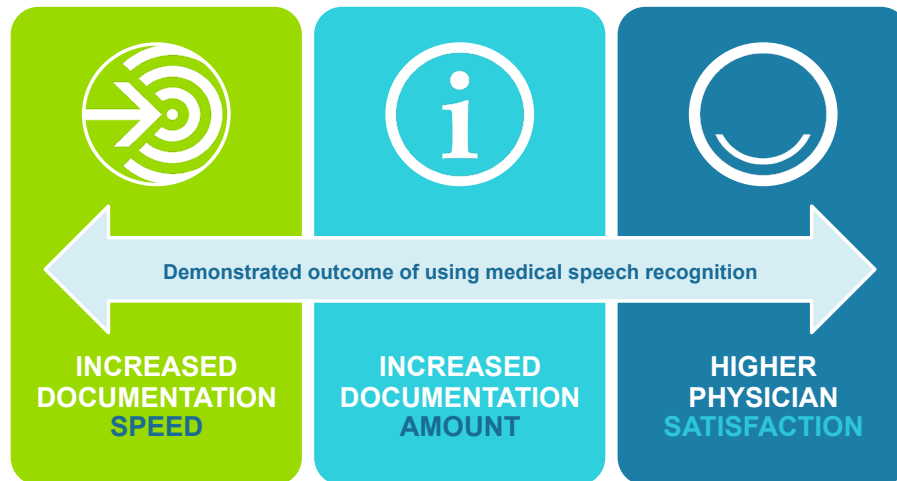


RCT – Web-Based Speech Recognition



Analysis of Documentation Speed Using Web-Based Medical Speech Recognition Technology: Randomized Controlled Trial <http://www.imr.org/2015/11/e247>

So what happened using voice?



Analysis of Documentation Speed Using Web-Based Medical Speech Recognition Technology: Randomized Controlled Trial <http://www.imr.org/2015/11/e247>

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Key Findings from ED Study

ED Department, South Tees Hospitals NHS Foundation Trust



- **The benefits realised focus on Time Savings, Speed and Quality:**

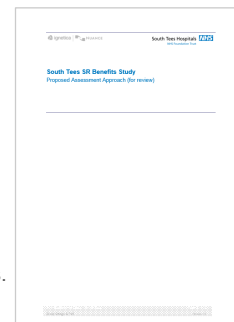
- 98%: Time savings compared with typing
- 86%: Speed factors i.e. information being available to others more quickly via SR
- 88%: Quality improvements with documentation

- **Documentation time savings of up to 40% (about 3.5 minutes) per patient:**

- Speech vs typing: 389 days saved or almost 2 WTEs
- Hand writing and traditional dictation have gone, but typing remains.
- SR primary means of documentation – 69% in S&T, 49% in Main Dept and 31% in Resus.
- Time savings per patient – 3.45 mins in Main, 3.68 in Resus and 0.2 mins in S&T
- NB. Main transition in S&T was removal of traditional dictation.

- **Further time savings in other settings – 78 mins to 4 hours per person per week.**

- Outside of S&T, Resus and Main, some respondents also used SR for clinical use or admin use in other settings (Care with interpretation as responses from only 9 users).



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Key Findings from an Outpatient Study

Acute University NHS Hospital – uses Cerner Millennium

- Creation of OP letter using SR for whole renal specialty – 26 users (doctors and nurses)
- Replaced outsourced digital dictation
- Shortage of secretarial support
- Average usage of speech recognition was 82% for doctors and nurses (challenge was satellite clinics)
- Turnaround time of letters reduced from 12 days to 3 days (average)
 - Some consultants 24-48 hours
 - NB. CCG target 10 days reducing to 7 days from April 2018
- Cost of out sourced transcription reduced by 77%.
- Not recruiting for a third secretarial role.
 - A saving of one WTE band 3 (£18,333)



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Key Findings from an Outpatient Study

Acute University NHS Hospital – uses Cerner Millennium

- Renal Consultant:
 - *‘Big impact on the efficiency of getting my letters done for any clinic. I am now able to send my letters within 24 hours (or even instantaneously if there are no blood results awaited for), as compared to pre-VR era where the letters may take up to 2 weeks or even longer to be done’.*
- Renal Admin Team Leader:
 - *“The introduction of VR into renal has resulted in a dramatic change in clinic letter turnaround times. As a result of time being freed up from letter reviewing, this has also permitted the renal secretaries to expand the variety of their tasks and work on their CPD.”*



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Cambridge Community Services NHS Trust

www.eoemskservice.nhs.uk



- Speech to create all outpatient letters (18 physiotherapists and one podiatrist)
- DMPE, PowerMic and support services from Nuance partner
- Letter turnaround time reduced from weeks to 2-5 days
- Increased patient throughput and decreased waiting times
- Reduced backlog
- Faster referral to secondary care (screening of primary care referrals)
- Team able to complete admin within contracted hours and go home on time.

"Physiotherapy and other Allied Health Professional services are undergoing exciting changes leading to whole system improvements in the NHS. Dragon Medical integrated into our clinical documentation delivers efficiencies that support that change and our growth"

Sarah Saul,
Service Manager,
DynamicHealth

"I can complete my notes with the patient or immediately after the appointment. Now I have no need for an 'admin' afternoon or to come in to the clinic just to sign letters. This time can now be used to see more patients."

Chris Sadie,
Physiotherapist
DynamicHealth



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The Power of Clinical Engagement

Pathology Department

- Backlog of 600 reports outstanding. Shortage of staff.
- Understanding a complex workflow – registering the specimen (secretary), preparation of specimen (Lab tech) and microscopic analysis (histopathologist)
- Integration with Laboratory Information Management System (LIMS)
- Meeting requirements for national cancer reporting requirements – use of voice commands to navigate through the form.
- SNOMED coding and the TMP format
- Role of standardised reporting eg. Addenbrookes
- Outcomes:
 - Removal of 600 report backlog. Turnaround now exceeding national target
 - NHS Innovation Award
 - Time savings equivalent to 7 man hours per day
 - Lead pathologist – "not work in hospital without speech"



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Benefits of Speech Recognition

- Faster turnaround times (TATs) of clinical documentation
 - Discharge summaries, OP letters, referrals
 - Meet national requirements and avoid penalties
- Boosts clinician productivity and efficiency with workflow optimisations
 - Less time documenting, more time with patients.....**and going home on time!!**
 - Reduces clinician's admin burden
- Increases completeness and accuracy, particularly unstructured narrative
 - Mental health, allied health professionals
- More timely access to clinical information as TAT has increased
- Reduced backlog of letters, referrals, reports



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Benefits of Speech Recognition cont....

- Increase adoption of EPRs – reduce added 40 minutes
- Achieves an ROI for the organisation
- More efficient use of secretarial time eg. MDT meetings, increased patient contact
- Improved quality of data results in improved analytics
- Better informed decision making and patient safety
- Better quality records for medico-legal challenges
- Puts patient at the centre of their care eg. Part of letter creation, given letter same day



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7-year old girl's drawing published in JAMA, June 20, 2012, Vol 307, No. 23, Thomas G. Murphy, MD
<http://jama.jamanetwork.com/article.aspx?articleid=1187932>

Case Study and Reading Material

- Analysis of Documentation Speed Using Web-Based Medical Speech Recognition Technology: Randomized Controlled Trial <https://www.ncbi.nlm.nih.gov/pubmed/26531850>
- Clinical Documentation Improvement – Medicine today is a balancing act
<http://www.nuance.co.uk/for-healthcare/clinical-documentation-improvement/index.htm>
- Three Great Reasons (and the evidence) to speech enable your clinical documentation
http://www.nuance.co.uk/ucmprod/groups/healthcare/@web-enuk/documents/collateral/nc_046533.pdf
- UK: Histopathology Reporting: Dragon Medical Fires-Up Turnaround Times at NHS Plymouth
http://www.nuance.co.uk/ucmprod/groups/healthcare/@web-enuk/documents/collateral/nc_031846.pdf
- Worcestershire Health and Care – community nurse using speech <https://youtu.be/-J4jl1b52V4>
- The Impact of the use of Speech Recognition in the ED Department
http://engage.nuance.co.uk/report-speech-recognition-emergency-department?cid=7010W000002WLF4QAO&ls=website&rs=www.nuance.co/healthcare&offer=speech_recognition&ot=ePaper
- UK: Primary Care: Dragon Medical. Time saved, accuracy up, errors down. Wellspring Medical Practice, Newcastle-upon-Tyne.
http://www.nuance.co.uk/ucmprod/groups/healthcare/@web-enuk/documents/collateral/nc_031847.pdf
- Speech Recognition and Musculoskeletal Services
https://www.nuance.com/content/dam/nuance/en_uk/collateral/healthcare/case-study/ss-dynamichealth-cambridgeshire-community-services-nhs-trust-en-uk.pdf
- Nursing RoundTable Report: Nursing Documentation – the challenges, opportunities and role of technology
<https://whatsnext.nuance.co.uk/healthcare/nhs-nursing-round-table-2017-impact-of-patient-record-keeping-nhs-nurses/>



Thank you

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