Preventing burnout: Can ambient technology be the key to supporting clinicians while improving patient experience?

Introduction

Getting technology to help save time is a common theme we hear from clinicians in every part of the NHS and so we are always exploring what high value, high impact innovations could help with this.

A set of speech recognition products is emerging which work in the background and change how clinicians interact with electronic systems. These exciting Ambient Voice Technologies (AVT) have great potential to reduce administrative burden for clinicians and could be applied to healthcare in the next six to 18 months, realising benefits for patients and staff quickly.

We are pleased to support discussions which highlight issues and potential next steps with this emergent technology, to make sure innovators and providers can work together to develop products which meet the needs of UK patients and clinicians and start using them soon.

Thank you to everyone who attended the innovation exchange which led to this discussion document, for their important contributions. I am excited to see what the next steps may be.

Rishi Das-Gupta, Chief Executive Officer, Health Innovation Network (HIN) South London

Discussion Supported by:

- Vin Diwakar, Medical Director for Transformation and Secondary Care, NHS England
- Melanie Iles, National CCIO (Interim), NHS England

Discussion Attendees:

- Hatim Abdulhussein, National Clinical Lead - AI and Digital Workforce, NHS England and Medical Director, KSS AHSN.
- Helen Balsdon, Interim Chief Nursing Information Officer, NHS England
- Dominic Cushnan, Director of AI, Imaging and Deployment, NHS England
- Jane Eddleston, Executive Medical Director and clinical lead for informatics at Manchester University NHS Foundation Trust
- James Friend, Director of Digital Strategy, NHS England - London Region
- Sanjay Gautama, CCIO, Imperial College Healthcare NHS Trust
- Malte Gerhold, Director of Innovation and Improvement, The Health Foundation
- Joanna Lee, Head of Data Analysis, Department of Health and Social Care

- Chris Lindesay, Consultant acute physician and Divisional Director of Medicine, Milton Keynes University Hospital NHS Foundation Trust
- Leon Lindsey, Speech Recognition lead for South Tyneside and Sunderland NHS Foundation Trust and North East North Cumbria ICB
- Robert Locklan, Senior Commercial Manager in the Commercial Engagement and Solutions Team, NHS England.
- John McCormick, Chief Clinical Information Officer, Devon ICB and GP, Clinical lead NHSE South West Digital Transformation Programme (Primary Care Digital Lab), and also GP Partner South Devon.
- Alison Moulds, Improvement Fellow, The Health Foundation
- Dermot O'Riordan, Chief Clinical Information Officer, West Suffolk NHS Foundation Trust
- Dominic Pimenta, AI Consultant at Great Ormond Street Hospital NHS Foundation Trust and also CEO of Tortus AI.
- Luke Readman, Regional Director for Digital Transformation, NHS England - London Region
- Charles Tallack, Director of Data Analytics, The Health Foundation
- Wai Keong Wong, Director of Digital, Cambridge University Hospitals NHS Foundation Trust
- James Woollard, Chief Clinical Information Officer and consultant psychiatrist at Oxleas NHS Foundation Trust and National Speciality Adviser in Digital Mental Health at NHS England.

Background

Ambient Voice Technology (AVT) offers the potential to revolutionize clinicians' interactions with patients by supporting them to document care and interact with their clinical systems in a less intrusive way. This technology represents a near-term opportunity to use supervised, artificial intelligence (AI) in clinical practice to address an often-heard complaint by clinicians about the burden of documentation.

Clinician burnout is a well-documented reality in the NHS[1][2], and the administrative burden of tasks such as note taking and ordering tests is one of the main contributors[3].

The challenge varies by specialty but one secondary care clinician in the discussion described doing documentation for up to 90 minutes after a three hour clinic and sometimes coming in at weekends to catch up. Another outlined the pressure in mental health services to document care, and thought this negatively impacted the quality of conversations in the consultation.

[1] https://www.nhsemployers.org/articles/beating-burnout-nhs
[2] https://www.bmj.com/company/newsroom/clinicians-suffering-burnout-are-twice-as-likely-to-be-involved-in-patient-safety-incidents/
[3] https://bmcprimcare.biomedcentral.com/articles/10.1186/s12875-015-0363-1

Retention of staff is also a clear priority for the NHS[4]. Trying to increase productivity with a stretched and stressed workforce means doing more of the same will not work. In this context, AVT has the possibility to capture patient interactions in real time, creating a record of the key points which the clinician can check. If this was utilised across the 1.75m daily patient appointments this could save hundreds of clinical hours, dramatically changing the capacity within the NHS. This could be used to see more patients or decrease the amount of overtime being worked to improve work/life balance and help retain staff.

"In General Practice this has the opportunity to massively change practice."
Clinician

However, the field is developing quickly, and new products and functionality are being developed continuously. This initial event aimed to bring together industry partners with clinicians and patients to help understand the 'art of the possible' and to articulate what product features are of most interest to UK clinicians, and what concerns they have.

Art of the possible - Now

This is an exciting time to consider AVT as there are several suppliers providing automated digital dictation and use of these products is widespread (though not yet universal). Some suppliers are using AI to draft the text from dictation completed after a consultation. The discussion focused on a number of products due to be launched in the next 6 months which (with permission) listen into patient clinician interactions and produce a summary which can be checked by the clinician and added to patient records in near real time (removing the need to dictate letters and notes).

Key points raised were:

- This builds on the more traditional model of digital dictation which is then typed up by human and sent back. AVT removes the human element by using AI to produce the initial report which is then checked by the clinician.

- A key requirement is the need for speech recognition technology to be available to all clinical staff. It was recognised that while many clinicians use speech recognition as part of their current practice to dictate letters and make notes (there were clear examples of this in secondary care and in primary care), this has not been consistently rolled out across the whole NHS.

At the innovation exchange event there was a live, unscripted demonstration of a product which showcased features due for release in Autumn 2023. The

[4] https://www.nhsemployers.org/publications/improving-staff-retention

technology was different to a traditional transcript (although it could produce that too) in that it identified the relevant points of the consultation and disregarded conversation points unrelated to the consultation e.g. weather, getting to and from the appointment etc. This meant it typically produced a 1-2 page structured clinical note from a 10 minute appointment.

The live demonstration included an unscripted GP consultation with a patient representative in front of the attendees. Following questions from the group, the patient representative reported that the GP sat facing them, and maintained eye contact for longer and that it was good that the notes were available at the end of the consultation.

> "I don't think I behaved differently because it was being recorded. It was nice to feel the doctor had the time to speak to me. I found it easier to remember what was said." Patient Representative

This positive response from the patient representative underlined the importance to continue to test and co-produce the approach with many patients representing different backgrounds and needs to ensure it would not inadvertently impact on health inequalities and to understand further how AVT operates within known gender/ethnicity biases, including for people with language barriers.

The live demonstration also gave clear areas of where it would be beneficial to conduct further testing and evaluation including ways of working (in consultation or reflective practice) and patient experience (including consent, trust).

Overall, all the attendees were encouraging about the potential for the technology. Some clinicians felt there needed to be more functionality and better integration prior to roll-out to make sure it is useful, that this might be done quickly and that NHSE can play a role in accelerating integration. For example this may include the need to trial, co-develop and test more whether AVT is ready to scale. Others acknowledged the current pressures clinicians were under and felt any beneficial input should be made sooner rather than later.

Decisions were still to be made, which impacts the costs of these systems such as how recordings or transcripts of consultations would be retained; currently, dictated notes are held only until (or shortly after) the letters are finalised and sent.

To get good integration with EHRs there needs to be resource in the IT teams. There are already examples within the system of where this is down well which could be learned from, such as Milton Keynes University Hospital NHS Foundation Trust.

The group also recognised some risks which in many cases are related to potential benefits which will need to be tested as products are developed:

- Notes become longer and harder to read – making it difficult to pull out the meaningful elements and could also have the impact that the patient letter would be too long.
- It was unclear whether the structure of notes will match guidance on letters and notes.
- Some errors in transcription were not picked up automatically as part of the note and needed to be corrected by the clinician. (This would need to be tested further to understand whether the error rate is higher than using current processes, how often it occurs and how long it takes to correct notes)
- A concern around the potential to increase complaints / litigation based on documentation of errors which currently result in minor consequences / minor harm.
- Anxiety amongst clinicians that full recordings might lead to an increase in complaints / questions around the quality of their practise.
- An understanding of how the model would cope with transcribing an encounter where the clinician and patient disagreed.

However, those present recognised that these risks could be evaluated and monitored over time, enabling any issues to be identified and addressed where needed.

Although exciting, it was also acknowledged it would require support for roll-out, with the benefit being this type of support is well understood. Several organisations are rolling-out speech recognition technologies to automate existing dictation workflows e.g. Manchester FT in secondary care, South West region for primary care and participants felt that AVT is likely to require a similar level of support for roll-out.

Art of the possible – Future

While clinicians and CCIOs were positive by the possibilities, as they could see the possibility for AVT to improve patient experience, quality and safety, they also recognised the potential for the demonstrated product to do even more in the future.

Key points raised included:

- Future AVT would be married even more closely to workflows in EHRs and decision support tools enabling technologies to pick out actions and complete actions such as ordering tests and to prompt the clinician e.g. draft prescription, order lab results, send on patient information and would interact with existing EPRs such as Epic, Cerner, EMIS, Rio.
- It could also be used to create structured data from unstructured data for example identifying diagnoses for coding without the clinician inputting this separately (or suggesting coding options).

- What limits development of these systems is having real examples to refine the models with, so as a system we have a responsibility to partner with some suppliers to develop functionality.
- In particular, the group heard how in the South West a business case has been written to work with the local universities and create a primary care lab to act as a test bed for AVT.
- This could also present an opportunity to set up an evaluation to rigorously test hypotheses around AVT, not just to test a product (it is planned that this will be shaped in collaboration with the Health Foundation).
- Although other language models will develop for medicine and we might see development of multiple models for different specialties or settings, this is a good starting point as it is supervised AI so the clinician remains responsible for checking it and the regulatory burden to test the models in every situation is lower.
- That AVT and note taking was a potential improvement over the current speech recognition technologies but it was important to think about automating the whole pathway.
- The opportunity to "Get rid of the desk and talk with the patient in a better way" in the consultation or to change the human computer interfaces with multimodal input.
- Diagnoses were coded as blocks of text, and converting these to formally coded (e.g. SNOMED CT) would be helpful and potentially improve quality of care / safety.
- Recognising the opportunity to save time if systems could also order / prepare forms for tests or book future appointments – this might need NHSE to work with EHR vendors to support integration.
- The quality of notes could also improve as a result of improved diagnosis coding (e.g. capturing diagnoses / comorbidities).

Next steps

Given its appeal and potential, it is clear that some manifestation of AVT which was demonstrated will be around in the UK health environment in the future and there was a drive within the group for the NHS to accelerate its use and for regions to be engaging with companies of all sizes to develop products in this area and collate examples of where this is working.

It was acknowledged that it would require a decision around whether the next step is driving roll-out of traditional speech recognition more quickly or leapfrogging to AVT, as it feels like the technology is now ready for testing and trialling in practice and people want to see a supplier do this in real time in a clinic. Therefore, a roadmap is need for speech recognition, AVT and cloud recognition of free text in EPR.

Following the Innovation Exchange event, NHSE has confirmed it is looking for sites that would be a vanguard for testing and evaluating current AVT products to look at their feasibility and recommendations around spread and adoption.

Conclusion

Clinician burnout and workload is a national emergency impacting on patients and so bold moves have to be made. AVT could be the single most important technology we can deploy to improve this but if rapid progress is to be made, it must be shaped nationally rather than at ICB level.

Appendix A

Original discussion guide

- How excited are you by the opportunity you've seen?
- Was the consultation representative of what we do?
    - Did the consultation cover the key elements of UK practice?
    - Are there any elements it will be good to test in future?
    - Did the consultation seem affected by the use of ambient? (positives / negatives)
- Transcript of the consultation:
    - Did the accuracy of the transcript seem adequate?
    - Is the transcript useful for the clinician?
    - Is the transcript useful for patients?
- Formatted clinic note:
    - What features of a clinic note were supported?
    - What additional features would be important?
    - Was the structure a natural fit for your clinical areas
- Formatted Letter text:
    - How ready did the letter text seem?
    - How important is it to have medical text?
    - How would this differ from a typical letter?
- Workflow:
    - How easy did the workflow seem?
    - What changes would be needed to make this work well in practice?
    - How important is integration in to the EPR vs. copy paste of fields?
    - What routing would be needed for letters?
    - How complex does this seem vs other outpatient transformation? (what are comparable projects in your organisations?)
- Having seen the products what is your overall impression?
    - Is the level of development what you would expect?
    - How important do you think something like this is vs. other projects you have in train?