Digital dictation and voice transcription software enhances outpatient clinic letter production: a crossover study

Kinesh Patel, Marcus Harbord

Abstract
Background Digital voice transcription has been introduced widely in the National Health Service (NHS), though primarily in radiology departments. There has been a long-standing problem with recruitment of medical secretaries within the NHS, leading to long delays in the production of correspondence from outpatient clinics.

Objective To determine whether use of widely available digital transcription software improves efficiency and the time taken to produce correspondence.

Methods The project used a prospective, crossover trial design in a ‘real-world’ environment. Correspondence from clinics was transcribed after dictation by a secretary using conventional analogue audio tape or the dictation software. After a 2-week washout period the same clinics’ dictations were transcribed using the other method to produce identical correspondence. The two sets of letters were compared.

Results The mean time for the secretary to produce letters for a complete clinic using digital dictation was 66 min whereas analogue dictation took 121 min (p<0.00002). There was no difference in the number of mistakes per letter (p>0.05).

Conclusion Voice transcription software significantly decreased the time taken to transcribe outpatient clinic letters with minimal training of secretarial staff, resulting in improved efficiency.

Background
Proprietary digital dictation and voice transcription has been widely introduced throughout the National Health Service (NHS) primarily in radiology departments, although there is still doubt that it is as good as transcription by a secretary. Recruitment and retention of medical secretaries has been a problem for the NHS for many years. The combination of low rates of pay with a high-pressure environment has led to posts often being filled by temporary staff, which itself can add to difficulties in the workplace.

Methods
The project used a prospective, crossover trial design in a ‘real-world’ environment. Two clinicians (MH, KP) dictated letters from six entire outpatient clinics using Dragon NaturallySpeaking Medical version 10, Nuance Communications, Burlington, MA, USA into the gastroenterology department of Chelsea and Westminster NHS Foundation Trust to try to overcome some of these problems.
The total time taken using each method was measured. The letters from the clinics were saved separately so that an error analysis could be performed. Acceptability was assessed qualitatively.

Results
In total, 45 letters were dictated during the trial, equating to 3589 words.

The mean time for the secretary to produce letters for a complete clinic using digital dictation was 66 min, whereas analogue dictation took 121 min (paired, two-tailed t test; p<0.00002). There was no difference in the number of mistakes per letter (p>0.05). Results for each investigator and each clinic are shown (table 1 and figure 2).

There was no difference in user satisfaction, with the time taken to record the digital files being no more than for analogue dictation. The secretary actively preferred using voice transcription, and continued using it after the end of the study. The system was then adopted by other secretaries in her team.

Conclusions
Voice transcription software significantly decreased the time taken to transcribe outpatient clinic letters with minimal training of secretarial staff, resulting in...
efficiency is less than with conventionally typed letters,6–9 although these studies used earlier software versions that are known to be less accurate. Two reports have described a more efficient ‘turn-around’ time to generate electronic patient records, in the emergency room9 and the pathology department,10 probably reflecting the types of record that are produced in these environments.

A retrospective comparative trial in a radiology department showed that no additional errors occurred when the users of voice transcription were experienced.11 This was confirmed more recently,12 in a study in which headset use and templates were associated with transcription efficiency.

Integration of voice transcription into the military outpatient clinic has been shown to be acceptable to the majority of users,13 which supports our demonstration that modern platforms produce an efficient and effective service.

Within the past decade, the NHS has increasingly used offsite digital transcription services14 as a result of shortages in secretarial staff and to save money.15 The clinician dictates correspondence onto a digital voice recorder, which is then sent via secure electronic means to a transcriptionist who produces a document to send back to the clinician. There has been no randomised published evaluation of the effect on quality efficiency is less than with conventionally typed letters,6–9 although these studies used earlier software versions that are known to be less accurate. Two reports have described a more efficient ‘turn-around’ time to generate electronic patient records, in the emergency room9 and the pathology department,10 probably reflecting the types of record that are produced in these environments.

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### Table 1 Transcription time using voice recognition is significantly reduced (p<0.00002)

<table>
<thead>
<tr>
<th>User</th>
<th>Analogue transcription time (mean, min/clinic)</th>
<th>Digital transcription time (mean, min/clinic)</th>
<th>Time saving (mean, min/clinic)</th>
<th>Analogue accuracy (errors/%)</th>
<th>Digital accuracy (errors/%)</th>
<th>Total words</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH</td>
<td>123</td>
<td>62</td>
<td>61</td>
<td>6 (0.4)</td>
<td>10 (0.6)</td>
<td>1642</td>
</tr>
<tr>
<td>KP</td>
<td>118</td>
<td>69</td>
<td>49</td>
<td>27 (1.4)</td>
<td>30 (1.5)</td>
<td>1947</td>
</tr>
</tbody>
</table>

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**Figure 2** Voice transcribing clinic letters decreases their production time (p<0.00002).
or price of remote transcription compared with conventional onsite transcription.

The demonstrated efficiency and accuracy of voice transcription in this trial has resulted in Chelsea and Westminster Hospital procuring digital dictation for all outpatient work; to be followed by voice transcription, based on the Nuance Communications speech engine. This is expected to reduce the use of temporary secretarial staff, resulting in cost savings, and allow permanent staff to be redeployed in line with modern working practices. Similar cost savings could be made in other hospitals within the NHS.

Limitations

This paper shows good results in using electronic transcription compared with conventional methods of producing correspondence in outpatients. However, there are limitations associated with this study. Both authors were born in the UK: the ability of the software to recognise the voices of those with either strong regional or foreign accents is not known.

As this was intentionally designed as a real-world trial, it was not possible to completely isolate the secretary from distractions while performing the typing. The impact of these interruptions on the data analysis was minimised, however, as they occurred during both analogue and digital transcription.

An alternative methodology would have been to record and transcribe a script, using both analogue and digital methods, in a silent isolated environment. However, these results would have been less valid in everyday clinical practice, even though it is likely that the digital data would have shown an even lower error rate.

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Contributors

MH and KP were involved jointly in the trial conception, design, procurement of materials, staff education, collection of data, analysis and writing of the manuscript.

Competing interests

None.

Provenance and peer review

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References

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