Advantages and limitations of virtual online consultations in a NHS acute trust: the VOCAL mixed-methods study

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Scientific summary

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Background

Health services face rising costs as a result of increasing disease prevalence, high non-attendance rates and poor engagement by some patient groups (especially the disadvantaged and those with multiple and complex needs), resulting in poor health outcomes and greater use of emergency care. Outpatient care, particularly for people with long-term conditions, has changed little over the years and is now poorly matched to current demographics and patterns of chronic disease (e.g. rising multimorbidity, people living longer with complications, multidisciplinary team care). Current care models often fail to reliably provide responsive care when patients need intervention and/or support with self-care. Non-attendance leads to patients being labelled as 'hard to reach' and a tendency towards further disengagement. Many are then discharged from the service.

There is a strong policy push from the government to improve health care by better utilising digital technology and redesigning care pathways to allow the NHS to adapt to the modern world, while improving efficiency and patient self-management.

Our research on the DREAMS [Diabetes Review, Education And Management by Skype™ (Microsoft Corporation, Redmond, WA, USA)] study (funded by the Health Foundation) and other pilot studies indicated great potential for using video consultation services to help address the challenges facing NHS services. A handful of small randomised controlled trials (and one systematic review) have suggested that video consultations produce similar outcomes to face-to-face consultations in selected patients and conditions, and that patients find such consultations convenient and acceptable. Some studies have demonstrated cost-savings. However, the published literature is likely to have been strongly influenced by selection and publication bias.

To date, little research has been done on the sociocultural, political, technological and economic context for introducing alternatives to face-to-face consultations (macro level), the organisational challenges of implementing a new service model based on video consultations (meso level) or the fine-grained detail of how video consultations unfold (micro level). Insights at all these levels are needed to inform and support the development and scaling up of virtual consultation services.

Objectives

The aim of this study was to generate transferable new knowledge about the nature of virtual consultations and how these may be rolled out and routinised in public-sector health-care organisations. We sought to define good practice and inform its implementation in relation to clinician–patient consultations via Skype (and similar media), addressing the following objectives:

1. At the macro level, to build relationships with key stakeholders nationally and identify from their perspective how to overcome policy and legal barriers to the introduction of virtual consultations as a regular service option.
2. At the meso level, to illuminate and explore the sociotechnical microsystem that supports the virtual consultations, thereby identifying how organisations can best support the introduction and sustainability of this service model in areas where it proves to be acceptable and effective.
3. At the micro level, to study the clinician–patient interaction in a maximum variety sample of 30–45 virtual outpatient consultations in two clinical areas. In particular, to highlight examples of good communicative practice; to identify and characterise examples of suboptimal communicative practice; and to propose approaches for minimising the latter.

Our research questions were as follows:

1. Macro level – what is the national-level context for the introduction of virtual consultations in NHS organisations and what measures might incentivise and make these easier?
2. Meso level – how is a successful virtual consultation achieved in an organisation in which the processes and systems are mostly oriented to more traditional consultations?
3. Micro level – what defines 'quality' in a virtual consultation and what are the barriers to achieving this?

Methods

This study was designed to investigate the social and material interactions that take place between patients, staff members and technologies. We drew on strong structuration theory (SST), which proposes a dynamic and reciprocal link between the external social environment (political, sociocultural, technological, regulatory and so on) and human action; it considers how the relationship between them changes over time. The SST lens guided us to investigate questions about the implementation of virtual consultation services in situ. This led us to design a multilevel mixed-methods study of virtual consultations between patients and clinicians in three hospital departments (Diabetes, Antenatal Diabetes and Cancer Surgery: micro level), embedded in an organisational case study of the introduction and roll-out of this new service model (meso level), and taking account of the evolving national context (macro level) in the period 2015 to 2017.

At the macro level, we conducted key informant interviews with 12 national-level stakeholders, combined with document analysis. The meso- and micro-level research took place in Barts Health NHS Trust, a large, multisite acute trust in the east end of London, in which we have been working for several years to develop virtual consulting. We conducted > 300 hours of observations, combined with interviews with 24 staff members and document analysis. We combined this with descriptive and demographic data from each of the clinics (for instance, the number of patients offered the virtual consultation option). At the micro level, we used audio, video and screen capture to produce rich multimodal data on 30 virtual consultations involving 27 patients and seven clinicians from the Adult and Young Adult Diabetes clinic, the Antenatal Diabetes clinic and the Hepatobiliary and Pancreatic Cancer Surgery clinic. We supplemented this with audio-recordings of 17 matched, face-to-face recordings involving 17 patients and five clinicians, allowing us to make comparisons across face-to-face and virtual consultations. In both micro-level data sets, we sought maximum variation in clinical, social, ethnic and personal circumstances.

The macro- and meso-level analyses focused on surfacing historical and policy drivers for the introduction of virtual consultations, combined with mapping of the key interactions and interdependencies shaping implementation within the trust. The micro-level analysis involved close examination of verbatim transcripts of the video- and audio-recordings of consultations, using the validated Roter interaction analysis system (RIAS) to code and analyse different kinds of talk. The RIAS analysis used both qualitative coding and descriptive statistics to address five hypothesis-driven questions about the differences between virtual and face-to-face consultations for the same clinical condition:

1. Are remote consultations shorter and more 'to the point' than face-to-face ones?
2. How do they differ in the different kinds of (non-technology-related) talk that occurs?
3. What kind of technology-related talk occurs?
4. What kinds of breaches (misunderstandings, 'repairs' and so on) of talk occur in virtual consultations, when do such breaches occur, to what extent do they matter and how might they be reduced?
5. How do interruptions (in the patient's home and/or in the clinician's office) affect the flow of talk in the virtual consultation?

The study had a strong action research component in which data collected by, and with, the research team were fed back formatively to inform development of the service (e.g. when appropriate, we sought to support plans for the roll-out of virtual consultations across the hospital). We sought patient feedback

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on both the research process and the virtual consultation services via a dedicated patient advisory group with 12 patients (and one spouse) who met three times throughout the study, supplemented with ad hoc contact between meetings.

Results

At the macro level, we found that remote video consultation was viewed by policy-makers with much enthusiasm as a way of delivering health care efficiently to a population with rising rates of chronic illness at a time of progressively worsening funding pressures on the NHS. This perspective reflected a general confidence in the potential of technology to improve the efficiency and effectiveness of service provision. Policy-makers were concerned about information governance and patient safety; they anticipated that these important issues would be resolved by the development of guidance and standards. Our industry informants were cautiously enthusiastic about the technical potential for supporting virtual consultations. However, following a period of tension during and after the National Programme for IT (2005–10) they expressed concerns about the challenges of engaging either NHS England or local NHS organisations in the kind of collaborative partnership needed to evolve and embed complex technological solutions.

At the meso level, the reality of setting up and delivering the virtual consultation service in a busy NHS hospital trust (even when that trust had been a willing partner in the research proposal) was far more complex and difficult than policy-makers or industry (or the research team) had anticipated. Perhaps the most significant barrier to progress was the extreme pressure on human and financial resources. Clinicians and managers in every department were under pressure; key posts were unfilled; clinics were heavily booked; and the IT department, in particular, was reluctant to commit to supporting a major new technology initiative, because of severe staffing pressures. In all three clinics, the 'same' consultation when delivered virtually involved numerous and complex changes to key organisational routines (for booking the appointment, for doing and documenting the consultation itself and for arranging follow-up). Workarounds and ad hoc solutions were often required to get the Skype service up and running, and extending the new model of care to other clinics took far longer than had been anticipated. While some clinicians embraced the new technology with enthusiasm, others were unwilling to try it (mostly because they were 'too busy').

By the end of the study, the virtual option had become business as usual in the Adult and Young Adult Diabetes Clinic, but had evolved in a different way from the original plan: although around 4% of traditional outpatient appointments in this service were undertaken via Skype, the main use of this technology was for supplementary clinician-initiated and/or spontaneous patient-initiated encounters (e.g. as an ad hoc measure for keeping in close contact with patients who were undergoing a temporary period of instability or heightened need). Clinicians liked the ease with which vulnerable and 'hard to reach' patients could send a message via Skype, requesting a virtual encounter, allowing prompt clinical input that (in some cases) may have averted a serious complication or hospital admission. In the Antenatal Diabetes clinic, only one clinician ever used the Skype service (for 2% of her encounters), and it was abandoned after a pilot period. In this (extremely busy) clinic, virtual consultations aligned poorly with a context involving multidisciplinary teams (patients were typically consulting multiple clinicians across departments) with a relatively short-term but high-risk condition (gestational or pre-existing diabetes mellitus in pregnancy) and no access to integrated medical records (paper medical notes being held by the patient and so not being physically present at the clinician end). In the Hepatobiliary and Pancreatic Cancer Surgery clinic (a tertiary referral service), virtual consultations were popular and, generally, unproblematic for follow-up after cancer surgery (a time when it was neither convenient nor clinically recommended for patients to make a long journey to the clinic), and the proportion of all consultations undertaken remotely rose from 7% to 20% during the course of the study. In all virtual consultation services, there were multiple technical issues to be addressed. These were often easily resolvable, but not all patients (or staff) were sufficiently skilled or confident to undertake the necessary 'troubleshooting' to achieve and maintain the video connection.

In summary, virtual consultations appeared to work best for long-term conditions in which the clinician and the patient had a pre-existing relationship with a high degree of mutual trust and 'common ground'; when interdepartmental co-ordination over clinical care was not required; when the need for close physical examination could be excluded in advance; when there were clinical or practical barriers to the patient travelling; when both parties were confident and competent with technical issues; and/or when there was a pressing clinical need to have repeated contacts with the patient. In the (sometimes rare) circumstances in which key clinical, technical and practical preconditions were met, video consultations appeared to be safe and popular with both patients and staff.

At the micro level, our RIAS analyses showed that virtual consultations were, overall, slightly shorter than comparable face-to-face ones, even when taking account of the small amount of 'technical talk' at the beginning as the connection was established (around 3% of all talk). In both remote and face-to-face consultations, the clinician did more talking ('dominance') and exerted more control; differences in these variables between remote and face-to-face media were small and not statistically significant. Differences in the proportion of different kinds of non-technical talk that occurred were small and, generally, not statistically significant. One difference that was statistically (and probably also clinically) significant was that both parties sometimes needed to state things explicitly in a virtual consultation that remained implicit (and/or obvious to both parties) in a traditional face-to-face encounter. Many of these differences could be explained by material differences (e.g. absence of shared artefacts, such as the paper antenatal record).

We have developed significant expertise, standard operating procedures, information governance and technical guidance documents, protocols for setting up and running virtual clinics and a strong clinical management and administrative team. The work has attracted national policy attention and interest from other hospitals. A roll-out phase continues within the trust, and work is ongoing to extend the model to other trusts across the UK.

Conclusion

In the context of a strong policy push and industry interest to develop digital alternatives to the traditional consultation there are, in reality, multiple challenges to embedding virtual consultation services within routine practice in the NHS. In particular, it takes considerable and ongoing effort to co-ordinate and mutually adapt and align structures, processes and people, and interorganisational collaboration and sharing of knowledge and practices appears to be critical to service development. Virtual consultations fundamentally change the nature of outpatient care and require clinician buy-in (which may or may not be forthcoming). If our case study is typical, NHS organisations are currently not sufficiently configured or resourced to enable and facilitate these processes.

The findings of this relatively small study suggest that, even when a virtual consultation service has been established, many patients will either be unsuitable for this option or choose not to use it, so the assumption that face-to-face clinics will soon be replaced by virtual ones is probably premature. As predicted by theories of sociotechnical development, the functionality of Skype provided opportunities for clinicians and patients to use the technology adaptively and differently, with the result that in some, but not all, services, the remote consultation was not simply (or not always) a video version of the face-to-face consultation. Rather, and driven by a strong clinical commitment to improving access for vulnerable groups of patients, new modes of consulting co-evolved alongside creative and adaptive use of the Skype technology. That the functionality of this technology enables patient-initiated contacts direct to the clinician (via Skype messaging) has potentially far-reaching implications.

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