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Online consulting in general practice

It is time to make the move from disruptive innovation to mainstream service

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People are familiar with using digital technologies to make their lives easier. In comparison with the banking, retail and travel industries the health sector has been slow to adopt technological innovations but it is catching up. In 2017 the global digital health industry was worth £19bn ($25bn; €21bn) and there are reported to be over 320 000 mobile health apps in regular use.[1]

Online consulting is one of the fastest growing applications of the new technologies. In the US online consulting has been commonplace for over a decade and many health insurers, emboldened by some supportive research evidence,[2] offer such services routinely in an effort to reduce their costs. Similar services are now being established in general practice in the UK, driven by rapid developments in the supporting technologies, consumer demand for convenient and accessible services, and the need to find solutions to rising workload and constrained resources.[3]

In this paper we examine how online consulting is developing in British general practice and the emerging benefits and risks associated with it. We focus on the new text-based and video-based online technologies which are being used as an alternative to face-to-face consultations, rather than on the use of the telephone or emails, both of which have been available for many years. In addition, we explore a number of complex questions that the emergence of online consultations is raising for policy makers, practitioners and patients.

A rapidly expanding market

The online consultation market in UK general practice is expanding at pace; eConsult, Babylon, askmyGP, Dr Matt Ltd, Push Dr, Doctor Care Anywhere, GP at Hand, Anytime Dr, Dr-Plus and many others have been established in recent years. Most of the online systems have been developed by private entrepreneurs and some have significant backing from private investors.[4]

There is no independent national information about the relative uptake of these difference systems by individual patients or by service providers. Such data would in any case be rapidly out-dated as new providers emerge, change and disappear on a regular basis. In

December 2017, thirty-four online digital providers had been inspected by the health regulator, the Care Quality Commission (CQC), to provide services in England.[5]

Broadly speaking, three categories of online services are emerging. Firstly, systems such as eConsult or askmyGP are integrated into the electronic medical record systems of established general practices and the online service is provided by the practice staff as part of a comprehensive NHS-funded service. Secondly, systems such as GP at Hand offer online services delivered by clinicians operating separately from established general practice teams, though they might be working in a business partnership with established practices. The services are NHS-funded but may only be available to specified low-risk patient groups, or limited to specific activities such as prescriptions or fitness-to-work certificates. Some of these online providers offer follow-up face-to-face consultations when required. Thirdly, private services are available on a pay-per-consultation or payment scheme basis, or as an employment benefit. Examples of the first two categories are provided in the Box.

<<Insert Box about here>>

A growing number of online services are developing advanced technologies such as Artificial Intelligence (AI) and machine learning to support or replace decisions made by clinicians. Some commentators are skeptical that the potential impact of AI is being exaggerated and the benefits and risks of these innovations are hotly debated.[6]

Disrupting the established system

Digital online consulting and associated technologies such as AI may be described as a 'disruptive innovation' since it has the potential to disturb and perhaps displace current ways of working. Established power-brokers in the system are either promoting or responding to the disruption in different ways.

The UK government is promoting the use of new technologies as a central plank of its industrial strategy.[7] Policy makers see online consulting as a way of reducing GP workload and providing more accessible care at lower cost. For this reason they have provided financial support to increase uptake of online systems by established GP practices.[8,9] At the same

time there is a suspicion that policy makers are quietly encouraging private providers to shake up the established system.

Industry and private investors are making significant investments in both the technologies and the promotion of online services. They will expect a healthy return in the medium term from the UK and other developed countries and in the longer term from the growing middle classes in emerging economies.

Regulators, primarily CQC, the General Pharmaceutical Council and the General Medical Council, are playing catch up as online providers test legal and ethical boundaries. In their first round of regulation of online providers in 2016/17 CQC found only four of 28 providers were fully compliant with regulations and 15 required enforcement action due to a failure to meet fundamental standards.[5] Problems were highlighted with confirming patient identity prior to prescribing medication, unreasonable assumptions about mental capacity, failure to seek informed consent, poor safe guarding procedures and inadequate communication with patients' registered GPs.

The British Medical Association and the Royal College of General Practitioners state they are supportive of new technologies in principle whilst at the same time expressing concern about the negative impact of emerging online services on patient safety, equity and on the sustainability of the current model of general practice provision. Some question the legality and morality of emerging practices; one commentator criticised 'a cynical exploitation' of existing regulations relating to advertising and patient selection.[10]

Benefit and risks

Advocates and sceptics of online consulting are inclined to express highly polarised views about the benefits and risks for patients, carers, health professionals and the health system (Table).

<<Insert Table about here>>

Emerging evidence

Since the emerging models of on-line consulting are new, there is currently little rigorous research evidence from a UK general practice setting about their cost-effectiveness or adverse consequences. The relevance of international evidence in a field which, whilst technology enabled is highly culturally dependent, is questionable. Some commentators question whether conventional approaches to evaluation, particularly ones focused on linking rapidly changing interventions to outcomes, are incompatible with, or possibly detrimental to, a fast-moving innovation culture.[11, 12]

Notwithstanding these criticisms, the rapid growth of on-line consulting and its potential risks for patients and negative impact on established services suggests the need for a systematic approach to evaluation – not least because in the absence of rigorous research, anecdote and partial marketing data are being passed off as 'evidence' by those with commercial interests.

Research carried out in British general practice settings suggests that:
- Patients make use of online consulting services but the uptake is currently low (in one study 2 online consultations per 1000 patients per month)[13] particularly at weekends.[13,14,15] Most online consultations are conducted during normal general practice opening hours.[13]
- Online resources are most commonly used for administrative purposes (repeat prescriptions, test results, fitness-to-work notes). Musculoskeletal conditions and infections are the most common clinical reason for consulting.[13]
- Online consultations are more effective for discrete and straight-forward problems and less effective for complex ones.[13]
- 32% of online consultations result in a telephone consultation and 38% in a face-to-face consultation.[13]
- General practices are motivated to establish online services because they want to be seen to be progressive, and because they think it may be a way of managing demand [14], (Atherton H, personal communication, awaiting publication).
- General practice staff thought that online consulting added to rather than reduced their workload.[3,14]

Some additional insights can be gained from research carried out in related fields. There is evidence to suggest that the pace of uptake and the impact of new technologies in the health sector, such as NHS Walk-in Centres, was often overstated in the early days, their unintended consequences were poorly understood and they were more likely to generate demand than to reduce it.[16] In addition, telehealth technologies in general have less impact and higher costs than established care.[17] There is some evidence that new technologies are more effective when they are integrated within established services, rather than set up in parallel to them.[18]

Emerging issues

Whilst the current evidence base does not provide a glowing endorsement, the continued growth of online consulting is inevitable, whatever its merits and risks. Despite the hyperbole – one advertisement claimed *'(use our service and)* you will never go to the doctors again' - the roll out of online consulting is likely to be less disruptive than some people hope and others fear. Already online providers are developing partnerships with general practices, finding common ground with the regulators and considering offering their services for underserved population such as the homeless. Within a few years online services may well be fully embedded as a normal way of working within established general practices.

This is more likely to happen quickly and effectively if current initiatives are rigorously evaluated, in particular examining the impact on demand, workload and equity, and the evidence heeded. It is also more likely if health service staff are trained to use the technologies safely and to their full potential, if funding mechanisms are reformed to incentivise online services integrated with convention ones, and if regulators have more powers to address unacceptable performance, particularly when services are provided from geographical locations outside their jurisdiction.

The rapid growth of online consulting is surfacing some new ethical and philosophical questions. First, the established model of general practice is designed to provide comprehensive services for all patients in a geographical locality, a model which even when implemented imperfectly has been shown to deliver good outcomes at low-cost.[19] In contrast, private online providers detached from conventional general practices explicitly

segment the population, providing services primarily for the healthy working population and excluding people with long term conditions, multi-morbidity and mental health problems. Proponents argue that doing so frees up resources for the NHS to focus on those with greatest need and improves access for some historically poorly-served populations, such as adolescents. Opponents claim that it generates new demand and unrealistic expectations, and disadvantages groups who are unable to use online services. The impact of the new technologies on different population groups needs to be carefully evaluated.

Secondly, online provision of care adopts a different stance from face-to-face care on the balance between the sometimes competing domains of quality. When a patient is prescribed antibiotics for a sore throat by an online GP, without having access to the patient's records or an ability to examine the patient, the doctor may be preferencing patient access and experience over safety and cost-effectiveness. This may be what patients want but at present it is unclear whether they are making an informed decision.

Thirdly, encouraging, albeit implicitly, patients to pay for some online GP services touches on the on-going debate about how best to fund the NHS and raises concerns that such services may act as a vehicle for privatization of the NHS by stealth. The business model underpinning some of the private online providers is essentially one of co-payment, a model that challenges one of the founding principles of the NHS, that care should be free at the point of delivery.[20]

Finally, the provision of online services challenges established thinking about risk. In conventional face-to-face consultations the clinician holds most of the information necessary to manage clinical risk – the patient record, data derived from a full assessment of a condition, and clinical expertise. The clinician is therefore held in law to be responsible if something were to go wrong. Online consultations may be operating in a different arena. Patients have chosen knowingly or otherwise to seek help from a clinician who has less information at their fingertips. Online consultations may therefore be more risky for both parties but clarification is required about who bares this risk.

Online consulting in general practice presents real benefits for patients and opportunities for clinicians and for the health service. In this paper we have also highlighted some significant risks for all parties. These risks could be minimised by ensuring that rigorous evaluation

takes place and that people who use online services are fully informed, and by developing online services as an integrated part of established general practice and not in competition with it.

Key messages

- Opportunities to access GP care online are developing at pace and offer significant advantages for some patients over traditional models of service provision.
- Online services may also be unsafe for patients, exacerbate inequalities and risk destabilising established services.
- The benefits are more likely to be realised and the risks minimised if online services are integrated into the established model of general practice, rather than set up in competition with it.

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Table: Potential impact of on-line consulting on different dimensions of quality of patient care and health system functioning

Dimension	Benefits	Risks
Access	• Better access for people less able to attend a clinic in person - employed, family commitments, mobility problems • Better access for people for whom personal care is less important • Greater opportunities to consult in different languages	• Poorer access for people who are unable or less able to use IT • Poor access for those without high speed broadband
Clinical effectiveness	• Suitable for presenting conditions which do not require physical examination • Development of artificial intelligence (AI) may improve decision making process [1] • Online consultations may be helpful precursor to traditional consultations	• Unrealistic expectations of capability of new technologies [17]
Safety	• Better access to care for those who are able to use online technologies but are unable or unwilling to use current services and are at risk as a consequence (e.g. adolescents with mental health problems, people with sexually transmitted diseases, or frail older people who are at risk of falls if they attempt to travel to a clinic)	• Lack of reliable access to patient records for past history, allergies and medications may increase risks • May miss important diagnoses when unable to conduct full assessment • Suggestions of a tendency to over-prescribe, particularly antibiotics and analgesics • Higher risk of identity fraud [5] • Risks of breaches of confidentiality [5] • Risk of poor communication between online provider and registered practice [5]

		• Risk of multiple providers with different opinions • Risk of patient non-compliance with medication if diagnosis is provided remotely rather than face to face
Patient-centredness	• Improved convenience • Opportunity to record and replay consultations	• More challenging to deliver personalised, whole-person and continuity of care • Clinicians may feel threatened by increased risk of legal challenge when consultations recorded
Equity	• May facilitate access to some hard-to-reach groups e.g. adolescents	• Risk of 'cherry-picking' i.e. providing services only for those with least need • May have negative impact on more vulnerable people
Efficiency/finance	• Potentially more efficient use of expensive workforce • Public-private partnerships may increase available resources for care • Development costs do not have to be met by the public sector	• Undermines sustainability of current funding system [10] • May increase prescribing [21], investigation and referral rates and therefore costs • Substantial set up costs for NHS to bring IT hardware up to required specification
Workforce	• Popular flexible way of working for some clinicians, thereby improving workforce recruitment/retention and morale	• Training requirements of on-line care provision uncertain • Risk that clinicians may choose to work online in preference to face-to-face settings, increasing workforce crisis • Implications for type and cost of indemnity unclear • Risk of professional isolation

		• Inadequate regulatory oversight of workforce [5]
Workload	• May help to manage current workload in more efficient way	• May generate new and unfunded demand for NHS services • May increase demands from the 'worried well' • May compromise recruitment to general practice and primary care.
Public support for the NHS	• Boost NHS reputation for responsiveness and engagement with technology	• May lead to increased privatisation of NHS and reduced support for publicly funded health system. • Evidence of effectiveness in reducing patient demand on stretched services is unclear.
Ethics	• An efficient way of dealing with low priority workload and so frees up time for people with greater need • Better access to services for currently disadvantaged groups who are able to use online services but do not access conventional services • Online services may encourage those tax payers who are low need but high demand to continue supporting a universal service	• Risks promoting 'cherry picking' rather than provision of comprehensive service • Challenges to established models of data governance [5] • Patients may not be aware of how their information is being used beyond direct provision of care • Risk of upselling of products • Risk of increasing patient expectations and patient dependency on digital technology

Box: Examples of online services

eConsult

eConsult is a digital platform developed by a group of GPs in London and launched in 2014. It delivers a range of online services including symptom checking and self-help information for patients, signposting to services outside the practice, and text-based consultations. Patients are invited to complete a 'responsive' online form which seeks information tailored to the patient's demographic and presenting problem. The technology bolts onto the practice's existing website and is linked to the patient's medical record, and the consultation service is provided by existing practice staff. Information provided by the eConsult team suggests that online consultations last on average for 3 minutes and 70% of presenting problems can be managed remotely. eConsult is currently used in 388 practices across the UK and is available to 3.5 million people.

askmyGP

askmyGP is a digital GP-led online service launched in March 2015, developed by a team led by Harry Longman, an engineer with a background in systems thinking. The main focus of the technology is to enable triage of patient contacts and management of flow, carried out by the patient's own GP. According to data provided by askmyGP, about two-thirds of requests can be managed remotely, and one third face-to-face.   The technology is currently used by 15 practices covering over 100,000 patients; about 2000 online requests are received per week. Online consultations are only one component of the whole systems change programme offered by askmyGP.

GP at Hand

GP at Hand is an online service launched in November 2017, delivered by the technology company Babylon in partnership with an NHS general practice in West London, and now expanding to additional locations in other parts of London. The practice utilizes flexibilities within the GP contract to register patients living outside their usual geographical area. The service had proved highly popular, with the registered practice population increasing from 4970 at the beginning of November 2017 to 16,117 just two months later. 90% of the new

registrants are aged between 20 and 44. Although GP at Hand says it offers all core NHS services, they state that online services are 'less appropriate' for people who are frail or elderly, pregnant, have serious long term illnesses or major mental health problems, leading to claims that they are selectively choosing to register healthy people. The service is designed for use with smart phones, though face-to-face appointments are also available in a limited number of centres across London. Consultations can be replayed after they have taken place. Symptom checker services are available and Babylon claim that their technologies are making increasing use of Artificial Intelligence. An independent evaluation is currently being commissioned by NHS London.