Digital-first primary care: a rapid evidence synthesis

Initial Scoping Work and Protocol

Background

NHS England uses the term 'digital-first primary care' to refer to delivery models through which a patient can receive the advice and treatment they need from their home or place of work via online symptom checking and remote consultation.[1] In these models, the patient's first point of contact with a GP is through a digital channel rather than face-to-face consultation, though the latter may remain an option if required.

Since 2015, NHS England has invited a number of organisations to become New Care Model Vanguard sites, each "taking a lead on the development of New Care Models, which will act as the blueprints for the NHS moving forward and the inspiration to the rest of the health and care system".[2]

For Vanguards focusing on implementing digital solutions, NHS England's *Harnessing Technology* workstream seeks to provide support to these organisations, "to rethink how care is delivered, given the potential of digital technology to deliver care in radically different ways, [and] help organisations to more easily share patient information".[2] The Health Innovation Network was commissioned by the Harnessing Technology workstream to undertake a review of the evidence base for technology-enabled care services. The review, which was published in 2017, looked for evidence on on SMS, video consultation, digital health apps, web-based interventions, and telemonitoring.[3]

However, this review did not look exclusively at digital innovations in primary care, particularly 'digital-first primary care' as conceptualised by NHS England. As digital-first services have increased in number and reach, so have questions about the implementation and effects of such services. For example, the implications of digital-first primary care for general practice payments was the subject of a national consultation undertaken in July-August 2018.[1]

NHS England initially approached the HS&DR evidence synthesis centre to help identify published evidence of potential relevance to digital-first primary care. An iterative process of scoping the literature was agreed. The first stage to scope and summarise existing evidence was undertaken and the findings discussed with NHS England, resulting in further refinement of the research questions of interest to be undertaken in the second stage. The progress in Stage 1 and planned methods for Stage 2 are described below.

Stage 1: Scoping and summary of the evidence

Identification of evidence

Searches were conducted for evidence syntheses related to digital alternatives to face-to face consultations in primary care (see Appendix). No date or geographical restrictions were applied. In addition to records directly focused on alternatives to face-to-face communication, searches also identified related reviews addressing broader issues around digital innovation in primary care including computerized clinical decision support systems, 'e-health' and electronic health records. The following databases were searched up to 4th July 2018:

- Medline
- Cochrane Database of Systematic Reviews
- Database of Abstract of Reviews of Effectiveness (DARE)
- HTA database
- PROSPERO

The database searches were supplemented by searching relevant research, policy and government websites, as well as a search for any potentially relevant ongoing or completed projects funded by the NIHR HS&DR programme.

Selection criteria

Records identified by the searching process were screened on title and abstract for relevance against the following criteria:

Population: alternatives to face-to-face communication between any primary care medical staff and i) patients (or their caregivers) of any age and/or (ii) other medical professionals.

Interventions: any form of non-face-to-face interaction including e-mail, online/video, messaging, AI led systems and telephone consultations or triage. Reviews focusing predominately or solely on the following were excluded:

- Improving adherence to treatment or rates of attendance through the use of reminders
- Remote monitoring or self-management of conditions without some form of two way interaction being a key component
- Remote treatment, coaching or rehabilitation focused interventions, for example, remote therapy for mental health conditions.

Outcomes: impact on care in terms of effectiveness and safety; patient access/convenience; system level efficiencies and related issues such as workforce retention, training and satisfaction. In terms of patient access, this includes a better understanding of which patients are able to use digital consultations and what conditions are/are not appropriate for non-face to face engagement.

Study design: systematic reviews, meta-analyses and other forms of evidence syntheses. Reviews could include primary studies of any design. Though the searches focused on evidence syntheses, any related primary studies encountered were also included where relevant.

Results of the initial scoping work

In total, 2846 records were retrieved and screened, and 92 included. All the included documents were summarised in a brief narrative overview alongside a spreadsheet that could be ordered or filtered according to the following characteristics:

- Reference number
- Author
- Funder/Document source
- Country
- Year
- Title
- Nature of document (e.g. Primary study, systematic review, review of reviews, realist review, call for proposals)
- Publication status (published, ongoing)
- Technology(ies) of interest

- Primary focus of document (e.g. primary care, emergency care, health care in general)
- Health condition(s) or population of interest
- Nature of evidence: effects (e.g. efficacy/effectiveness/risks/harms), implementation (e.g. enablers/barriers), cost-effectiveness, qualitative data
- Link to full text (where available)
- Notes

Summary of key evidence from scoping work

- There are many reviews of digital alternatives to face-to-face consultations, however many are primarily concerned with "mainstream" technologies such as telephone consultation/triage. Only a minority specifically focus on primary care.
- Most very narrowly evaluate the introduction or use of a class of technology (e.g. internet video consultation) rather than the integration of such technologies as part of a broader reorganisation or reimagining of services.
- The Technology-enabled care services (TECS) review commissioned by NHS England and published in April 2017 provides a good overview of these broader reviews, and discusses the available evidence in the context of the New Care Models Vanguard sites.[3]
- As noted in the TECS report, there does not appear to be any good published evidence looking at the "next generation" forms of technology (artificial intelligence, big data analytics, next-level messaging platforms, blockchain etc)[3]
- A November 2016 report by the Nuffield Trust, while not a formal evidence synthesis, cited a small amount of "evidence of impact" relating to wearables/monitoring technology, online triage tools, online information/advice/targeted inteventions/peer support, online booking/transactional services, remote consultations, online access to records/care plans, and apps.[4]
- Much of the most recent work relevant to digital-first consultations in primary care has been undertaken by Helen Atherton from Warwick Medical School. Among other publications, she has co-authored two recent (February 2018 and June 2018) NIHR HS&DR-funded projects on the potential of alternatives to face-to-face consultation in general practice,[5-7] and the role of digital clinical communication for NHS providers of specialist clinical services for young people.[8-10] The first of these included a realist review to identify explanations of why and how various alternatives to face-to-face consultations might work (or not) in primary care. The second aimed to provide an overview of how video is actually being used in health-care settings, by reviewing the existing published reviews. An ongoing NIHR-funded systematic review to explore patient and clinical experiences with two-way synchronous video consultations in healthcare is due to be completed by this group in July 2019.[11]
- In addition to the Warwick projects, the NIHR HS&DR programme has funded a systematic review of digital and online symptom checkers and health assessment/triage services. This work is being completed by the NIHR HS&DR Evidence Synthesis Centre in Sheffield. We have corresponded with the authors who say that, while the remit was limited to systems that attempt to direct people to appropriate services based on information about their symptoms, some of the studies looked at these as part of broader digital primary care systems. This systematic review searched for evidence on both generic and named systems (e.g. askmygp, webgp, webMD, GP at hand, Push Doctor, Engage Consult), and is currently undergoing peer review, though the authors would be happy to share the final draft report.[12]

- Our searches also encountered several recent or ongoing primary studies that have been conducted alongside evidence syntheses. Though not focused on primary care, a recently published NIHR HS&DR study (June 2018) used multilevel mixed-methods to examine remote video consultations in three contrasting clinical settings (Diabetes, Antenatal Diabetes and Cancer Surgery) in a NHS acute trust.[13]
- We also identified two currently open NIHR calls for proposals (Digital Technologies to Improve Health and Care;[14] and Evaluating the Digital 111 Offer: NHS 111 Online).[15]

Stage 2: Narrowing the evidence base: rapid evidence synthesis

Revised research questions

After examining the initial scoping material, NHS England refined their initial list of questions to the following:

1. What are the benefits of digital modes and models of engagement between patients and primary care? To patients, GPs, the system?
    - As GP workload and workforce is the main threat to primary care, how do we use these innovations to alleviate this, rather than only increase patient convenience and experience?
    - Which patients can benefit from digital (online) modes and models of engagement between patients and primary care
    - What channels work best for different patient needs, conditions?
    - Are there differences in synchronous and asynchronous models?
2. How to integrate "digital first" models of accessing primary care within wider existing face to face models
3. How to contract such models and how to deliver: what geography size, population size

We will conduct a rapid synthesis of the most relevant evidence identified in the scoping exercise (stage 1) to establish whether and to what extent these questions can be answered by the identified research.

Revised selection criteria

To understand what evidence might be available to address each of these questions, we will further refine the list of documents to the following:

a) Systematic reviews/evidence syntheses focused on the use of digital (online) modes and models of engagement between patients and primary care. (Where multiple systematic reviews are available on the same topic, higher quality reviews that discussed their findings in relation to a UK/NHS context will be prioritised)
b) Primary studies and ongoing research focused on the use of digital (online) modes and models of engagement in any healthcare setting

Where evidence is available to address one of the above questions, the relevant results/conclusions will be extracted. Where no evidence is available from the included documents, this will be made clear.

Selection procedure

All records will be screened by two reviewers, with disagreements resolved by consensus or consulting a third reviewer.

Data extraction

For each included record, data will be extracted on study/review methods, type of digital intervention, patient population(s), outcomes, and authors' conclusions. Data will be extracted by one reviewer and checked by a second.

Critical appraisal

Critical appraisal of included evidence will be facilitated by relevant assessment tools and reporting standards. These will include the Database of Abstracts of Reviews of Effectiveness (DARE) database selection criteria for systematic reviews,[16] the RAMESES standards for the reporting of realist syntheses,[17] the CASP checklist for qualitative research,[18] and any other methodology-specific tools. Assessments will be conducted by one reviewer, and checked by a second. These appraisals will inform conclusions about the internal and external validity of included research results.

Synthesis

The seven research questions identified by NHS England will form the basis of a thematic framework. Where empirical evidence and/or related conclusions are identified in the evidence, they will be coded, grouped and synthesised according to the following themes

1. Benefits of digital modes and models of engagement between patients and primary care

1.1 Issues relating to GP workload and workforce

1.2 Patients subgroups that can(not) benefit

1.3 The effects of different channels for different groups/settings

1.4 Differences between synchronous and asynchronous models

2 Integration of digital-first models within wider existing face to face models

3 Issues relevant to contracting delivering digital-first models (e.g. geography size, population size)

External engagement

As described above, this work was conducted for NHS England, who were contacted at the start and end of each major iteration of the project.

Dissemination plan

An evidence synthesis briefing/report will be submitted to NHS England and a follow-up call arranged to establish whether a third stage will be required. If not, the research team will investigate whether the information provided in this brief bespoke evidence synthesis would be of value to audiences beyond NHS England and consider alternative outputs and channels for the findings.

Timelines

	June	July	August	September	October	November
Initial teleconference						
Searching						
Initial scoping exercise						
Submission of scoping report						
Follow-up call with NHS England to describe findings						
Revised questions and timelines agreed with NHS England						
Rapid evidence synthesis						
Submission of rapid evidence synthesis report						
Follow-up call with NHS England						

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Appendix: Scoping searches

Searches were conducted for reviews related to digital alternatives to face-to face consultations in primary care. No date or geographical restrictions were applied. In addition to records directly focused on alternatives to face-to-face communication, searches also identified related reviews addressing broader issues around digital innovation in primary care including computerized clinical decision support systems, 'e-health' and electronic health records. The following databases were searched up to 4th July 2018:

- Medline
- Cochrane Database of Systematic Reviews
- Database of Abstract of Reviews of Effectiveness (DARE)
- HTA database
- PROSPERO

In addition, the following online sources were searched for relevant documents:

- AHRQ Health Information Technology (https://healthit.ahrq.gov/)
- Deloitte (https://www2.deloitte.com/uk/en/pages/life-sciences-and-healthcare/solutions/deloitte-uk-centre-for-health-solutions.html)
- EU digital single market website (https://ec.europa.eu/digital-single-market/)
- EU reports and studies on e-health (https://ec.europa.eu/digital-single-market/en/reports-and-studies/75992/3553)
- European ehealth survey (https://www.himss.eu/himss-analytics-annual-european-ehealth-survey)
- Good e-health (http://good-ehealth.org/)
- Health Foundation (https://www.health.org.uk/)
- Health Innovation Network (https://healthinnovationnetwork.com/)
- HealthIT.gov (https://www.healthit.gov/)
- HIMMS Europe (https://www.himss.eu/)
- mhealthevidence (https://www.mhealthevidence.org/)
- Nesta (https://www.nesta.org.uk/project/digital-health/)
- NHS Digital (https://digital.nhs.uk/)
- NHS England (https://www.england.nhs.uk/gp/gpfv/)
- NIHR Journals Library (https://www.nihr.ac.uk/research-and-impact/research/journals-library.htm)
- NIHR Ongoing research – obtained via NIHR HS&DR
- NIHR School of Primary Health Research (https://www.spcr.nihr.ac.uk/)
- Nuffield Department of Primary Care Health Sciences, University of Oxford (https://www.phc.ox.ac.uk/research/research-themes/digital-health-and-innovation)
- Rand Corporation (eg: https://www.rand.org/randeurope/research/projects/benchmarking-ehealth-among-general-practitioners.html)
- Royal Australian College of General Practitioners (https://www.racgp.org.au/your-practice/ehealth/additional-resources/racgp-technology-survey/ and https://www.racgp.org.au/your-practice/ehealth/)
- The King's Fund (https://www.kingsfund.org.uk/)
- The Nuffield Trust (https://www.nuffieldtrust.org.uk/)
- UCL Institute of Digital Health (http://www.ucl.ac.uk/digital-health)
- US NIH on health informatics (https://www.nlm.nih.gov/hsrinfo/informatics.html)

- World Health Organisation (eHealth: http://www.who.int/ehealth/en/)
- NIHR database of projects