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Pan-London research on the shift to remote consultations during the COVID-19 pandemic: lessons learnt

Report for NHSE&I London's Clinical Advisory Group (LCEG)

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Background

In response to the COVID pandemic, a move to remote consulting for routine primary care and outpatient NHS appointments was mandated in March 2020. The London Clinical Executive Group (LCEG) invited London NIHR Applied Research Collaborations (ARCs) to conduct research-grade evaluation of the impact of this shift in London to inform whether and how remote consultations should continue to be scaled and spread post-pandemic, focusing on cardiology and mental health as exemplar pathways. Quantitative methodology sought to explore patterns of healthcare use, health care efficiency, and clinical outcomes using publicly available datasets and de-identified patient-level health records datasets in North-West (NW) London (WSIC) and South London (CRIS, LDN, KERRI, GERRI) to cover as a minimum the period from November 2019 to December 2021. Qualitative interviews with 34 primary care and cardiology clinicians and patients with experience of remote consultations for mental health in primary care and cardiology in secondary care sought to develop a more in-depth understanding of the collective experience of the move to remote consulting.

Key findings

Key findings relevant to the appropriate ongoing use of remote consultations were:

Developing a learning system

1. ARC Northwest London and ARC South London partners have begun an ongoing collaboration to evaluate the impact of remote consultations across regional datasets in each healthcare sector. We are now well placed to further pilot and refine our evaluation methodology in academic collaboration with the London Health Data Strategy (LHDS), with a view to supporting London's decision making in the future.

2. The collaboration identified challenges with data availability including relevant measures of remote consultation and impacts, delays to access and comparability across settings. There is also a relative lack of people with the required experience and skills in data extraction from complex source data.

Offering remote consultations

3. Telephone consultations were the predominant form of remote consultation across all settings and interviewees.

4. Both patients and clinicians accepted remote consultations as part of a hybrid model of care delivery for the future, identifying situations in which it could appropriately meet the need of both patients and clinicians. (N.B. COVID restrictions meant all interviews were conducted remotely, with all interviewees able to access Zoom teleconferencing).

5. Remote consultations were believed to work best when clinician and patient had previously met face-to-face.

6. It was suggested remote consultations work less well for certain populations e.g., recently arrived migrants, those with cognitive and sensory impairment, and those with limited spoken English.

7. Both patients and clinicians expressed the view that patients should be able to choose between a remote and face-to-face consultation.

8. **In primary care** minor issues can be addressed by telephone consultation, however it is important to have the capacity to rapidly convert to a face-to-face appointment. Video consultations were rarely used, GPs cited technical frustrations and minimal perceived advantages.

9. **Cardiology** staff in our sample (nurses and allied health professionals) expressed a preference for video over telephone consultations although in practice use was significantly restricted by challenges of technology, and access to appropriate space and equipment.

10. By the end of 2021, only 2% of all hospital outpatient appointments (across all specialties) were recorded as occurring via video.

Ensuring inclusion

11. In NW London, older people and those living in more deprived areas were more likely to have face-to-face than remote hospital outpatient appointments. Further exploration is needed to understand whether this is replicated in primary care, and whether it reflects individual-level patient/clinician choice, differences in service provision or other factors.

12. Despite differences in relative use of face-to-face appointments, overall hospital appointment numbers (for face-to-face and remote combined) have now recovered to levels forecasted based on pre-pandemic trends, and there was no evidence of inequality in appointment numbers by age, ethnicity or socioeconomic deprivation during the pandemic in NW London.

13. Concerns were expressed about the possible exclusion of some people by widespread use of ‘digital first’ access to care.

Healthcare efficiency

14. Hospital outpatient appointments booked as remote were significantly less likely to be cancelled (either by patients or hospitals) or to be missed in NW London.

15. Primary care appointments that occurred via telephone more frequently occurred on the same day they were booked compared to face-to-face appointments – although further research is needed into whether remote consulting increases the need for repeat appointments.

Building skills

16. Clinicians and patients have had to adapt quickly to remote consultations and to manage privacy, confidentiality and clinical decision-making in that context, having not had access to any formal training or support.

Recommendations

1. The development of the London Health Data Strategy (LHDS) is important to support secure analysis of health and care data in London. Although this is currently unable to support all our queries, our work complements and builds on their approach. We seek LCEG **support to build an ongoing academic collaboration, aligning with LHDS and the Health Data Research-UK** strategy (see **Quinquennial Review**) of designing high-performance Research Data Services to unite health-relevant data, as **a key next step**.

2. Remote consultations have been accepted by both patients and staff, but their appropriateness varies according to a combination of service, patient, purpose, and wider contextual factors that can be unique to each consultation. Organisationally, services need to be configured so that **choosing the mode of consultation** is possible for **both patients and clinicians**.

3. Video may have potential to improve quality of remote interaction if technological and logistical challenges are addressed, particularly in secondary care appointments. For some patients however, **accessibility constraints** (of the technology, or having the place and space to consult) are likely to persist and **for these patients, face-to-face consultations may be the most appropriate** first point of contact.

4. We have identified some variation in mode of consultation by patient demographics (e.g. age and deprivation) although understanding the reasons for these requires further exploration. As hybrid models are implemented it will be **important to monitor patterns of use across demographic groups** (e.g. as part of health equity audits) to ensure services are meeting the needs of all patients.

5. Clinicians should be supported to access **formal training** that continues to develop clinical skills to consult remotely, building on the experiential learning that has taken place. Similarly, **resources** should be made available to **support patients** to access healthcare using digital means where appropriate.

Introduction

In March 2020, the NHS Chief Executive wrote to all health care providers and commissioners, instructing them to roll out remote consultations for all routine Outpatient (OP), GP and diagnostic appointments where safe to do so, to help reduce the spread of COVID-19, supported by a funded programme in England to implement video consultation capability in all NHS provider trusts.

The London Clinical Executive Group (LCEG) asked the London Applied Research Collaborations (ARCs) to undertake research-grade evaluation of this shift in London to inform whether and how to integrate this practice into future development of services and to scale and spread as appropriate. Mental health and cardiology were selected by LCEG as exemplar clinical pathways, looking across primary and secondary care settings.

Definition of remote consultations

Qualitative interviews focused on consultations occurring via telephone or video as per the original steer from LCEG. Quantitative definitions were based on available data which defined remote consultations as occurring via video, telephone or online platforms (NHS Digital primary care appointment data) or 'telephone or telemedicine' (SUS data). Where possible, telephone and video/online consultations were separated for specific analyses.

Report overview and approach

This report presents mixed-methods findings from both quantitative and qualitative approaches. Findings have been triangulated with summaries of recently published work to develop key messages.

The **quantitative study** aimed to:

1. Establish methodologies to use routinely collected observational data to evaluate the shift to remote consultations in a manner which is replicable over time and consistent across sites in London, focusing on observed service utilisation, healthcare efficiencies and clinical outcomes.

2. Test these methodologies within cardiology and mental health pathways in North-West (NW) and South-East (SE) London in three domains:

    a. Patterns of healthcare use

    b. Health care efficiency

    c. Clinical outcomes

3. Identify modifiable recording gaps existing in current data and feed these back to LCEG. Pan-London aggregated datasets provided context and high-level comparison (NHS digital primary care data[1]; Secondary Uses Service data[2]). Pseudonymized patient-level data were explored for granular analyses for NW London (via WSIC) and South-East London (via CRIS, LDN, KERRI and GERRI) to cover the period November 2019 to December 2021. Analyses of patient-level data were possible only with NW London datasets within the timeframe of this report. Full details of the statistical methods are in the accompanying full quantitative report.

The **qualitative study** aimed to:

1. Explore perceptions and experiences of accessing or providing care remotely during the pandemic.

2. Identify factors that have influenced those experiences.

3. Assist decision-making about the future use of remote consultations.

Interviews focussed on **mental health in primary care and cardiology in secondary care** to ensure sufficient data across primary care, secondary care, mental health and cardiology. Between February and March 2022, we interviewed 15 primary care staff, 5 primary mental health care patients, 5 cardiology staff, and 9 cardiology patients. Recruitment was via email and interviews were held via Microsoft Teams or Zoom. Interview data were subjected to qualitative thematic analysis.

The **summary of other research studies** aimed to:

Systematically identify other UK studies exploring the impact of the use of remote consultations during the pandemic at the service and patient level.

Due to the rapidly changing field the review was done as we analysed our data to capture the work being done in parallel with our study. The review enables an assessment of our findings in relation to the those from studies from other parts of the UK.

Patient public and stakeholder involvement

Stakeholder feedback was collated via cardiology and mental health clinicians, and primary and secondary care data experts. Patient and public input was established through workshops focussing on the key research questions, which were agreed with a panel of PPIE members.

[1] **NHS Digital. Patients Registered at a GP Practice. 2022**

[2] Supplied by NHS England and Improvement as monthly aggregated counts by NHS secondary care provider, main specialty, attendance status (attended, did-not-attend, unknown), and mode (remote, F2F, admin, unknown), with small number suppression applied for low aggregated counts.

Quantitative study – key findings

Key findings are highlighted below. The full set of evaluation findings are presented in the quantitative report (attached).

General Practice appointments

1. The percentage of remote appointments rapidly increased in March 2020, peaking in April and declining thereafter across all London regions. By late 2021 more than half of GP appointments were face-to-face (*NHS Digital data*, full report pages 8 and 14).

2. Lack of GP appointment data in WSIC prevented analysis of consultation numbers, modality and equity of appointment provision for NW London. Following feedback and discussions with the WSIC team, plans are in place to make these data available for future research.

Secondary care outpatient appointments

1. There was rapid adoption of remote outpatient appointment modalities early in the pandemic across London (all specialties), with greater relative use of remote consultations over face-to-face coinciding with peaks in COVID-19 incidence (Figure 1).

2. The percentage of all outpatient appointments which were remote has remained at around 20-25% in 2021. A similar pattern was seen in cardiology services (Figure 2). In mental health services, use of remote consultations was significantly higher at above 50% early in the pandemic but has been declining over 2021 (Figure 3).

3. Remote appointments were mostly telephone appointments. Across all specialties and Trusts the percentage of all outpatient appointments recorded as video consultations in London peaked in June 2020 at 6.5% and has declined since, with only 2% of all hospital appointments via video in December 2021 (see full report page 22).

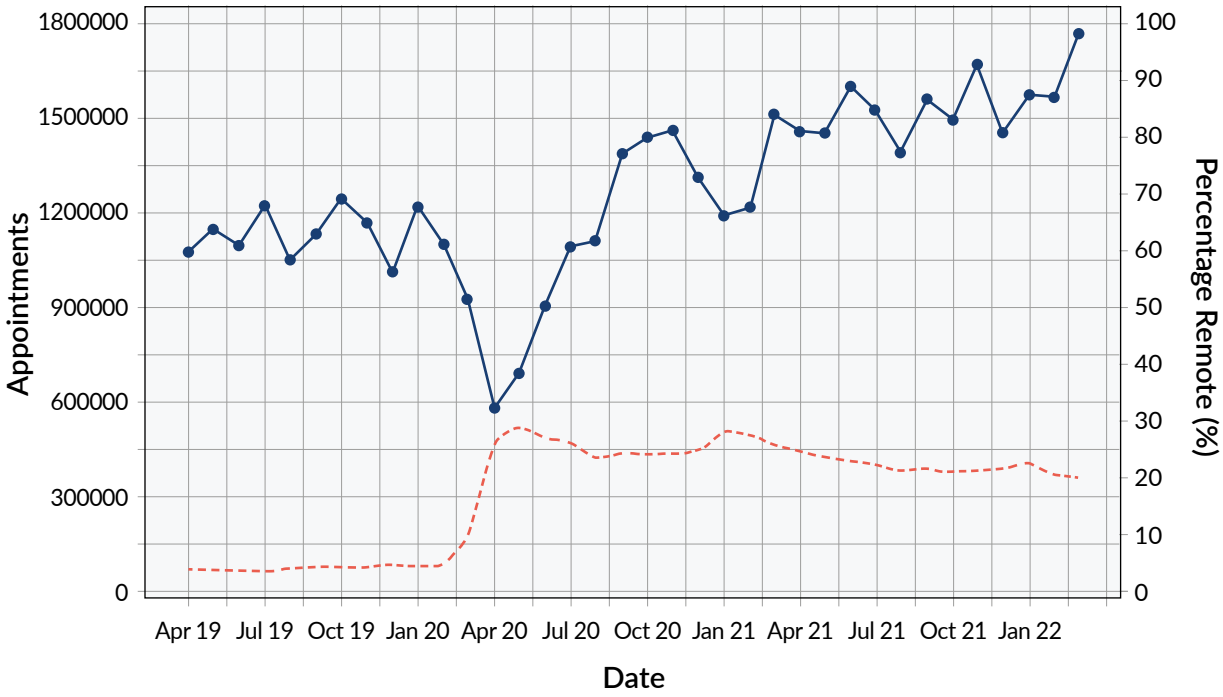


***Figure 1** – Total hospital outpatient appointments per month, April 2019 to March 2022 (all specialties) and percentage of appointments that were remote (red dashed line). Includes data from all London Trusts. Source: Secondary Uses Service data*

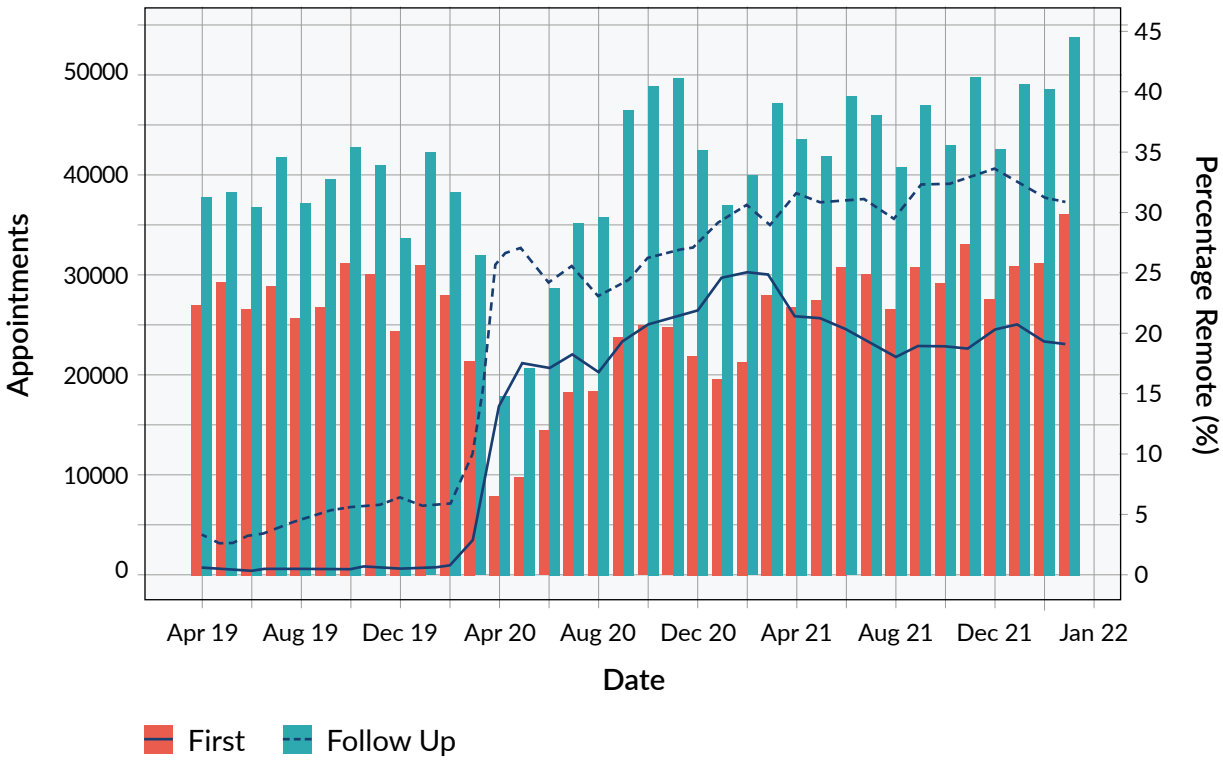


***Figure 2** – Total cardiology outpatient appointments by first or follow-up appointment and percentage remote appointments per month, April 2019 to March 2022. Includes data from all London NHS secondary care providers of cardiology services. Source: Secondary Uses Service data for London.*

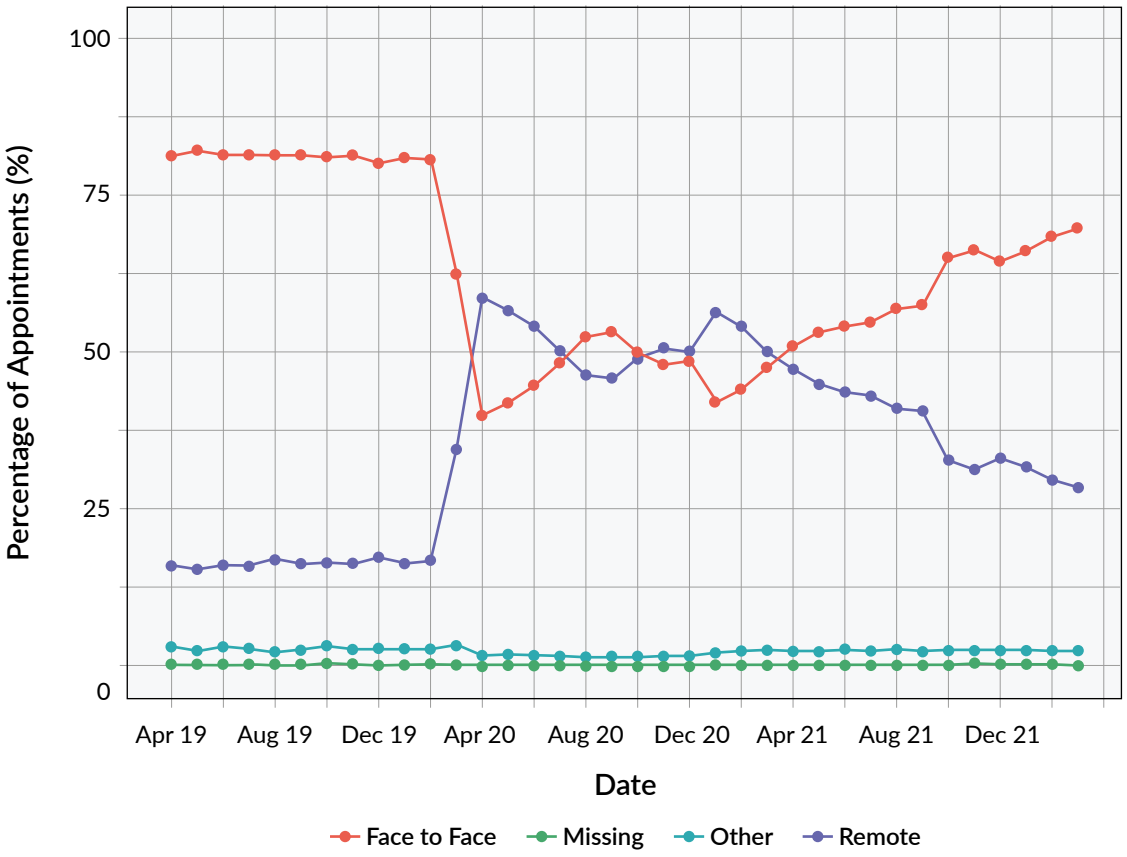


***Figure 3** – Monthly total mental health and community Trust outpatient appointments by mode, April 2019 to March 2022. Includes data from all London NHS secondary care providers of mental health services. Source: Secondary Uses Service data.*

Factors associated with use of face-to-face and remote appointments

1. Within hospital outpatient appointments in NW London, analysis in WSIC of patient factors associated with use of remote consultation across all specialties (see full report pages 34-42) revealed that:

    a. People aged 80 years or over, and women aged 18-39 years were most likely to have face-to-face appointments compared to other groups, across all specialties combined.

        i. Associations in women aged 18-39 years were explained mostly by greater use of face-to-face follow-up appointments in maternity services.

        ii. Associations with age were similar for both first and follow-up appointments.

b. There was a strong trend towards greater use of face-to-face appointments in people living in areas of higher socioeconomic deprivation, and greater use of remote appointments in people living in areas of lower socioeconomic deprivation.

    i. Associations with deprivation persisted throughout the time periods examined.

    ii. Associations were similar for follow-up appointments, but for first appointments, there was no clear trend with deprivation.

c. People with a higher number of long-term conditions (LTCs) were more likely to use remote consultations than those with no LTCs.

d. Looking at cardiology and mental health outpatients specifically, some of these associations varied.

    i. In mental health clinics (within a single hospital Trust in NW London), associations between age and use of remote consultations were less clear, but there was a stronger association of increasing likelihood of face-to-face with increasing deprivation.

    ii. In cardiology clinics, there was a strong trend towards greater use of face-to-face appointments in older age groups but a less clear relationship with deprivation.

Whether these associations are explained by choices made by patients or clinicians, access policies at particular services or Trusts, or confounding by other factors (such as disease or severity) is not clear and requires further evaluation.

2. In a time-series analysis in NW London acute hospital Trusts, across different age groups, ethnicities, and quintiles of socioeconomic deprivation, total outpatient appointment numbers (remote and face-to-face combined) for all patient groups have returned to levels forecasted based on pre-pandemic trends from September 2016 – January 2020, with no evidence of any persisting inequality in expected appointment numbers (see full report pages 30-31).

Healthcare efficiencies

1. Hospital outpatient appointments in NW London booked as remote were significantly less likely to be cancelled (either by patients or hospitals) or to be missed (Figure 4).

2. GP appointments that occurred via telephone more frequently occurred on the same day they were booked compared to face-to-face appointments (*NHS Digital data*, Figure 5). The shorter wait times for telephone appointments could imply increased efficiency at a service level; however, further investigation is needed to understand whether remote consulting increases the need for repeat appointments.

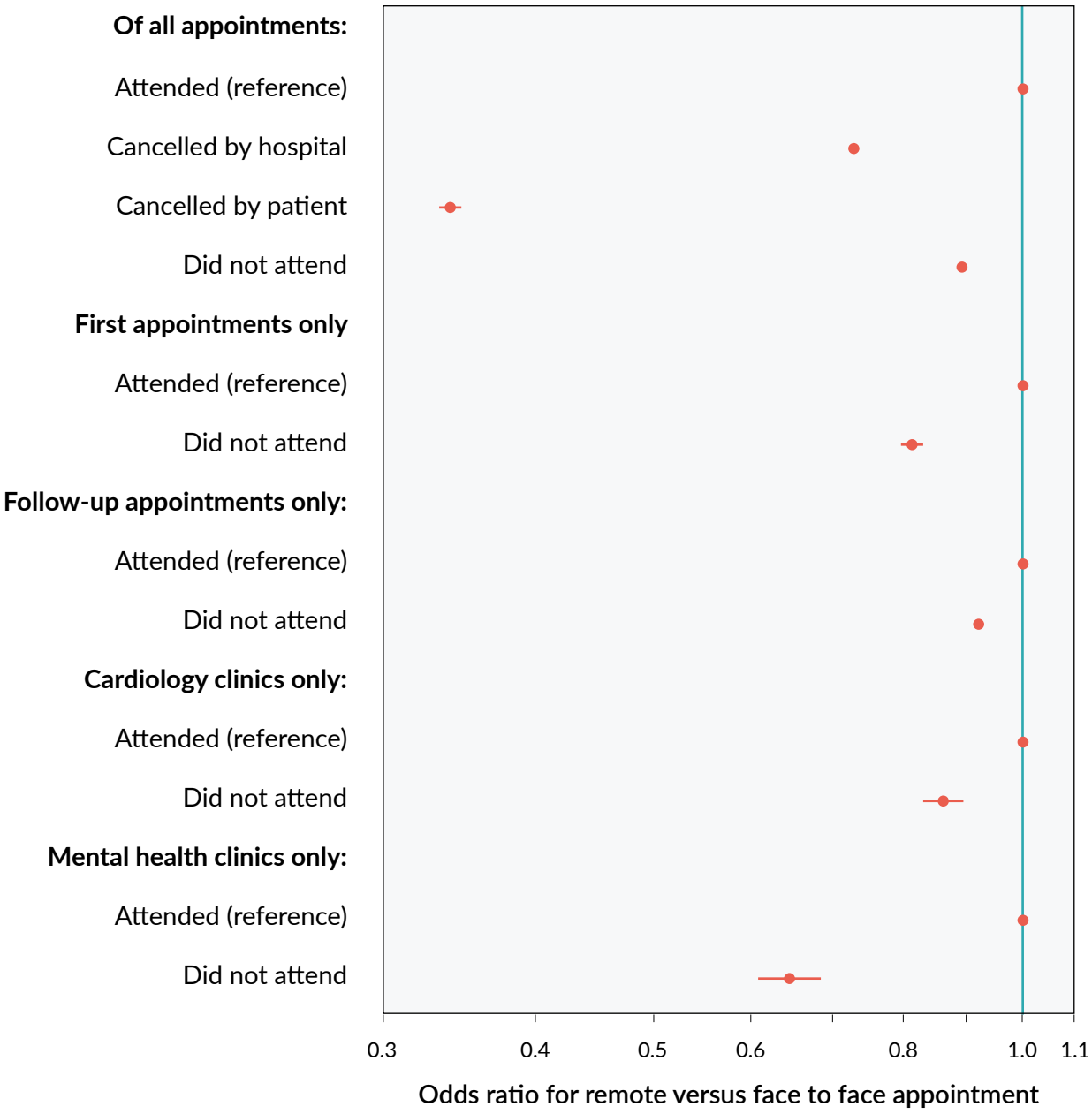


***Figure 4** – Odds ratios (OR) for cancelled or missed appointments (compared to attended) for remote compared to face-to-face appointments (OR definition: OR>1.0; more likely, OR=1.0; just as likely, OR<1.0; less likely). Note: Models adjusted for all other variables listed in the figure: age, sex (including an interaction term), ethnicity, Index of Multiple Deprivation decile, number of long-term conditions, appointment type (first or follow-up), hospital Trust and time (including an interaction term). Models including cancellations available for three Trusts only due to data availability: Chelsea and Westminster, Imperial College Healthcare and Central and North West London NHS Trusts. Source: Whole Systems Integrated Care*

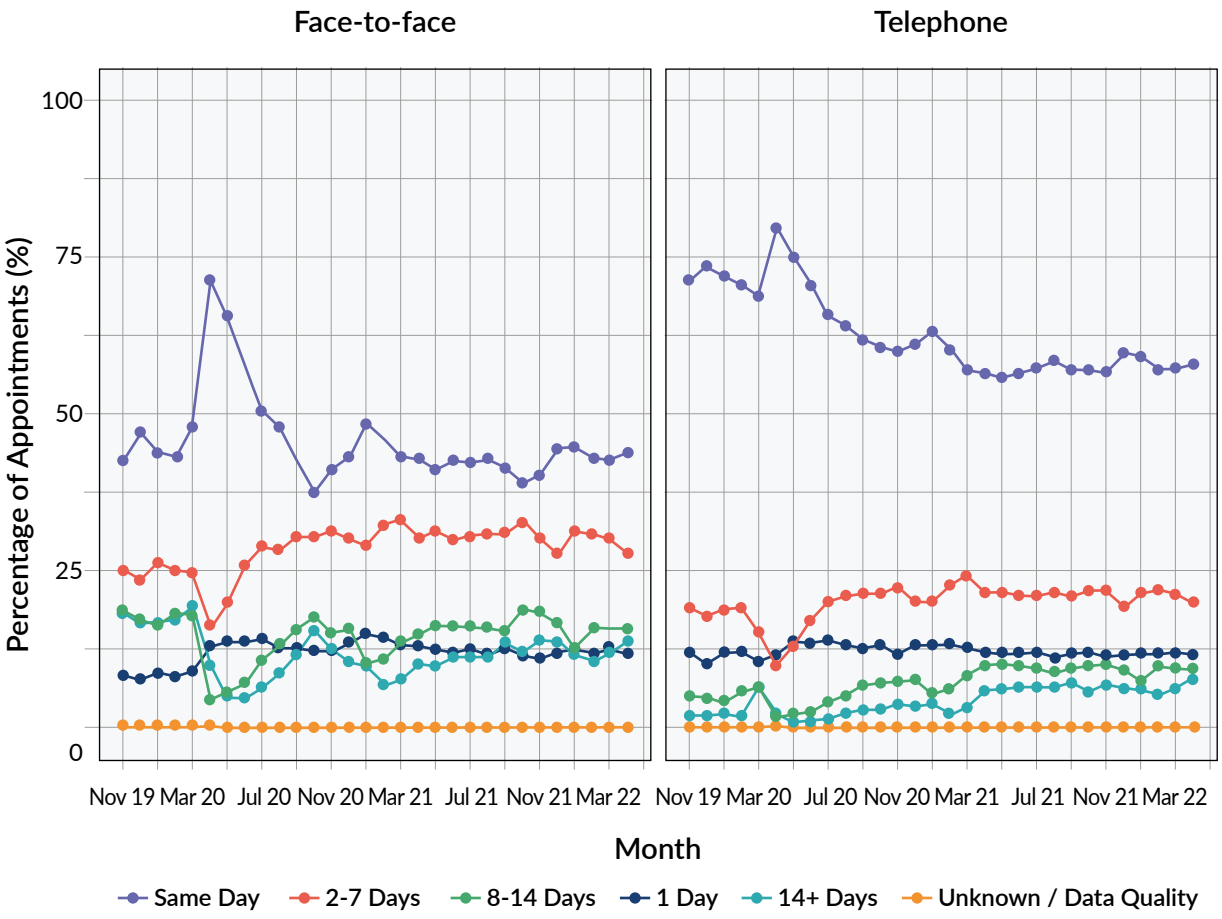


***Figure 5** – Percentage of attended telephone and face-to-face appointments by time between booking date and appointment date in General Practice in London. Source: NHS Digital.*

Clinical outcomes

Due to the lack of reliable primary care data on consultation type in WSIC, clinical outcomes associated with mode of consultation are yet to be determined. We plan to analyse outcomes when data become available and using South London datasets (see page 23).

Consultation modality recording

Discussion with clinicians and database administrators has revealed the following modifiable data gaps:

1. WSIC contains recordings of consultation modality in secondary care (all trusts), from September 2016. However, there is no detailing of type of remote consultation and there are data gaps for some trusts. WSIC primary care data does not currently have reliable capturing of appointment modality.

2. CRIS has reliably recorded modality since 2016 with detailed subsets. Face-to-face consultations subsets include face-to-face individual, face-to-face group, and procedures. Remote consultations subsets include phone call, video call, and web.

3. The LDN has been recording consultation modality since 2005, with the subsets of face to-face, telephone, home visit, and electronic (video).

4. The KERRI database has modality recordings from as early as 2006. However, it only implemented consistent hospital-wide recording from May 2020.

5. The modality data exists within the GERRI database. However, the extent to which it has been recorded reliably across the trust is unclear without further data investigations.

Qualitative study – key findings

Choice

Both patients and clinicians reflected on how much choice they had about whether appointments were held remotely or in-person.

Clinicians expressed views that remote consultations had been imposed on them at the start of the pandemic:

> ***We were told by the trust you can't hold face-to-face and to limit significantly home visits.***
> Heart Failure Specialist Nurse

> ***We weren't really involved, I think. I think it came down from on high, it felt like, partly from NHS England and from the partners, saying, "Well, you can't really see patients."***
> GP

Patients similarly reported an initial lack of choice in the type of consultation they participated in:

> ***… because of the restrictions in place, the surgery closed. The surgery was unable to offer [in-person] appointments.***
> Primary care mental health patient

> ***No choice at all… but that's the way it was. There seemed to be no ability to say, "Actually, I don't think this is appropriate for me."***
> Cardiology patient

Both clinicians and patients expressed the view that patients should be able to choose between a remote and face-to-face consultation:

> ***I'm really happy if we were able to ask our patients in the future: "Would you prefer this, or would you prefer this?"***
> Specialist Cardiology Nurse

> ***I think patients should have the choice… at the moment, there's no choice.***
> Cardiology patient

It was acknowledged that remote appointments impede the relational aspects of a consultation and rapport between clinician and patient was likely to be improved if the clinician and patient had previously met face-to-face. This suggests remote consultations might be more acceptable to both clinicians and patients once a face-to-face consultation had taken place:

> ***It's very, very, important for me to be able to establish a relationship of trust with my cardiologist {…} You need to see somebody, you need to look them in the eye, to be able to do that.***
> Cardiology patient

> ***…the whole point of building a rapport, really, and a relationship, is the connection, the human connection, and it's far, far harder to do that over the phone…and I think once you've seen them, even just once, the relationship, or the strength of that rapport increases exponentially.***
> GP

> ***I genuinely feel like it's affected my care because I don't feel like we've built up a rapport at all because we've not met face to face. There have been some significant problems because of that.***
> Primary care mental health patient

Video versus phone consultations

Clinicians' use of telephone consultations was framed in terms of perceived benefits of expediency and efficiency, with video positioned as offering relatively few advantages, particularly in primary care:

> ***You can multitask when you're on the phone, you can take notes more easily because you don't have to worry about giving eye contact to someone.***
> GP

> ***I think connections are a lot clearer and often there's not much that I can get from video that I couldn't get from a telephone.***
> GP

> ***It's really good. I can manage eight to ten patients in a day, you know, doing phone calls.***
> Community Heart Failure Nurse

Patients reported that phone consultations were acceptable, particularly for routine or follow-up appointments. However most had not been offered a choice between a video or phone consultation. Some patients – particularly in cardiology – did express a preference for video based on their personal experiences:

> ***… a video recording is better because you're face to face, and you can see the expression or whatever you like and the concern.***
> Cardiology patient

Similarly, some cardiology staff reported positive experiences of video consultation, leading them to prefer video over phone:

> ***I would prefer a video consultation …because actually seeing the patient is hugely beneficial. Being able to see somebody face-to-face helps with their clinical decision making. You are then able to be a bit more trusting of your decision making.***
> Heart Failure Specialist Nurse

> ***At least I can see the patient on the video, I can see. If I do an assessment, I always ask them, "Can you press your ankle?" if there's swelling.***
> Community Heart Failure Nurse

However, use of video was constrained by lack of access to required equipment and appropriately confidential space for consulting:

> ***I'm in an office with six other people, in and out, lots of toing and froing. For the most part a lot of my consultations have had to take place there […] Obviously confidentiality from that perspective is a challenge so we try fairly hard not to hold a video consultation in that environment. Clinic space is a challenge. A quiet appropriate area is a challenge.***
> Heart Failure Specialist Nurse

Overall, video consultations had not been widely used by our participants. Technical challenges were cited across all groups limiting the utility of video – particularly in primary care:

> ***Video is usually frustrating because it depends on internet connection, video resolution, sound is offering buffering, delayed, it's not quite right, so video is hugely problematic. I don't know anyone who's not had any problems with it.***
> GP

Video was presented as something for the future if technical issues could be resolved and there was demand:

> ***Video might come in more over time if the interface becomes a bit easier to use, it is a bit slicker. If there is more demand.***
> GP

Education and skills development

Most clinicians had not received any formal training on how to deliver remote consultations, and those who had reported training that was limited to how to use the technology. However, GPs, cardiology staff and patients have developed skills in consulting remotely through practical experience:

> ***… it's a whole new way of working and it's a whole new way of conducting an assessment… the type of questions you ask, has changed.***
> Physical activity specialist

Remote delivery of consultations would be enhanced through training and upskilling of staff to optimise remote consulting practice, and support for patients to maximise their inclusion:

> ***There needs to be more innovative thinking regarding patients who may be experiencing digital exclusion, or digital problems.***
> Primary care mental health patient

A key area in which clinicians indicated adaptation was in increasing willingness and ability to manage risk within remote appointments:

> ***… what a lot of us found, is that we were doing things – not, I would say blindly – but we were taking greater risks, presuming or assuming more than we would do under other circumstances, because we were having to make judgements without having the person in front of us, or being able to investigate in the same way.***
> GP

> ***I think people are more comfortable with risk. I think before, maybe, we'd have to see the patient. See a child with upper respiratory symptoms, we'd have to examine them, we'd have to see them. Now some GPs feel confident doing that over the phone because a lot of what you're asking is really in the history and appropriate safety netting. So people have become more confident in doing so.***
> GP

A necessary organisational safety net, particularly in primary care where this is generally more feasible, is to have the option to convert to an in-person consultation with minimal delay:

> ***Where I felt that I couldn't get enough information, I've always opted to bring them in.***
> GP

> ***I'm going to say, "You know what? I think, really, you need a face-to-face conversation here, just to tease out everything.***
> GP

Summary of other research

Quantitative

Studies looked primarily at mental health (n=5) and oncology (n=5) services, followed by dermatology (n=2), respiratory (n=1), orthopedic (n=1), older adult care (n=1), GP (n=1), general outpatient (n=1) and COVID-19 inpatient care (n=1). Studies highlighted an increased use of remote consultations during the pandemic, with marked use of video consultations and telephone triaging services. Findings among mental health services highlighted a decrease in overall missed appointments between April-June 2020 compared to the pre-pandemic year (March 2019-March 2020). However, in another study attendance rates for remote consultations were lower than face-face between May-September 2020 (in mental health services), with no show rates for remote consultation increasing from Jan-Sept 2020. This finding differs from our findings from NW London data, where remote consultations were less likely to be missed. Rates of face-face appointments decreased weekly between March-September 2020 in secondary mental health services and ranged from a 16% decrease in GP consultations across all age groups from 21 GP services to a 64% decrease in older adult (>65 years) primary care appointments when compared to pre-pandemic rates. Rates of home visits among older adults and mental health services also decreased in 2020 compared to pre-pandemic. This shift was primarily studied early in the pandemic in majority of studies (up until Aug-Sept 2020). Rates of remote consultation usage and impact on outcomes captured (e.g. medication, referrals, re-attendance) varied among populations and services (e.g. older adult primary care, respiratory and mental health services), suggesting that remote consultations may not be equally appropriate across all situations. For example, studies in mental health services and primary care demonstrated a higher rate of remote consultations among children and adolescents and lower rate among older adults during the pandemic, compared to the pre-pandemic year. Studies have reported similar limitations including a lack of detail on the modality of the remote consultation from data sources, short-term evaluations, differences in documentation on electronic record platforms, and inconsistencies between primary and secondary care data availability of electronic record platforms (Further detail is available in Appendix 2).

Qualitative

Studies considered the experiences of staff at all levels including managers, clinicians, nurses and social prescribing link workers (n=10), patients with a variety of conditions (n=4), or a mixture of both (n=7) (see data extraction in Appendix 2).

Summary (patients)

For some patients, remote consultations were convenient and reduced travel and time. For some it also provided reassurance through more frequent check-up calls (e.g. in dementia) and promoted independence through a different platform to express opinions and raise questions (e.g. in end-stage renal disease). However, variations in communication quality resulted in uncertainties of how their queries were handled. By extension, some patients felt that proper quality of care and relationships could only be built in person, favouring the non-verbal communication and physical presence of face-to-face consultations. For example, the voices of patients with dementia had been reportedly lost in remote communications that primarily engaged their carers. Other studies highlighted that recently-arrived migrants found consultations hard to access (including issues with new registrations) and to engage with remotely. Finally, it was indicated that certain patients with cognitive and sensory impairments might require additional technical assistance; e.g. for those using augmentative and alternative communication, telehealth systems that were originally created for persons without disabilities needed adaptations co-designed with the patients.

Summary (staff)

For staff, remote consultations – and especially by telephone – were perceived as more efficient for 'simpler' consultations such as repeat prescriptions, medication reviews and non-practical elements of chronic disease. However, telephone consultations – and even video consultations – presented some additional obstacles in detecting and dealing with complex and unknown health issues. Studies further reported reduced observational information – in particular via telephone as the most commonly used modality – resulting in consequent misdiagnoses. Whilst remote consultations also risked adding to workloads and isolated staff. A balance was advocated between remote and face-to-face consultations, with some staff mirroring patients' views of remote on its own as too 'transactional'. This was most acutely felt in deprived practices in the North East and North Cumbria, where a lack of face-to-face contact had damaged the relationship with their community. Evidence suggested that comparatively resourced services had coped better with the re-configuration to remote ways of working. For example, nurses had found virtual consultations valuable if adequately supported, albeit requested more flexibility on working from home. Studies also suggested clearer 'thresholds' of when to bring patients in, guidelines around safeguarding, and formal training as a relatively neglected practice initially during the pandemic as remote consultations were rapidly deployed, as well as investments in hardware and software.

Planned next steps

Building data infrastructure for learning health systems for London

ARC Northwest London and ARC South London have initiated a collaboration to run comparable queries regarding remote consultations across different real-world datasets across London to better inform decision making for service planners. Key questions have been developed in consultation with stakeholders and experts by experience relating to the exemplar areas of cardiology and mental health, building on the existing work completed with the South London AHSN on mental health. Initial general queries have been run in pan-London primary and secondary care NHS Digital and SUS data. Specific queries have been developed and first run in NW London's WSIC platform, a combined system which includes primary care and secondary care, including mental health Trusts. These queries will next be run in separate datasets across primary care, mental health, and secondary acute settings in SE London, using linkage data where needed. This will be repeated using the infrastructure being developed by the London Health Data Strategy (LHDS) using Primary Care and NHS Digital sourced datasets so that our work aligns. The key methodological findings to date to address are highlighted below.

1. We have identified the following modifiable recording gaps which need to be addressed to create a longitudinal data informed learning health system for London:

    a. Missing data on whether GP appointments were conducted remotely or face to face in WSIC: following local discussions with the WSIC team, plans are in place to extract these data and make them available for researchers.

    b. Missing outpatient data for mental health and acute Trusts in WSIC. This has been raised with the WSIC team who are investigating.

2. Variation in data completeness as above, along with different definitions of key terms between datasets may limit validity, comparability and generalisability of the evaluation of clinical outcomes:

    a. We support the LHDS development of a meta-data library to manage value-sets and queries such that they are reproducible across London systems. This is needed to ensure that questions are comparing like-with-like as much as possible.

    b. We have developed a dictionary of key terms relevant to our exemplar pathways, which we will align to the LHDS meta-data library for maximum comparability.

    c. We also created a core list of stem queries, initially addressing points of interest in our exemplar pathways. We hope to collaborate with the LHDS team to extend to other healthcare pathways.

3. Certain variables are poorly captured in the primary and secondary care datasets examined, which limit the ability to understand the patterns associated with remote consulting in more vulnerable patient groups:

    a. For example, first language is recorded for only 45.8% in WSIC, and there is no variable capturing whether a patient is an English speaker.

Evaluating clinical outcomes of remote consultations

We recommend that a robust evaluation of the impact of remote consultations on outcomes requires use of a causal inference framework, which was outside the scope of the current evaluation, due to data availability, time and resource constraints. Whether a patient has a face-to-face or remote consultation depends on many interconnected factors which should be considered in analysis. Based on the discussions of the evaluation team, we identified the following factors at a societal, provider, clinician and patient level that should be taken into account in the design of quantitative studies to evaluate outcomes related to mode of consultation:

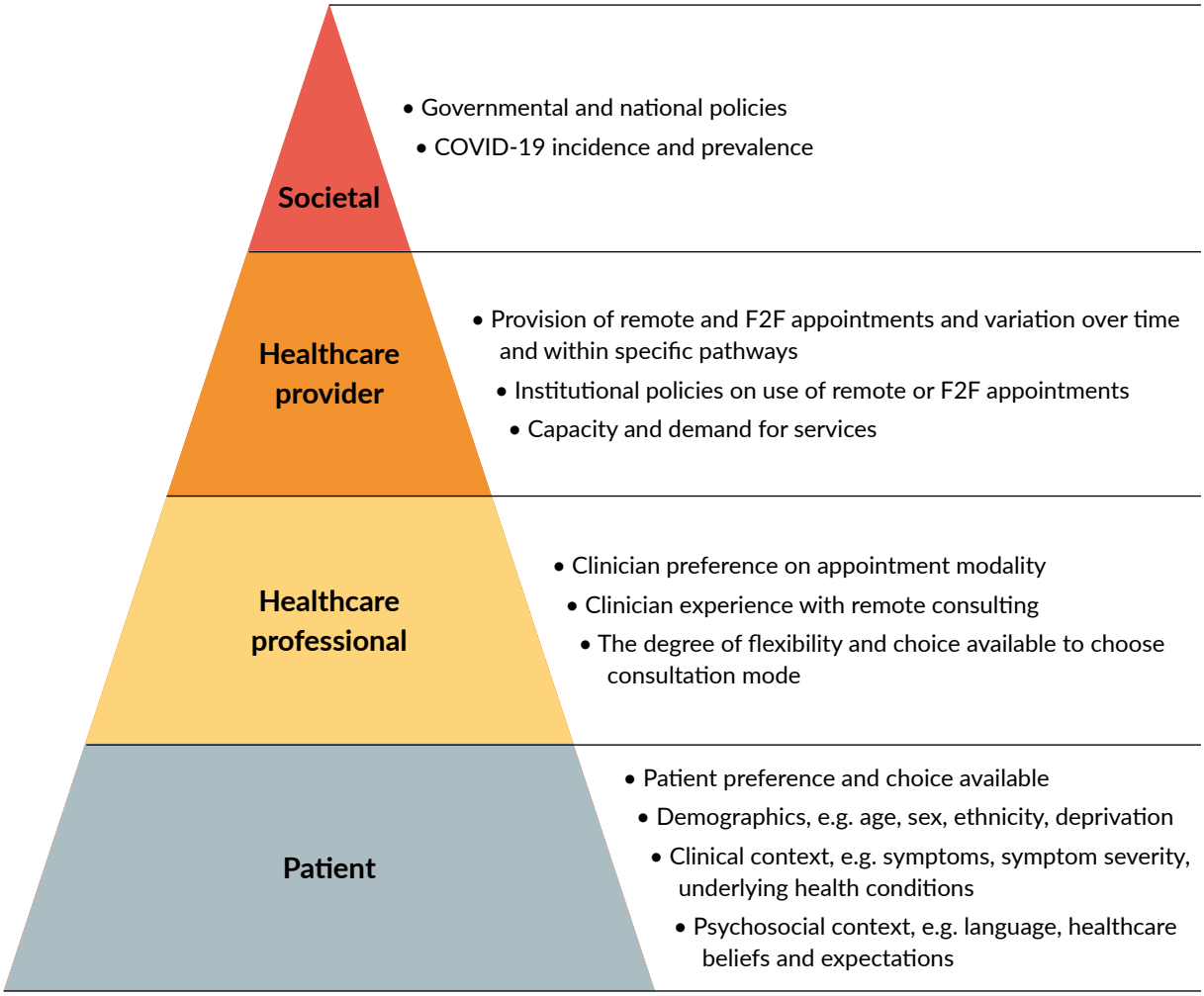
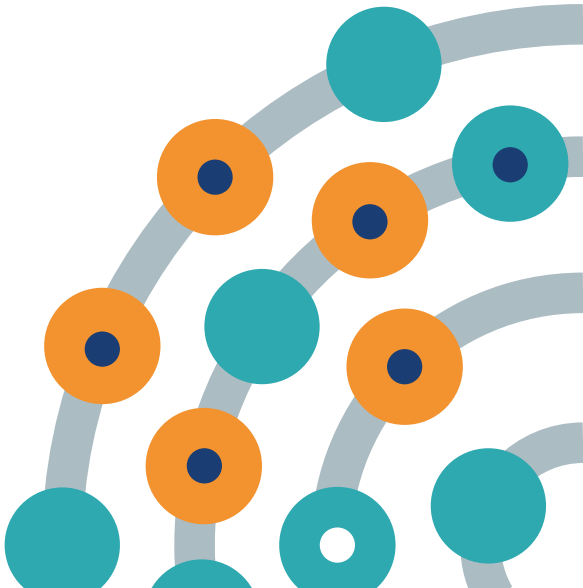


***Figure 6** – Factors to consider in quantitative evaluations of outcomes related to appointment modality.*

Abbreviations

LCEG	London's Clinical Executive Group
ARC	Applied Research Collaboration
LHDS	London Health Data Strategy
WSIC	Whole Systems Integrated Care
CRIS	Clinical Records Interactive Search
LDN	Lambeth DataNet
KERRI	King's Electronic Records Research Interface
GERRI	GSTT Electronic Records Research Interface
GSTT	Guy's and St Thomas' NHS Foundation Trust
SUS	Secondary Uses Service
LTC	Long-term Condition



Appendices

Appendix 1: *London Remote Consultations: Full Quantitative Report*

Appendix 2: *London Remote Consultations: Summary table of published research studies*