INVESTIGATING THE IMPLEMENTATION OF TELEMEDICINE IN ENGLISH PRISONS

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Declaration

I, Chantal Edge confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed:

Date: 14th September 2021

Acknowledgements

Over the years of conceiving this fellowship application, submitting a proposal and undertaking this research I have been lucky enough to meet a multitude of wonderful people who have in some way touched, influenced or informed this research. I could not possibly name everyone who has had a conversation with me about ‘prison telemedicine’ but needless to say I am grateful to each and every one of you.

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a family of three but I think we've done a pretty good job overall. Know that I am forever grateful for your patience and understanding, and I hope one day you will be truly proud of what you helped your mummy achieve.

Abstract

Background

Prisoners experience significant health inequalities, tending to suffer poorer access to services and health outcomes than the general population. The delivery of secondary healthcare services by video consultation (telemedicine) offers an opportunity to improve the health outcomes for people in prison, by improving the access, quality and cost of healthcare services available.

This PhD thesis investigated how prison telemedicine could improve access and quality of health services for patients in English prisons, and the issues that arise during implementation of prison telemedicine models. The study spanned the period both prior to and during the COVID-19 pandemic, and the research approach was adapted to these changing circumstances.

Methods

This PhD study employed mixed methods including systematic review, qualitative interviews and autoethnography. The PhD starts by considering how telemedicine could improve the patient experience of accessing secondary care in English prisons, through qualitative analysis of patient interview data collected by peer researchers (pre-pandemic). It then investigates the barriers and facilitators to prison telemedicine implementation, firstly via a systematic review of existing literature on prison telemedicine, secondly through qualitative analysis of a staff interview series relating to a local prison telemedicine implementation project (pre-pandemic). Finally the PhD sought to understand how the pandemic context affected the ability to implement prison telemedicine, through both an auto-ethnographic account from my perspective as a key agent in ensuring national implementation, and staff interviews with senior health and justice stakeholders.

Findings

Prison telemedicine could potentially improve the equivalence of care for people in prisons. Interviews with prisoners revealed that they experience numerous barriers to accessing secondary care services, and feel stigmatised and dehumanised at hospital sites. They have long delays for appointments, and poor treatment by both hospital and prison officer staff. A systematic review of prison telemedicine literature highlighted that many of these barriers could be overcome through delivery of remote appointments. Video consultations remove the need for prisoners to be chaperoned during appointments by prison security staff, and reduce delays associated with prison officer escorted transfer to the hospital. The systematic review revealed that implementation of prison telemedicine has flourished in countries with vast geographical distances to traverse, such as the USA and Australia, but prior to the pandemic had been limited in English settings. Despite successful overseas implementation, there are numerous operational and systems level barriers that need to be overcome during implementation efforts. These include: securing top-down and bottom-up support for implementation, framing the telemedicine intervention effectively, and considering the differing strategic and operational priorities of prison and hospital healthcare providers. Interviews with stakeholders in prison telemedicine described how a local telemedicine pilot in England struggled to find traction over a three year period, mainly as a result of provider resistance, commissioning barriers and incompatibility between health and justice systems. The COVID-19 pandemic represented a significant contextual shift which supported remote consultations and partnership working, resulting in telemedicine rollout across the entire English prison estate. The autoethnography described my role during the pandemic, working to overcome most barriers to implementation as part of centralised national leadership for the telemedicine agenda. This prompted the prison service to consider and assure innovative technology to improve care continuity by telemedicine. Issues still remained with the complexity of the prison commissioning landscape, existing prison infrastructure and the incompatibility of approved prison and community software solutions.

Impact statement

The research in this thesis provides evidence of inequalities experienced by prisoners in England when accessing secondary care, opportunities for potential mitigation of these issues through use of telemedicine and considerations as to how to successfully deliver prison telemedicine implementation.

This research is the first to study the implementation of an intervention (telemedicine) that spans both prison and community health settings in England. It is made unique by the time period under study, covering implementation efforts both prior to and during the COVID-19 pandemic in 2020.

The research findings in this thesis provide evidence to support successful delivery of telemedicine and other future innovations that span prison and community settings, supporting continuity of care for patients in prisons. The research also highlights the barriers to implementation that were mitigated during a national crisis (the COVID-19 pandemic) and those that remained to be overcome, despite widespread national support for prison telemedicine implementation. Together these findings provide practical advice for prison and community healthcare providers and commissioners, about how to overcome the barriers to successful collaboration between these different organisations. It also highlights opportunities and considerations for prison healthcare commissioning in regards to the current trajectory for the localised, integrated healthcare agenda in England.

The research findings relating to prisoner experiences of face to face appointments for secondary care have been used to engage hospital staff in discussions around how quality can be improved for this patient group, and to highlight the benefits of investing in a telemedicine service for prisons during the pandemic. Evidence surrounding barriers to collaboration between prison and community organisations has been shared with NHS England as part of their considerations for the future of integrated commissioning.

Resultant publications

Chapter 3
Secondary care clinicians and staff have a key role in delivering equivalence of care for prisoners: A qualitative study of prisoners' experiences. EClinical Medicine (2020) Chantal Edge, Rich Stockley, Laura Swabey, Emma J. King, Fabien Decodts, Jake Hard, Georgia Black

Chapter 4
Improving care quality with prison telemedicine: the effects of context and multiplicity on successful implementation and use. Journal of Telemedicine and Telecare (2019) Oct 22:1357633X19869131. doi: 10.1177/1357633X19869131
Chantal Edge, Georgia Black, Emma J. King, Julie George, Shamir Patel, Andrew Hayward

Chapter 6
COVID-19: Digital equivalence of health care in English prisons. The Lancet Digital Health (2020) Volume 2, Issue 9, e450 - e452.
Chantal Edge, Andrew Hayward, Angelique Whitfield, Jake Hard

Protocol (pre-pandemic)
Using telemedicine to improve access, cost and quality of secondary care for people in prison in England: a hybrid type 2 implementation effectiveness study- BMJ Open (2020) 10:e035837. doi: 10.1136/bmjopen-2019-035837.
Chantal Edge, Julie George, Georgia Black, Michelle Gallagher, Aftab Ala, Shamir Patel, Simon Edwards, Andrew Hayward

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Abbreviations

CCG	Clinical Commissioning Group
CFIR	Consolidated Framework for Implementation Research
COVID-19	Coronavirus (2019 pandemic)
DNA	Do Not Attends (hospital appointments)
GP	General Practitioner
H&J	Health and Justice
HJIPs	Health and Justice Indicators of Performance
HMIP	Her Majesty's Inspectorate of Prisons
HMPPS	Her Majesty's Prison and Probation Service
IBSS	International Bibliography of Social Sciences
ICS	Integrated Care System
KPI	Key Performance Indicator
NHS	National Health Service
NHSE	NHS England
NHSE H&J	NHS England Health and Justice Team
NIHR	National Institute of Health Research
NPT	Normalisation Process Theory
NRC	National Research Committee (prison ethics)
PI	Principle Investigator
R&D	Research and Development
RTT	Referral to Treatment Time
UV	User Voice charity

Chapter 1 Introduction

This thesis examines the real life practical application of prison telemedicine (also known as video consultations) for delivery of secondary hospital care to patients in prison in England. Throughout this research I have adopted the role of an embedded researcher.

1.1 Thesis structure

This thesis contains seven chapters. Chapter 1 (this Chapter) acts as a preface to the thesis, providing essential background information to the English prison system, prison healthcare services and commissioning arrangements and the health needs of prisoners. 1.8 describes my personal role as an embedded researcher, the impact of the COVID-19 pandemic on this research and my research questions.

Chapter 3-6 are research chapters, each of which contain a methods section to describe the approach to data collection and analysis. Chapter 3 looks at how prisoners experience secondary care in the absence of telemedicine appointments and how introduction of a digital medium could potentially improve patient experience and access to health care in England (Chapter 3). Chapter 3 analyses primary data collected by peer researchers from interviews and focus groups with current prisoners, based on research methodology and data collection processes that I designed.

I consider the difficulties involved in implementing a telemedicine model that spans the health and justice systems in a systematic review of published literature (Chapter 4) and primary qualitative data collection and analysis from healthcare staff involved in local prison telemedicine implementation (Chapter 5). Chapter 4 reports the results from a systematic review of prison telemedicine literature, with a thematic analysis of papers included in the review to understand known barriers and facilitators to the implementation of prison telemedicine in other countries. Chapter 5 presents analysis of primary in-depth interview data collected by myself (the author) from healthcare

professionals working in both prison and hospital provider settings, about their experiences of implementing prison-hospital telemedicine in one local geographical region in England. This data is further related to the theoretical domains of Normalisation Process Theory(1) and the Consolidated Framework for Implementation Research(2) to understand issues affecting implementation.

The final research chapter, unplanned at the start of this PhD, relates to the impact wrought on prison telemedicine implementation in England by the COVID-19 pandemic (Chapter 6). Between the completion of Chapter 5 and the commencement of Chapter 6, the COVID-19 pandemic emerged which fundamentally shifted the research plans for this thesis (more details in 1.8). Chapter 6 subsequently uses a mixture of autoethnography and in-depth interview data with senior health and justice stakeholders, to understand how the pandemic context rapidly shifted the prison telemedicine agenda in England.

Chapter 7 concludes the thesis with multiple reflections concerning study questions, content, method, and implications.

This information presented in this introduction is based on a combination of published literature and my knowledge of the sector.

1.2 Background to healthcare in English prisons

National and International health policies assert that people in English prisons are "*entitled to the same level and quality of physical and mental health services as NHS (National Health Service) patients in the community without restrictions*",(3) yet in practice it is extremely difficult to provide equivalent care within the security constraints that prisons operate. There is a need to consider innovative ways of delivering healthcare in the prison environment to overcome constraints to provision of equivalent care.(4) However, innovation in prison healthcare has been slow due to lack of research, hampered by the practical difficulties of conducting research and limited interest from research funders. There are currently few strategies for improving access and quality of

secondary healthcare for prisoners. In-reach clinics by secondary care staff are considered a good strategy, but are difficult to establish given the existing heavy workload of secondary care clinicians.

Prior to and during imprisonment, prisoners suffer from health inequalities, tending to experience poorer access to healthcare and poorer health outcomes than people in the general population.(5) Incarceration offers an opportunity to address unmet health needs for this population, however the opportunity for secondary care is often missed due to barriers in accessing services offsite from the local prison. Telemedicine, also called video consultations, may improve access to secondary care for prisoners by removing the need to transport the patient offsite to local hospitals for outpatient appointments.

1.3 Overview of the English prison system

The English and Welsh prison system is governed by Her Majesty's Prison and Probation Service (HMPPS). Prisoners can be classified as sentenced or on remand, meaning they are being held in prison whilst awaiting their hearing at court. At the time of writing there were a total of 78,838 prisoners in England and Wales, of which 75,580 were male and 3,258 were female(6), housed in 118 facilities. The prison population has risen continuously since the late 1990s(7) (Figure 1).

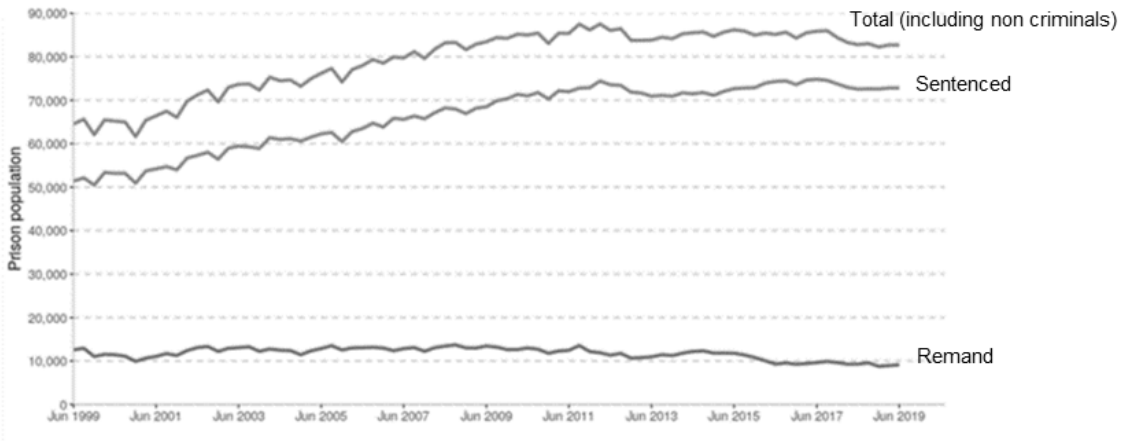

Figure 1 Prison population, June 1999 to 2019

The English imprisonment rate is one of the highest in Europe, averaging around 150 prisoners per 100,000 inhabitants. This is however far less than the highest rate which is found in the USA, measuring 655 prisoners per 100,000 inhabitants. (8)

The prison system comprises several different types of prison. Prisons may be public or privately operated. Fourteen out of 118 prisons in England and Wales are currently operated privately, whereby the running and management of the prison is contracted out by HMPPS to a private company.(9) Prisons also hold different security categorisations. Male prisons are designated a letter from A-D, with Category A holding the most serious offenders. Female prisoners are assigned as either restricted status, suitable for closed conditions or suitable for open conditions (Table 1). (10)

Table 1 Security categorisation of male and female prisoners in England and Wales

Prison type	Definition of prisoner within this category/status
Male Category A	Prisoners whose escape would be highly dangerous to the public or the police or the security of the State and for whom the aim must be to make escape impossible.
Male Category B	Prisoners for whom the very highest conditions of security are not necessary but for whom escape must be made very difficult. Local (take remand/sentenced from local courts) or training prisons (longer term high security prisoners)
Male Category C	Prisoners who cannot be trusted in open conditions but who do not have the resources and will to make a determined escape attempt. Training and resettlement prisons.
Male Category D	Prisoners who present a low risk; can reasonably be trusted in open conditions and for whom open conditions are appropriate.
Female - Restricted status	[…] convicted or on remand whose escape would present a serious risk to the public and who are required to be held in designated secure accommodation

Female – Closed conditions	Prisoners for whom the very highest conditions of security are not necessary but who present too high a risk for open conditions or for whom open conditions are not appropriate.
Female – Open Conditions	Prisoners who present a low risk; can reasonably be trusted in open conditions and for whom open conditions are appropriate

Prison type and security status can have an impact on prisoners' healthcare provision. Remand prisons tend to have a high 'churn' of prisoners, as people arrive straight from court or remain on remand until their court appearance. After their court appearance some people are found not guilty and do not return to the prison, others may be sent off to prisons elsewhere, meaning that some people may be in a particular prison for only a matter of days. Meeting healthcare needs in such short time windows can be exceptionally challenging.

Higher security status imposes additional complications on delivery of healthcare. Prisoners who are designated as Category A or restricted status females that need to go offsite to local hospitals for appointments will require additional security presence, such as an armed police convoy for the transportation process and several security professionals inside the hospital itself. The majority of prisoners are not designated as Category A; however, they still experience issues with accessing external healthcare services due to the requirement for a prison escort (which may not be available).

1.4 Healthcare services and commissioning in prisons

In 2006, healthcare commissioning in prisons was transferred from the control of the prison service (HMPPS) to the NHS in an attempt to ensure equivalence of care access and quality. Health and Justice (H&J) is a specialist commissioning function provided by the NHS in England (NHSE) and is currently delivered by seven regional teams, which link to a NHS England Health and Justice (NHSE H&J) national commissioning team.

Since April 2013 NHSE H&J has been responsible for commissioning healthcare services for people in prisons(11), immigration removal centres and the children and young people's secure estate, with the exception of emergency care, out-of-hours services and ambulance services which remain the responsibility of the local clinical commissioning group (CCG). NHSE H&J and their regional teams therefore retain responsibility for primary and non-emergency secondary care services, mental health, public health service commissioning (including substance misuse), dental and ophthalmic services for prisoners (12) (see Figure 2).

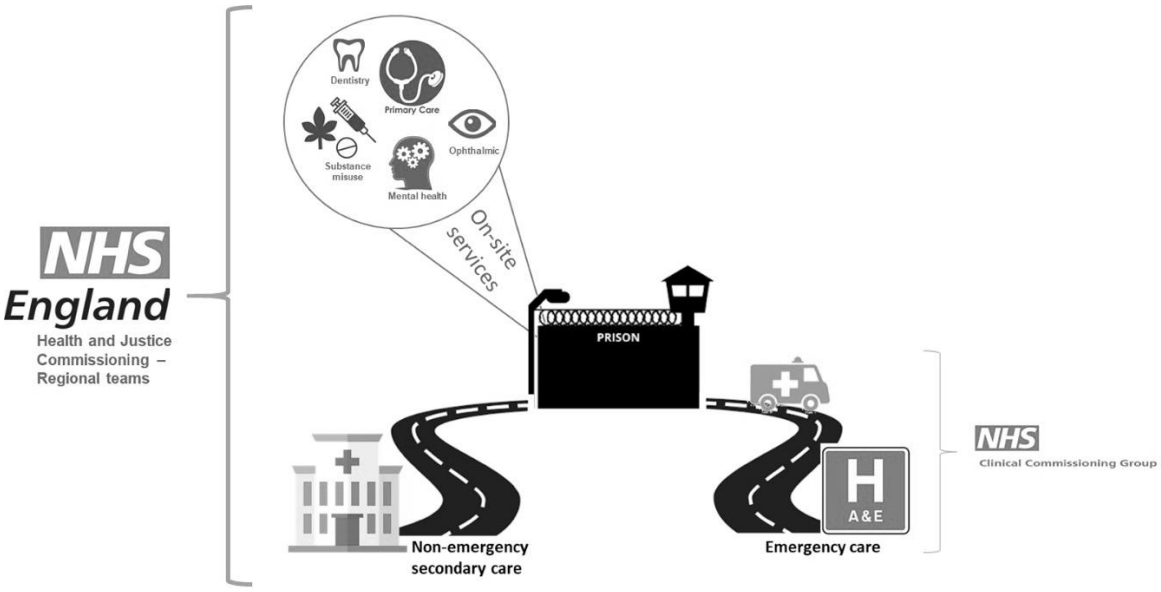

Figure 2 Commissioning of prison healthcare services

A H&J Clinical Reference Group consisting of clinical, professional and patient members, produces guidelines to promote consistent quality standards across the H&J landscape e.g. Prison Pain Formulary(13) and providing clinical oversight of health and justice commissioned services.

All prisons in England have primary care services on site, alongside mental health, substance misuse, dental and optometry services. These are operated through a series of contracts administered by NHSE H&J local area commissioners. Provider organisations enter a competitive tender process to bid for these prison service contracts which run for a period of three to five years. Within these contracts providers may opt to offer a *prime provider*

model, indicating that they take responsibility for operating all in-prison healthcare services. This may include a series of sub-contracts, or the NHSE H&J commissioner may hold numerous separate contracts with different providers for different aspects of the in-prison healthcare services.

To access secondary care services, prisoners travel offsite to local hospitals who are commissioned by local CCGs, and reimbursed for prisoner outpatient care through similar contracts with NHSE H&J.

Prison providers are held to account by commissioners based on their performance of the standardised Health and Justice Indicators of Performance (HJIPs).(14) Example HJIPs include indicators around screening, vaccination, and attendance and waiting times for in-prison GP clinics.

1.5 The health needs of prisoners

Prisoners tend to experience significant health inequalities. The reasons for this are multifactorial.

Prisoners often come from deprived areas and communities (outside of prison) which experience poor access to healthcare services. People may therefore enter prison with poor health and/or a variety of unmet health needs. The prison environment itself can also exacerbate or cause poor physical and mental health,(15) for example through stress, poor diet or exposure to infectious disease. As a consequence of these issues, prisoners experience a disproportionately higher burden of disease compared to the community population including infectious diseases (e.g. hepatitis C, tuberculosis, STIs), long-term conditions (e.g. hypertension, asthma) and mental health problems (e.g. psychosis, depression) (16). Male prisoners are 2.3 times more likely to die of any cause than the general population; female prisoners are 7.6 times more likely to die (5). The prison population is typically characterised as ‘young’. The number of older prisoners however continues to rise (17), bringing new challenges in the form of treatment of multiple co-morbidities within the prison environment.

Prison can offer an opportunity to address healthcare needs that may otherwise go unmet. (18) The prison environment satisfies many basic human needs, including shelter, food and warmth, which can allow those incarcerated to focus on addressing higher level needs such as health concerns,(19) and thereby represents an opportunity for healthcare intervention. Addressing health issues while in custody can allow the individual and support services to focus on managing other factors influencing reintegration with society upon release.(20) Addressing health needs whilst people are in prison can also bring wider public health benefits to society. For example, providing good healthcare access in prisons can mean fewer people return to their local community (outside of prison) with untreated disease. Good prison healthcare can also offer an opportunity to address poor health behaviours, such as through access to smoking cessation services. This means people return to the community healthier, placing less burden on community services and with a reduced infectious disease reservoir. ,. (4)

1.6 Barriers to healthcare in prison

Physical and mental health problems are commonplace in prison, yet it is extremely difficult to provide 'equivalent care'. A prison population who is already more disadvantaged and sicker than the general population may struggle to meet those needs in prison.(21) Prisons by their very nature are secure environments, concerned primarily with delivering the order of the courts, and operationalise access to healthcare within these constraints. Prisoners requiring access to health services not located on-site at the prison, for example secondary care, must be escorted off-site to the treatment provider.(22) Prisoners face numerous obstacles to secondary care treatment whilst incarcerated. These include lack of prison resources to escort patients to hospital(23-27), a reduced range of treatments due to insufficient resource to administer or monitor outside of the hospital environment(28), lack of outreach by hospital consultants(24, 29) and personal beliefs and trust in authority.

All prisons have a dedicated primary care department on site, which can refer patients directly to secondary healthcare.(30) To get to these hospital

appointments patients must be escorted by prison officers, at a cost to the NHS. Prisons themselves are also under financial pressure, with prison resources stretched.(31) Prisons are able to offer on average only 2-3 escorted transfers to hospital per day which are often required for emergency medical issues, causing routine outpatient appointments to be cancelled. Prison security crises ('lockdown') can disrupt appointment schedules and reduced staff numbers on site as a result of escorts to hospital, and can negatively impact free time and movement available to prisoners who remain on site.(28) Such security lockdowns also increase confinement and can have unintended consequences such as increased engagement in risky behaviours (e.g. use of illicit substances) to combat the boredom of restricted movement.(32)

Secondary care sites themselves also experience issues caused by treatment barriers in prisons. Appointments cancelled at short notice are done so at a cost to the NHS in the context of under-resourcing and long waiting lists for appointments,(33) with a missed appointment representing a space that could have been filled by another patient.

1.7 Telemedicine as a potential solution

Telemedicine refers to the use of technology, including video link, to allow remote consultation for patients without the need for direct physical presence with local health services.(34) The definition of telemedicine within this research refers to synchronous telemedicine, whereby real-time consultations take place over video between patient and clinician, as opposed to asynchronous telemedicine where images/recordings may be stored and forwarded to clinicians.

Telemedicine has been used successfully in numerous healthcare fields such as follow up of acute care, chronic disease management, prehospital diagnosis, direct disease treatment (e.g. viral hepatitis infection in remote communities and underserved populations (35, 36)), and even staff training.(37) It has also been used extensively in US prisons for diverse purposes such as HIV clinics through to telepsychiatry.(23, 25-27) Prison telemedicine models piloted in other countries, e.g. the USA, have been found

to be effective at improving care access, reducing costs and providing improved care quality.(23, 26, 38)

Whilst telemedicine has been used effectively to overcome geographical distances (35, 36), there has been little research to explore the possibilities of using telemedicine within UK/English prison settings, which is required because the context is so different to the USA where most research has taken place. Work is also needed to understand the requirements of implementing this type of model from both the hospital and prison perspective. Prison settings offer a unique format for telemedicine usage compared to the general community where previous large-scale studies have taken place.(39, 40) Within prisons, patient populations are confined on site and where provided, are able to access static equipment which is fit for purpose(41), as opposed to in the community where personal computers or mobile devices can hinder telemedicine usability, and patients may not always be easily located.

Figure 3 (p.29) shows a hypothetical process model of how a patient in prison would access an external or telemedicine appointment for secondary care. These steps have been specified previously in telemedicine working groups convened prior to this research fellowship. I chaired a local prison telemedicine implementation group prior to commencing my PhD fellowship, at which point the role of chair was passed to a clinical staff member from the prison healthcare team.

Prison telemedicine appears to be potentially beneficial not just from a prison escort perspective, but also in regards to patient autonomy, and connectedness between hospital and prison healthcare teams.

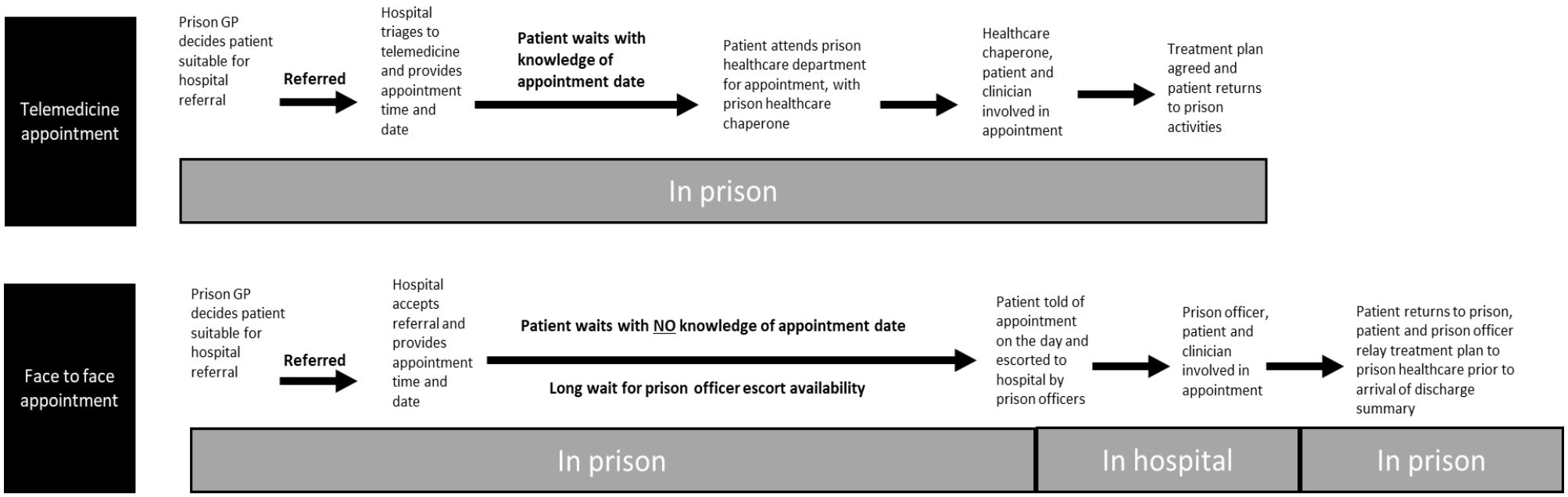

Figure 3 Process models for offsite hospital appointments and telemedicine hospital appointments

1.8 Current evidence of prison telemedicine effectiveness

Although there is now a reasonable body of literature on prison telemedicine which supports use in principle based on assumed positive outcomes (such as improved access to appointments) empirical, high quality research studies of clinical effectiveness remain sparse. A recent systematic review of telehealth outcomes in prisons found only 29 quantitative studies to consider after critical appraisal for bias, and concluded that overall the evidence for prison telemedicine effectiveness is mixed.(42) There is considerable heterogeneity in existing studies, extending to both study design (e.g. observational(25, 26, 32, 43-46), longitudinal(47), quasi-experimental(48, 49)) and also the clinical specialty being studied, which determines different sets of expected clinical and process outcomes. For example, measurement of a defined endpoint such as viral clearance in Hepatitis C infection is a clear marker of effectiveness, whilst the benefits of surgical follow-up appointments via telemedicine may be related more to personal utility than differing clinical outcomes. Cost effectiveness has been considered in numerous studies, but simply in regard to the absolute cost of healthcare delivery (23, 24, 50-55) as opposed to cost utility. Several studies have used questionnaires to measure patient satisfaction with telemedicine but, as yet, no interview-based studies have been completed. (43, 44, 56, 57) Other studies have reported improvements in clinical outcomes through use of telemedicine consultations, such as improvements in glycaemic, blood pressure, and lipid control for prisoners with diabetes(58) and improved virologic suppression in telemedicine treated HIV patients.(59)

Although evidence from these studies generally suggests that use of prison telemedicine can be better or equivalent to in-person care, data from robust randomised control trials is lacking. Future studies will also need to consider outcomes that may overlap between clinical specialties (e.g. reduction in referral to treatment times) but also the development of clinically specific outcomes (e.g. CD4 counts in HIV patients).

Chapter 2 The course of this PhD research: from local implementation research to adapting to a pandemic

OVERVIEW:

This chapter describes my dual role in research and implementation of prison telemedicine, the limitations this may introduce, and the impact of the COVID-19 pandemic on the research trajectory.

2.1 My background in prison telemedicine prior to research commencement

Prior to my research fellowship, I had been involved with laying the groundwork for prison telemedicine in the local region under study in this thesis. I provided clinical and operational support to the process through my clinical role as a Public Health Registrar. Before applying for the PhD fellowship I spent a period of one year working with the community and prison healthcare providers to establish a joint forum to progress the telemedicine project, had started securing support from individual clinicians for telemedicine services and was working with the HMPPS digital teams to understand the security approval processes. I applied for an NIHR Clinical Doctoral Research Fellowship based on my clinical experiences of the complexity of telemedicine work, expected by all to bring great benefits. There was an appetite to capture evidence on the process and outcomes to support business cases for further expansion if successful. These extensive prison and healthcare networks in support of the intervention were crucial to the viability of the application for research funding.

2.2 Background to the pandemic

On the 11th March 2020 the World Health Organisation declared a pandemic situation,(60) caused by the emergent virus SARS-CoV-2, known more widely as COVID-19.(61) Infection by the novel coronavirus was first recorded in Wuhan, China, in late 2019. Despite concerted efforts to reduce transmission

COVID-19 spread rapidly across the globe, with the first cases confirmed in England on 31st January 2020. In March 2020 the British Government took action to contain the growing numbers of COVID-19 cases by introducing social distancing policies and later a full 'lockdown' policy.(62)

2.3 Implications for this PhD research

I started my National Institute of Health Research (NIHR) PhD fellowship on prison telemedicine full time in June 2018. At the study outset, I aimed to understand whether local implementation and use of the prison telemedicine model was effective. If telemedicine was found to improve patient care locally, research results were expected to inform both the business case and the implementation process to expand use of prison telemedicine in other geographical regions.

At the time the pandemic hit England, I was one year and nine months in to my three year research plans. I had completed my proposed pre-implementation telemedicine research activities but had yet to embark on evaluation of the local operational telemedicine model. Indeed, the prison telemedicine model under study had only started to operate fully in the two months prior to the pandemic. Relevant to this thesis, government social distancing policies included closure of UK universities and the postponement of non-essential research studies in prisons and hospital settings. Visits to prison establishments were also restricted to core staff only, given the risks associated with infection control and outbreaks in a prison environment. Research on the implementation of prison telemedicine was severely restricted in wake of the pandemic.

As a public health registrar I was granted leave to return to clinical work to assist with pandemic response. I offered my time and assistance to the national NHS England Health and Justice team who, based on my PhD experience, asked me to lead on the rapid implementation of prison telemedicine across the English prison estate in support of the pandemic. I worked as a central member of this team from March – November 2020.

My formal PhD research and data collection was paused between March 2020 and February 2021. Being at the centre of national prison telemedicine implementation, granted by nature of my pre-pandemic experience from my clinical PhD role, meant that I was able to document the experience of national implementation during the pandemic. My PhD thesis was subsequently shaped by the pandemic, the influence it had on prison telemedicine rollout, and my experience within the national team.

For the purpose of this thesis I have assigned the following definitions:

Local implementation – Referring to my study of the small scale prison-hospital telemedicine model implementation, in one English county, prior to the pandemic (June 2018 – February 2020).

National implementation – Referring to my experience of widespread national prison telemedicine implementation at scale during the pandemic (March 2020 – October 2020).

Implementation research is defined by Peters as:

> *"the scientific inquiry into questions concerning implementation—the act of carrying an intention into effect, which in health research can be policies, programmes, or individual practices (collectively called interventions)".(63)*

Implementation research can refer to the implementation process, factors affecting implementation and/or implementation results. Implementation research can also consider how to introduce new interventions into health systems or how to scale-up existing use. To do this, implementation research seeks to understand interventions in real-world settings and how the context influences implementation. Evidence for how to implement new interventions into complex healthcare environments is often poorly reported.(63) It has been suggested that implementation projects should: start considering implementation projects at an early stage, seek to understand the implementation context thoroughly, use appropriate theories to guide and

explain implementation outcomes and use an iterative approach to implementation.(64)

2.4 Prison telemedicine – both implementing and researching as an embedded researcher

Throughout this account and subsequent thesis chapters I have opted to write my reflections in the first person given my embedded researcher status.

My PhD fellowship was awarded as a Clinical Doctoral fellowship, placing emphasis on my development as a clinical academic in the field of health and justice. Throughout this research, I have been involved in both the implementation and the *research* of the implementation of local prison telemedicine, through my role as a clinical academic, aligned with both the prison and the hospital clinical teams. My research has been informed by embedded research guidance.

My presence as a clinician and a researcher has certainly affected the progress of telemedicine implementation. There are indeed some aspects of the local implementation that I believe may not have progressed at speed had my clinical time and resource not been available to support this work. When I undertook tasks related to telemedicine implementation I did so 'wearing my clinical hat'. These tasks helped to progress implementation, which I was also trying to study, meaning my two roles were inherently intertwined.

Furthermore, my embedded role will have a lasting impact on telemedicine implementation through guidance and governance documents, and secured approvals for software from the prison service. Although my presence and involvement in the initial local implementation may have been key to getting a pilot model running, this pilot would be the catalyst for investment in other areas to deliver prison telemedicine if our local model proved successful. Indeed, without the experience of local implementation and the local agreements and policies we developed, the national rollout of prison telemedicine to support the pandemic would have been far more burdensome.

For this chapter I have documented my involvement with the prison telemedicine work as an embedded researcher, from both a local and national perspective, under the framework headings reported by Vindrola-Padros *(2017) The role of embedded research in quality improvement: a narrative review.(65)* Table 2 (p.36) details the characteristics of embedded researchers and how I related to these during my PhD study.

My experience as an embedded researcher studying prison healthcare raises questions as to where responsibility for oversight and championing of research in prisons should sit moving forward, if we are to evolve a national culture of prison research. Should it remain locally with busy provider teams requiring academics to build individual provider relations, or should there be some national oversight and support for research delivery, as with the overall commissioning of prison healthcare?

Table 2 My roles as an embedded researcher

Roles/features of embedded researcher	How I met this role
Researcher is usually affiliated to an academic institution as well as an organisation outside of academia, thus working in a state of 'in-between-ness'	• My in-between-ness straddled three organisations, that of the university (my employer/PhD host), the local hospital providing secondary care services **to** the prison (via honorary contract) and the hospital providing primary healthcare services **within** the prison (via honorary contract). At a later stage, it extended also to the national NHSE H&J team. • By nature of my embedded practice I adopted the role of a telemedicine champion (section 5.5.3.4 p. 151) straddling organisational boundaries. • Use of my fellowship associated clinical time to support the delivery of key operational tasks for local prison telemedicine implementation, which may otherwise have gone unfinished e.g. document preparation and progressing software approvals with HMPPS
Researcher develops relationships with staff and is seen as part of the team	• Apparent that if I wished to research hospital telemedicine in the prison provider establishments I would also need to ensure it was implemented, assisting the healthcare provider as required • Attendance at numerous internal meetings with prison healthcare provider such as Care Quality boards and operational management groups, to increase my visibility and brief staff on telemedicine implementation and subsequently the research I was proposing

Roles/features of embedded researcher	How I met this role
	• Acceptance as an insider at the prison healthcare provider trust improved once the telemedicine service was launched locally, representing a demonstrable and unlikely achievement for the prison healthcare team • At national level (pandemic experience) I was adopted into the national team with ease given that I was known previously in regards to my telemedicine research • Subsequently, being part of the national team meant I was accepted as a telemedicine lead across a broad range of providers
Researcher generates knowledge in conjunction with local teams (coproduced) which responds to the needs of the host organisation.	• Attendance of local clinical groups focussed my attention on the goals, strategic priorities and difficulties faced by a prison healthcare provider, allowing me to craft arguments for telemedicine, and datasets that would answer or evidence these concerns. In this way, my embeddedness influenced and improved my research plans. • Critical reflection on the research took place throughout with those directly accountable to the research from amongst clinical teams, specifically the principal investigators (PI) at both the community and the prison hospital trusts. • Work with national team to use existing PhD documents, data and research plans to inform national telemedicine rollout • Previous relationships built with HMPPS meant I could progress national level engagement at speed

Roles/features of embedded researcher	How I met this role

Researcher builds research capacity in the host organisation	• Presentations on securing clinical fellowships at various trust forums e.g. Grand Rounds and offer of help to members of the hospital team writing short research proposals
	
	• General difficulties with building research capacity in prison healthcare teams:
	  ○ Prison healthcare re-tendering on a five yearly basis is not conducive to the development or delivery of prison based health research
	  ○ The lack of research infrastructure in prisons in comparison to the community healthcare services also creates barriers e.g electronic health records held separately by providers and are not accessible by research database application, research nurses do not exist in prisons therefore consenting patients/collecting data must be completed by clinical staff
	  ○ HMPPS by default do not support student research projects below doctoral level
	  ○ The requirement of their secondary research committee (HMPPS NRC) approvals deters would-be researchers and lengthens the approval process which cannot be completed concurrently with NHS approvals
	  ○ Financial recompense received by hospital R&D teams for taking part in research is not shared with the clinical departments themselves, making it less of an incentive for their participation
	
	• At a national level I was able to advocate for an evaluation agenda for the national prison telemedicine rollout. My research became easier once I had the national backing and support of NHS England and legitimacy through my role in national telemedicine deployment.

2.4.1 Conclusion on embeddedness

In conclusion, I do not doubt that I would have faced significant challenges to researching telemedicine implementation if I had not assumed the role of an embedded researcher. The nature of my embeddedness also meant I was privy to meetings and processes which vastly improved my knowledge and understanding of the delivery of prison healthcare services, strengthening this research and the conclusions I am able to draw from it.

I do however reflect that my embeddedness presented some challenges to the research throughout. Interviewing staff members I work with was at times difficult. Participants would occasionally preface viewpoints with, "*well you know this already but…"* referring to my involvement throughout the implementation process. Although people were openly able to vent their frustration with the slow and arduous implementation work they may equally have held back from being overly critical due to my known involvement. I also felt that I came to be seen more as a clinician than a researcher, and had to continually remind teams that my presence was predominantly research based, and that I needed to deliver research outputs.

2.4.2 Influence on implementation research

Embedded researchers differ from clinical academics, a role which I also assumed by nature of the fellowship I was awarded. Embedded research describes the placement of an academic researcher, embedded within a non-academic team that they are not originally part of, to undertake/embed research activities. An embedded researcher will not necessarily have any clinical experience. In contrast, Clinical Academics undertake research in their specialist clinical discipline as part of their core job role. The Association of UK University Hospitals defines clinical academics as:

> *A nurse, midwife or allied health professional who engages concurrently in clinical practice and research, providing clinical and research leadership in the pursuit of innovation, scholarship and provision of excellent evidence-based healthcare. A central feature of their research is that it aims to inform and improve the effectiveness, quality and safety of healthcare. They focus on building a research-led care environment including the*

> *development of capacity and capability. They challenge existing practice as well as working within, and contributing to, a research rich environment that leads the way towards achieving excellence in healthcare and health outcomes. (66)*

In this instance I was both a public health clinician and academic (a clinical academic), embedded within a non-academic hospital team that I had never previously been part of (embedded researcher).

As a clinical academic, throughout this research I have been able to shape my research and ground it in the day-to-day implementation issues I encountered, to inform effectiveness and quality of a clinical service model whilst ensuring at all times outputs are clinically useable to inform future practice. I identified the need for this research project in my clinical role as a public health registrar prior to fellowship application, and adapted the research to account for clinical changes encountered throughout e.g. local delays in implementation and the new pandemic context. Through my academic and clinical expertise I was later able to assume a national clinical leadership role in support of the pandemic.

Prior to the pandemic I led on the following 'clinical' operational tasks in support of local prison telemedicine implementation:

- Establishment of a local prison telemedicine steering group forum (with representation from key stakeholders)
- Identifying a software solution for telemedicine and taking it through the HMPPS digital assurance and approval process
- Preparation of essential documentation in conjunction with relevant clinical/prison based teams e.g. Telemedicine security and operational guidance, patient informed consent sheet for telemedicine use

I was not at any point involved with development of clinical guidelines for healthcare. Coordination and delivery of telemedicine clinics was performed solely by relevant clinicians from both providers. My role in the implementation itself was to assure tasks relevant to telemedicine, to enable study of its

effectiveness as a method of healthcare delivery in prisons. I was able to deliver these tasks based on my relevant clinical expertise.

Despite my presence and dedicated clinical time, and enthusiasm for telemedicine itself implementation still did not progress locally at the expected pace. This led to the early refinement of my PhD methods proposal to collect staff interview data about the barriers to implementation rather than the early experiences of implementation. My local presence and legitimacy as an embedded researcher meant I was able to secure interviews with relevant staff members from both prisons and community settings. My involvement in implementation tasks also meant I understood terminologies and purposes of clinical groups enhancing my ability to interpret data collected. To ensure my knowledge did not influence the interpretation of interview data I used formal frameworks to guide analysis and had oversight and scrutiny from my supervisory team, who were kept informed of the clinical relationships, politics and issues relating to both the research and implementation. I discussed with my supervisors the challenges relating to interviewing those with which I had developed working relationships.(67) This included the need to reassure participants that information would remain anonymous, ensuring people knew they could opt out of participating and encouraging honest and open discussion. As I was not a permanent member of the team power differentials relating to work roles were not a factor that appeared to influence staff willingness to participate or engage in the interview process.

In summary, successful local implementation and evaluation of prison telemedicine would have supported investment in widespread rollout if deemed successful, therefore my clinical role in **implementation tasks,** although crucial in the local pilot model, would have likely been replaced with financed staff resource in other areas upon scale-up.

My **implementation research** is likely to have been influenced in some ways by my involvement in the implementation itself. I understood well the nuances and clinical politics affecting implementation but I argue this enhanced my ability to interpret data collected. My methods were shaped by my in depth

knowledge to ensure appropriateness to the unfolding implementation climate. My legitimacy as a clinician meant I could secure staff interview participation. Throughout the research I received independent scrutiny and advice from my supervisory team on aspects such as topic guides, data interpretation and self-reflection. I believe this has ensured the data presented within this thesis represents an account of the true issues associated with implementation and the way things changed with the introduction of the pandemic.

Had I not been clinically involved I would never have had legitimacy and access to collect data from local prison healthcare teams therefore I believe this compromise was necessary. Had I not had local experience I would never have been exposed to a national context, or able to truly put my research in to practice and scale up prison telemedicine nationally at speed. For me this research has demonstrated the true benefits of assuming a clinical academic role, being attached to the questions and problems arising at the ‘frontline’ and ensuring outputs are useable by clinical services.

Contrasting the roles of the embedded researcher and clinical academic shows benefits and negatives to both. From my personal experience, I doubt I would have been accepted as an embedded researcher had I not had clinical expertise to lend to the prison healthcare provider hospital team. Equally, not being a formal member of their local team and having to rely on other staff members to conduct my research (e.g. I could not undertake direct patient recruitment) was problematic. I suspect that had I been an academic researcher alone with no clinical experience, my research role would have been clearer to the team, but difficulties with actual delivery of research and acceptance into the team would remain. In contrast, a role as a true clinical academic, where both specialist clinical and academic knowledge is combined to deliver research objectives within a home clinical team, appears a more effective route to research delivery. Specialist clinical and academic knowledge supports the development and delivery of clinically appropriate, meaningful, research. Undertaking this research within a home clinical team removes the issues associated with integration into unfamiliar clinical teams and the over-reliance on others to deliver research activities. I believe prison

research could strongly benefit from the development of local clinical academics who understand the prison environment and have the legitimacy to deliver health research related activities within.

2.5 Research questions addressed by this thesis

As stated in section 2.3 (p.32) my research questions regarding prison telemedicine adapted to the pandemic context and the shifting context for telemedicine implementation. The following research questions were answered as originally planned through research conducted prior to the pandemic:

- What are prisoner's current experiences of secondary healthcare?
- Does telemedicine have the potential to mitigate any of the barriers and problems to accessing secondary care as reported by patients in prison?
- What factors are known to affect the implementation of prison telemedicine models in other countries?
- What factors affect the implementation and normalisation of a local hospital-prison telemedicine model in England?

The following research questions were not answered as originally planned:

- How does the local telemedicine intervention change as implementation progresses?
- Is telemedicine acceptable to prisoners and staff delivering telemedicine appointments?
- If implemented successfully how does the access, quality and cost of secondary care in prison change with a local telemedicine model?

Following the start of the pandemic and the widespread scale up of prison telemedicine in England the research plans were adapted to answer the final following question:

- How did the COVID-19 pandemic context affect the implementation of prison telemedicine in England?

The remaining thesis chapters address these questions.

Chapter 3 What are prisoner's current experiences of accessing secondary healthcare?

OVERVIEW:

This chapter explores the experiences of accessing secondary care as a prisoner in England. The chapter is structured to first understand the themes related to attending secondary care as a prisoner. Secondly it aims to relate these themes to the concept of prison telemedicine, to understand where telemedicine may be able to mitigate poor patient experiences of the hospital care process.

A better understanding of current prisoner experience of hospital care provides information on the ways in which telemedicine could improve patient experience. This chapter was written prior to the COVID-19 pandemic and describes the findings of a study on prisoner experience of accessing secondary care services as a prisoner, to understand how telemedicine could potentially improve this experience and offer closer equivalence of healthcare in prison.(4) To my knowledge there is no published literature which seeks to understand the experience of accessing hospital care as a prisoner in the UK, nor any attempt to understand how the use of telemedicine could, theoretically, improve the experience of care for prisoners. This chapter uses qualitative data collected from current prisoners to understand key issues that arise when trying to access secondary care treatment during incarceration (in the traditional model of off-site care at the hospital), to answer the following research questions:

What are prisoner's current experiences of secondary healthcare?

Does telemedicine have the potential to mitigate any of the barriers and problems to accessing secondary care as reported by patients in prison?

An understanding of the patient-perceived barriers that can potentially be mitigated by telemedicine will help guide the collection of future outcomes data from operational telemedicine models, particularly in regards to patient experience.

3.1 Methods

3.1.1 Wider background to data collection

I was awarded research funding to study prisoner's experiences of accessing secondary care whilst incarcerated. This research support this thesis and formed an integral part of this PhD study, but also has other objectives, reported elsewhere. (68)

3.1.2 Rationale for a qualitative approach to data collection

A qualitative approach to data collection was used to understand prisoner beliefs, perceptions and fears around hospital appointments, and to examine the perceived relationship dynamics between the numerous parties involved with receipt of secondary care as a prisoner. These were mapped to a process model (Figure 3 p.29) of how prison telemedicine may operate to understand how telemedicine may mitigate some of these concerns and improve equivalence of care between prisoners and community patients.

3.1.3 Use of researchers with lived experience of prison

Carrying out qualitative research with people who are imprisoned requires a considered approach. Participants must feel free to share their experiences without judgement, and care should be taken to ensure participants do not feel coerced into taking part given that so much of their current lifestyle is dictated by their imprisonment. The data collected to inform this chapter relates to previous healthcare experiences whilst imprisoned. Recalling these experiences, particularly those of a negative nature, can be highly distressing for people in prison.

Use of peers or people with previous lived experience of incarceration is advocated within the prison environment, for both research and non-research

activities. (69) Given the trauma that some people may have experienced when accessing healthcare, and the potential need to escalate concerns around healthcare experiences disclosed through existing channels, we committed to the use of peer interviewers throughout to collect qualitative data and recruited a voluntary sector partner.

User Voice (UV) is an established voluntary sector organisation that aims to ensure people within prisons have a voice in services developed for them.(70) UV employs people with lived experience of prison as Engagement Fellows. Having directly experienced imprisonment allows Fellows to understand nuances in prisoner accounts and language, to confidently navigate the prison environment, and to sympathise and build a rapport with the people residing in the establishment. People in prison can be subject to judgement by those who have never been to prison, and may be reluctant to disclose to researchers who have no experience of incarceration. Use of UV Fellows also instils a sense of trust in participants, that the research project is independent of the prison itself, and that the remit and purpose will be of genuine benefit to prisoners in alignment with UV values.(71)

UV Fellows routinely gather feedback from current prisoners on a wide variety of topics, including prison healthcare, to ensure prison residents have a voice in service development. UV Fellows receive accredited peer training to equip them with skills to gather high quality research data.(72) For this part of the research project UV Engagement Fellows organised and led data collection activities in prisons, including recruitment of participants. The UV Fellows leading research activities were of the same gender as the prison participants (all English prisons are single sex facilities). Questions posed in data collection activities and the methodologies employed were co-designed by the research team and UV.

3.1.4 Data collection

Five different English prisons comprising male, female and foreign national prisoners were involved in data collection. At the outset, focus groups were used to understand broad issues relating to accessing secondary care in

prisons. Following completion of the five focus groups, the research team conducted a further stage of qualitative research consisting of 17 one-to-one interviews with prisoners.

Semi–structured interview guides were developed in conjunction with UV interviewers and reviewed by a community forum comprised of ex-offenders prior to use. Topic guides were split into three overall sections: Attending hospital from prison, patient journey in the prison context and leaving prison. The high level topics to be covered are shown in Appendix Table 15 (p.261)**Error! Reference source not found.** These were supplemented with prompts within the topic guide.

Throughout the data collection process, peer researchers, in discussion with the lead researchers, reflected on what worked to gain the most accurate data from participants and adapted their questioning style appropriately.

3.1.5 Recruitment

Participants were selected by UV researchers and prison healthcare teams using a mixture of purposive and snowball sampling. Participants who were known to have had experience of secondary healthcare were approached in person with a leaflet and a verbal explanation of the study purpose and activities. Peers in prison known to the UV Fellows were also asked to identify people who may be appropriate and willing to participate. Those who participated in focus groups were also invited to attend 1:1 interviews. Of 29 total focus group participants, 5 took part in 1:1 interviews. Additional participants were also recruited for interviews through UV researchers' networks in the recruiting prison sites.

3.1.6 Participants

Focus groups (n=5) and 1:1 interviews (n=17) were undertaken by UV interviewers to collect qualitative data pertaining to the experiences of accessing secondary care whilst incarcerated. Focus group size ranged from three to nine people, and lasted between one and two hours. All focus groups and interviews took place within prison in a neutral space.

Forty-five participants took part in the study (see Table 3 p.49). Several participants dropped out or could not participate. Reasons included: other commitments (e.g. hospital attendance, gym session), receipt of bad news prior to interview, lack of prison escort to bring participant to interview and circulating rumours that research results would be sent to the Home Office.

Table 3 Participant characteristics

Total participants		45
	Participants (interviews)	17
	Participants (focus groups)	29
Gender	Male	21
	Female	24
Ethnicity	Asian	6
	Black	12
	Dual heritage	6
	White	12
	Other	3
	Not reported	5
Age	Age range	23-69
	Average	41

Participant's names have been changed to protect confidentiality. In addition prison establishments or hospitals involved in care have not been named within quotations/results.

3.1.7 Ethics

This part of the study received ethical approval from the Camberwell St Giles NHS Research Ethics Committee (18/LO/0643) and the HMPPS National Research Committee (NRC 2018-212).

3.1.8 Informed consent

UV Fellows were responsible for seeking written informed consent from participants prior to data collection. The informed consent sheet was based on the UV template which has been designed with prisoners to be accessible. UV fellows are generally assigned to work in specific prisons and are therefore well known and trusted by the residents of the prisons they work in. UV was well briefed on the study design and purpose, and able to clearly convey the rationale for participation when recruiting participants and leading research activities.

3.1.9 Analysis

All data collection activities were recorded on an encrypted digital voice recorder and professionally transcribed. Participants did not review or comment on transcripts due to the practical constraints of reconvening participants. Instead, after independent coding of transcripts, researchers, peer researchers and prison healthcare staff met to discuss codes and verify that they were reflective of the data attributed to them. During focus groups researchers made field notes to provide context to the analysis. I undertook Framework Analysis on focus group and interview data, through which data is sifted, charted and sorted in accordance with key issues and themes. Framework analysis involves a five step process: 1. familiarisation; 2. identifying a thematic framework; 3. indexing; 4. charting; and 5. mapping and interpretation. (73)

The analysis of this data was undertaken by five researchers from the research team, including myself, in my role as Chief Investigator of the project. During familiarisation an initial rapid review of transcripts was undertaken by the five researchers to derive codes from the data to develop a coding schema we have called the coding tree (2. Identifying a thematic framework)(73), after which further in-depth re-coding to this schema was undertaken (3. Indexing)(73). The resulting qualitative data collected was coded using open and axial coding in Excel (4. Charting)(73). Open codes arise during a researcher's interrogation of the data, and are formulated in an attempt to label and categorise sections of transcripts to explain the story that is unfolding, for

example, '*lack of physical preparation'*. Axial codes identify relationships between open codes. For this project the axial codes related to chronological stages of secondary care appointments, and grouped open codes according to when they were reported in the healthcare journey, for example, '*the morning of the appointment'*.

UV fellows did not undertake initial data analysis to reduce the risk of confirmation bias, whereby evidence is interpreted in light of existing beliefs and prior experience.(74)

For this PhD chapter analysis, I reviewed and re-explored the coded data. Codes are presented in (Figure 4 p.51). I used codes to interrogate the telemedicine process model (Figure 3 p.29) to determine where telemedicine may act to mitigate poor patient experience with secondary care. Some codes were not relevant to the telemedicine model at this stage and were not used in the formation of major themes for this analysis. Codes were compared and contrasted and subsequently grouped and labelled as major themes. Some codes overlapped between major themes (5. Mapping and interpretation).(73)

3.2 Results

The following results section presents themes identified in Figure 4, using verbatim quotations to demonstrate themes. All quotations presented have been anonymised to ensure individuals or establishments cannot be identified. Participants have been given pseudonyms throughout.

Prisoners experience issues with secondary care from the point of referral through to the point of return to the prison. In the following sections I first report issues relating to accessing secondary care in prisons as described by participants, and secondly describe how these relate to telemedicine.

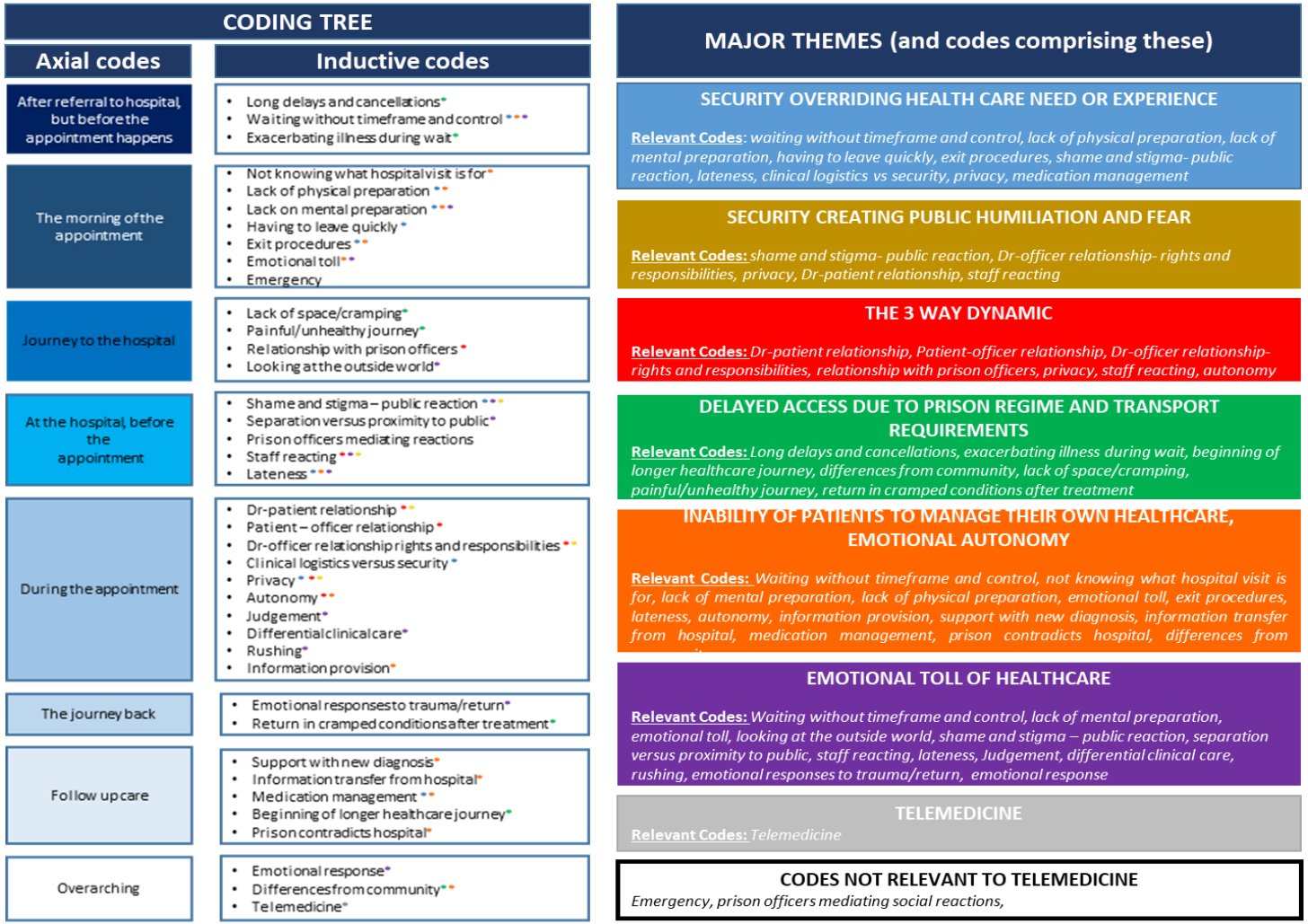

Figure 4 Coding tree and major themes (asterisks denote which theme inductive codes contribute to)

3.2.1 What issues do people in prison experience in trying to access secondary care?

3.2.1.1 MAJOR THEME 1 - Security overriding healthcare need or experience

Prisons by their very nature are secure environments, concerned primarily with delivering the order of the courts and access to secondary healthcare is operationalised within these constraints. In most circumstances security will take precedence over healthcare need or quality which can lead to poor healthcare experiences for patients.

Prisoners are not allowed to know the time or date of their hospital appointment in case they make plans to abscond. After referral they will wait for an undetermined period of time, sometimes months, with no indication of when they will have their appointment. Most people talked about the high levels of anxiety this causes.

> *"So, from the point where they told me they booked the appointment, every day I was kind of anxious to know is this the day I'm going to go?" (Dwight)*

Prisoners are subsequently only told on the day of their appointment that they are going to hospital, which may involve taking people straight from their assigned work placement within the prison. Lots of participants said that the unexpected nature of these appointments means they do not have the opportunity to mentally or physically prepare as they might in the community. Dwight talked about his experience in light of the 10 minutes he was allowed for preparation to leave:

> *"I didn't have any time to prepare, to have a shower, iron my clothes, […] I was working as a cleaner, I could have been in the middle of cleaning or preparing myself to clean and not found myself in a presentable state that I would want to go outside or go into the public as such." (Dwight)*

Here he expresses his concerns as to the image he will project to the public if he does not have time to change and 'get presentable' after completing his cleaning work in the prison. Another participant, Leah, talks about the mental

burden she experiences when she finds out she has a hospital appointment, and the lack of opportunity to prepare herself mentally in advance:

> *"…when you go in for an operation no matter how big or how small you need that headspace a day or so before not that morning "Oh you're going for your operation now." There's no time to prepare or maybe get a few things together that you might need, it's that what gets me not knowing, the not knowing." (Leah)*

Prisons are concerned that residents may try and smuggle objects out during hospital visits so, having just been told that they are going for a hospital appointment, patients face being strip searched prior to exit. Here we see that this process has almost been normalised by Tony:

> *"I was worrying about that, but you don't know who to ask or anything like that, and they go through the things, what I call normal now, actually get […] reaching reception, getting undressed, security, squat and so on, all part of prisons, I've done it before, I'm alright."(Tony)*

In addition, the lengthy security procedures to get someone out of prison can often mean they run late for hospital appointments, resulting in feelings of guilt at a factor that is out of their control. Here Adam talks about the embarrassment he feels at being late for hospital, despite the fact this lateness is ultimately out of his control. He sees himself as an inconvenience to the hospital, given that they are going to have to try and fit him in despite his late arrival:

> *"[..] I feel embarrassed and […] like I'm an inconvenience to them, which it shouldn't be. I'm here, I've done as much as I can. But unfortunately the circumstances we're in and the logistics just don't work. […] When I went to hospital, myself on the outside before I came to jail, I was always on time if not early for appointments because I know it backlogs everything in the system and you're embarrassed about it. The fact it's not your fault but it is you causing a problem to the system." (Adam)*

Once back at the prison patients may find that medication they have been prescribed/given by the hospital, is removed from their possession, or denied prescription based on prison and healthcare policies e.g. around high 'value'

drugs. As Katy shows in the quotation below, prisoners are aware that the medication they receive in prisons may be limited compared to what they would receive in the community:

> *"Because of being in prison and because of not being allowed certain medications there are a few of us that have certain conditions where if we were outside we would be getting different medication to what we get when we're in prison." (Katy)*

Summary: Security measures employed can negatively affect patient's healthcare experiences; however, these are unlikely to be altered when transporting patients into the community given the imperative for security and risk reduction by the prison service.

3.2.1.2 MAJOR THEME 2 - Security creating public humiliation and fear

At the hospital prisoners will be in handcuffs and attached to officers to ensure they cannot abscond. Use of handcuffs is based on assessment of escape risk, as opposed to risk of violence from the individual. Wearing handcuffs and being accompanied by uniformed officers is a highly stigmatising experience for patients, clearly identifying them as a prisoner to other community patients, producing a raft of negative emotions and fears around hospital attendance. Most people talked about the public reactions they receive when at the hospital, here Duncan talks about the perception of fear he notices in community members:

> *"Certainly on that day, I noticed everybody looking at me. I noticed old ladies shuffling to one side, women holding their bags, kids looking at me and seeing fear in their face." (Duncan)*

It is not only the public seem to fear prisoners, hospital staff reactions can be equally unsettling for patients. Several people questioned how they can relay the message to hospital staff that, *"he's a non-violent person but unfortunately we have to bring people like this, handcuffed" (Aaron)* to ensure they don't feel intimidated or worried about interacting with a prisoner. Derek told us that he understands hospital staff will be naturally curious about prisoners and wonder if they are dangerous:

“I don’t know how that can be put across, that maybe the prison staff are capable of keeping us under a certain amount of control so they do not need to worry about what’s going through their mind, whether he’s a murderer or drug dealer or fraudster, whatever it is, they’re not there to cause any harm, they’re there to be helped. If that could be put across to them maybe that will make them relax a little bit more and deal with us, as prisoners, humanely.” (Derek)

During the appointment itself patients will remain handcuffed to a prison officer, meaning that they are afforded little privacy, and often causing logistical issues with testing procedures. Here Fay talks about her experience of having a chest x-ray whilst handcuffed:

"...the doctor requested for them to go out with that long chain anyway, they could sit outside the door. The officer refused. They say no, we have to be here and okay, lucky for me I’m not so prudish and this and that, but still, it feels uncomfortable. Because I had that long chain I took my tops, everything, my bra and everything out so they left hanging on the chain..." (Fay)

People also fear that prison officers, not being bound by the same duty of confidentiality as medical staff, will tell other people personal information back at the prison. The following quotation from Bobby also discusses feelings of embarrassment that can be generated when prison officers are there listening to sensitive medical information:

"Then, once you’re there, you’ve got officers in there listening to what’s wrong with you. It’s kind of personal. It’s a bit embarrassing, you’ve got two grown arse men there with you. You’re trying to speak to a surgeon, there might be things you want to ask that you don’t want them to know. Some things are private aren’t they? You don’t want an audience when you’re asking them." (Bobby)

Summary: Security measures employed by prisons can contribute to the stigmatisation of prisoners, with many feeling this portrays them as violent and dangerous to both the public and healthcare staff, who may react accordingly.

3.2.1.3 MAJOR THEME 3 -The three way dynamic – patient, clinician and prison officer

Patients in the community are generally free to attend hospital appointments on their own, or to make an informed choice as to whether to ask a friend or relative to accompany them. In prisons patients have no choice but to be accompanied by prison officers during hospital appointments. These officers may not be known to the patient, may not be of the same gender, and inevitably will not be healthcare professionals, yet are privy to the private information revealed in discussions between patient and clinician. This extends to the most personal of information as exemplified by the following quotation from Katy, where a prison officer actually poses a question to the community clinician about Katy's reproductive health:

> *"I've been sitting there and I've been talking about all my reproductive organs and the Officer has gone "So, will she be able to have kids in the future?" "Excuse me, what has that got to do with you? Who are you?" (Katy)*

In addition, hospital staff may react to prison officers with a sense of deference and a reluctance to challenge their authority, despite the clinician's professional autonomy within the hospital environment:

> *"When you're a prisoner this goes out of the window, you have no medical confidence. It's open information for everyone that's there and you just get cut out. After a while they don't talk to you, they don't see you, they see authority and they bow down to it, no matter what's requested of them." (Mohammed)*

Here Mohammed is referring to issues he experienced at hospital where medical staff deferred most of their attentions to the prison officers. Laura goes one step further suggesting doctors can be intimidated by prison officers, and feel unable to challenge them:

> *"I think sometimes the doctors are afraid to talk to the prison officers, to ask them to do things…" (Laura)*

Most of the study participants drew attention to the fact that during appointments clinicians will often direct their clinical questions and attention to prison officers instead of the patient:

> *"I was not asked any questions, apart from how are you feeling now? Any question that they wanted to ask me was going to the officers. They were asking the officers. So, what type of drugs does he take? Does he do anything else? Does he use the gym? You think hold on a sec, I'm right here. But all conversations took place between staff and doctors" (Mohammed)*

This can both frustrate and upset patients, who report feeling infantilised and uninvolved in their own healthcare as vocalised by Bobby:

> *"You're sat there cuffed to someone like that, sometimes they'll ask questions for you. Like you're their child or something"(Bobby)*

Some participants felt that hospital staff appeared unaware that they could challenge prison officers to leave the room through use of a long handcuff chain, as discussed here by Ian:

> *"You know, I think, at the time the surgeon doesn't know how much power they have at that moment, you know, and I think that they should use their power instead of being intimidated by staff in what to do, what not to do." (Ian)*

Despite the obvious benefits this would bring in terms of patient privacy:

> *"Yeah, there's no privacy. You're chained to the officers and you want to discuss your illness or your medication and they don't, like, put a longer chain on and let you have a private conversation with the consultant or the doctor or the GP." (Derek)*

A lot of people spoke about feelings of stress and embarrassment in appointments due to the presence of prison officers. Anna told us her story about a consultation for female genital mutilation reversal and reconstruction surgery, during which prison officers saw highly personal imaging on hospital computers during the consultation. From her quote we can infer she felt extreme distress:

"The main thing that is more humiliating than anything else, is, because we are female prisoners. So, a lot of women […] are taken to a gynaecologist, and that's supposed to be intimate and private and it's quite…it's heart-breaking the way you're treated in that environment. You don't see the gynaecologist on your own. You see them with the two members of staff, handcuffed. […] I came back, I was devastated. I was so depressed. I nearly, nearly took my life. That was really horrific." (Anna)

Prison officers may occasionally even exercise their authority in regards to decisions over the clinical care a patient will receive. Prison officers operate on a shift basis, and have an operational emphasis to return patients to the prison as soon as possible to avoid costly bedwatch situations, therefore may push for patients to have the procedure that aligns with these organisational priorities. In the following quotation Katy talks about an occasion where the hospital staff first asked the prison officer whether she could have sedation, and then the prison officers attempted to push for the simplest and quickest treatment option, without consulting her as the patient:

"And especially, like, for yourself going out for operations they spoke to the officer "Oh is she allowed sedation?" Hello, I'm the one having the operation it should be me you're asking do I want the sedation, it's got nothing to do with them. Just because they might wanna have a lesser time in the hospital "No, no, no don't give her sedation she'll be alright." Hello, it's me that's having this procedure done I would like the sedation thank you very much." (Katy)

Prison officers are often responsible for transferring information from the hospital back to the prison as hospital clinicians cannot document information directly on prison electronic health records. This information is intended to be used for interim care prior to arrival of a discharge summary at the prison. However participants frequently reported that this information did not appear to be received or acted on by prison healthcare teams, resulting in poor quality care, including a lack of pain relief and inattention to follow up appointments:

"Well, they said to me two weeks' time for my appointment so why haven't I been out?" and they were like "Oh, well nobody told us that" when it's written on the sheet that comes back from the hospital with you that goes to healthcare." (Katy)

Summary: Prisoners report that the clinician-patient-prison officer dynamic creates a three way relationship with an uneven power distribution, often resulting in a hierarchy that places the patient at the bottommost rung in regards to their healthcare decisions. The power differential between prisoner and prison officer can be exacerbated by hospital staff, who appear unaware of their roles and responsibilities in challenging security in the face of poor healthcare experience, for example that use of a long chain to give patients privacy is possible. Prison officers also hold a key role in transference of information from the hospital to prison healthcare departments, which if not upheld can cause issues with care continuity.

3.2.1.4 MAJOR THEME 4 -Delayed access due to prison regime and transport requirements

Prisoners are entitled to healthcare equivalent to that received in the general community(75, 76), with access to care arguably one of the most important aspects of equivalence. Within prisons, transfers off site to hospital are restricted each day due to the limited number of prison officers available to escort prisoners. Should emergencies arise routine appointments may be cancelled. Here Adam makes reference to 'spice buses' referring to the ambulances who carry emergency patients that have had adverse reactions to synthetic cannaboids:

> *"Unfortunately in this establishment at that period of time, we were having a lot of hospital visits for emergencies, […]. I know I missed three appointments due to what we call, spice buses. If someone goes over and has a medical emergency everything gets cancelled because of the ambulance." (Adam)*

In effect this means patients in prison face the unusual situation of being prioritised against their peers for a hospital attendance, whereas in the community all patients would be able to present at the hospital as required. Prioritisation in prisons happens both in terms of emergency appointments and for standard competing routine outpatient appointment needs. Some participants specifically mentioned the concept of lists and their placement on them according to healthcare urgency:

> *"[…] you've gotta go on a waiting list and everything's a list, go on the list, go on the list well how far down the list I am. You're at the bottom 'cause you're not an emergency but to me losing my sight because of that was and I had to petition against it" (Abigail)*

If there are too many cancellations, patients may be placed back at the bottom of the hospital list as per NHS guidelines and made to start the referral pathway from the beginning.(77) This can mean they wait well over the NHS target of 18 weeks from referral to treatment(78), clearly described by Katy (a prison peer health champion) in the following quotation. For those participants that were aware of this NHS rule, it contributed to a sense of unfairness, given that they have no control over cancellations from the prison end:

> *"The only thing I can think of is not to penalise women who are in prison […] if you miss an appointment three times you go back to the bottom of the list. That needs to change for inmates because it's not their fault, […] you might have waited six months, you've come to the top of the list and then you've missed three appointments so you are back at the bottom of the list so now you've got to wait another six or eight months […]. Anybody who is in prison that three strikes needs to be lifted because it's not down to us. We don't have control of getting to and from the hospital and like I said there's a lot of things that come into play on that. If somebody has been fitting overnight and they're out at a hospital that person's appointment is going to get cancelled." (Katy)*

Because of the limitations in hospital appointments for patients and the frequent cancellations, most participants reported waiting a very long time to have their appointment scheduled, potentially exacerbating their illness, as discussed by Susan:

> *"So I'm sitting there now and waiting and waiting and waiting and I'm thinking so why haven't I been called for this appointment? Because, I mean, last time it took me five months for me to get from here to the hospital and the condition's getting worse." (Susan)*

Transfer between prison establishments can also interrupt the care pathway and may result in patients starting the treatment journey from the beginning on arrival at the new facility. A few participants mentioned the disruption in care they experienced as a result of moving between prisons:

> *"I've had to move establishments while being seen at the hospital. Getting closer to the actual surgery and having been moved to another HMP prison, which has then led to my whole situation restarting from zero, again which has been very difficult because you're going round in circles and there's no progress on where you should be." (Ian)*

Improving access on site at the prison also removes the need to transport patients in often cramped and uncomfortable conditions to and from the hospital. Here Adam talks about the frustration that builds too and from hospital during the transfer process:

> *"It's a matter of comfort I think is the best description. […] restrictions of movement and being in the back of the car with double cuffs, it's uncomfortable, it's frustrating. I think even the most mild mannered person, if you're in a taxi and the car is bumping and grinding and your hands are restrained in that manner, you're going to get a little bit niggly" (Adam)*

Summary: Access to secondary healthcare in prison is unlikely to be equivalent to that experienced by community patients, given the long waits and cancellations that result in breaches of NHS waiting time standards, with patients unable to take personal actions to ensure that they attend their appointment. Appointments are prioritised against other people's health needs, which can also contribute to the long waits for patients to receive care. The process of transportation to get to the hospital is often unpleasant for patients.

3.2.1.5 MAJOR THEME 5- Inability of patients to manage their own healthcare, emotional autonomy

Emotional autonomy refers to the ability to have control over your own life, to make significant decisions and relinquish dependence on others. However, the opportunity to exercise emotional autonomy in prison in regards to healthcare is severely constrained and this institutionalisation may negatively affect people on return to the community. Here Lucy talks about how this can affect people who have 'grown up' within the prison system, meaning they lack skills on release to deal with their own healthcare appointments:

"…there are some girls that have been in prison since they were young and then if you're going to the hospital with doctors and they're only dealing with the officers, how are you then going to leave prison as an older woman and know how to deal with appointments, if someone's always talking to someone else for you?" (Lucy)

Throughout the secondary healthcare journey patients must relinquish the independence they would traditionally hold as a community patient. They are unable to book their own appointments, choose the hospital delivering treatment or get themselves to the appointment. This lack of independence is clearly vocalised by Ryan, and was representative of many of the stories told by study participants:

"[…], the independence of you making your own appointment on the outside and actually going […] I used to just walk there, […] it's that independence when you've been on the outside, compared to when you're on the inside it's a bit different, because, as you said, you don't know when you're going. […] When you're least concerned then your name could just be announced that you should show up by the office and then they just take you off there and then…" (Ryan)

Some participants specifically mentioned that short timeframes for appointment preparation mean they do not get a chance to prepare the questions they need to ask clinicians, to ensure they can take control of their own recovery, self-care and health on return to the prison facility:

"If they said, you're going next week you can think the things you want to ask. Sometimes you forget, when you're put on the spot, you don't know what to ask. But if you were given notice, then you could think to yourself, I need to ask him, this, this and this. Note it all down, so when you go there you can say look, I want you to ask about this, this and this" (Bobby)

Doctors at the hospital may subsequently fail to appreciate that healthcare departments at the prison are unlikely to provide in-depth condition specific information to patients on their return, and that patients are unable to find their own material from sources accessed in the community such as the internet. This was mentioned by several participants, for Katy this meant she was unaware her condition was progressive and incurable until she proactively

contacted a charity that specialised in her condition. Hospital clinicians had failed to give her in-depth information following diagnosis, presuming this would be delivered by the prison healthcare department.

> *"…then had to sit there with me and console me when I realised that this is lifelong this isn't going away. It's progressive, degenerate and thing and I was given none of that information in the hospital and it was like "Wow, how can you leave a patient so blind?" (Katy)*

Hospital clinicians may assume that patients, whether from prison or community, will discuss their condition with their GP if required. In practice, it appears that this is difficult to achieve in prison. As a result patients may resort to turning to others within the prison environment who share the same condition for first line advice on management, leading to care that is not equivalent to that of community patients:

> *"[…] you don't really rely on healthcare or the hospital when you're in prison, you rely on other people that are in the same position or have the same condition as you, or try your hardest to write to somebody who is in the know" (Katy)*

Overall most people talked in some capacity about the lack of control and autonomy they have in regards to healthcare in prison. Adam told us that in the community he had, "*never left the doctor's unsatisfied with what the doctor has told me, ever".* However this is in comparison to his experience as a prisoner:

> *"When I left this doctor's, I felt lost. I didn't know what to do, what direction to take. I just thought well I need to get out of prison as quickly as possible so I can get some good healthcare or find another way around it." (Adam)*

Summary: Patients tend to feel that their healthcare journey whilst inside prison is out of their control, at odds to the autonomy one experiences as a community patient.

3.2.1.6 MAJOR THEME 6 -Emotional toll of healthcare

Having a condition that requires hospital assessment or treatment can prompt feelings of anxiety amongst any patient group. However, in prison these anxieties are exacerbated by the lack of emotional autonomy and control patients have over their own healthcare journey. Anxiety was a common theme observed at all stages of the hospital journey, amongst all participants. Participants were anxious whilst waiting to be called for a hospital appointment, both in terms of concern over their physical health and concerns over the discrimination they may face in a public environment. Lengthy and intrusive security procedures to exit the prison intensify these feelings of anxiety on the day and the reaction of staff and the public at the hospital often serve to compound these fears. On return to prison the anxiety may not have been relieved if the experience was poor or the information provided unclear. In addition, traditional coping mechanisms such as the support of family and friends or the ability to seek out further information on a healthcare condition are traditionally restricted in prisons. The following quote from Tony clearly demonstrates that anxiety within prisons over your health is ongoing, and builds both before and after your appointment:

> *"Anxiety is a thing, it has good and bad times in terms of, if you're not in prison anxiety is, […], it's like you broke your finger or you broke your hand, you go you have a cast on, anxiety is over because you know when that cast comes off you'll be alright. But in prison[…] I don't know what's going on, they're not allowed to tell me and the only time I will know is when I actually go see the doctor, is it going for this procedure, […], you don't know, oh this is just results or, I wonder if I'm going for the thing […]. So the anxiety builds and builds after one visit, and two, and three, then you have high anxiety, then low anxiety…" (Tony)*

Alongside anxiety participants frequently report feelings of being judged by others. This may be perceived judgement from the public over their rights to healthcare, or from clinical staff both in terms of their lifestyle choices and the crimes that have led to their imprisonment.

Here Eric describes the feeling of being judged by everyone in the community:

“[…], as soon as you go out of this prison, the whole community, including doctors, public, officers, they are all one and you’re the other guy that everybody looks down on...” (Eric)

Whilst Bobby expands on the judgement prisoners presume is being passed, particularly in terms of the offense that person has committed:

"I think what are they thinking? Am I a rapist? A sex offender? But then I’m none of those things. But I think peoples’ persona when they see a prisoner, oh he must be a murderer or sex offender or rapist, or something like that." (Bobby)

Several participants frankly questioned whether the care they received is equivalent to that received by community patients:

"I felt like a second class citizen. I didn’t feel like I was being assessed as a normal member of the public at all. I felt almost like, well you’re not going to die from this injury, let him go. If it’s a life or death thing then yes we’ll operate, but this guy, nah he’s alright. "(Adam)

However, there is also suggestion that being in prison means you simply have to accept differences in care as par for the course as described by Paul:

"In prison, you find yourself desensitised to certain things. [...] You don’t make a situation out of certain things. You won’t highlight certain things because you’re used to a certain standard of care [...] So, where I was put in a broom cupboard was wrong to me and my instincts. But because I understand where I am in prison and certain things don’t happen as I’d like them, I just decided I’d keep quiet" (Paul)

Participants frequently likened their experiences to that of animals, *“with that long chain like a dog” (Fay)*, suggesting they experience feelings of dehumanisation as part of the healthcare process.

“That’s the thing, I felt like a zoo bear that is usually walking with a chain in the nose…” (Eric)

Patients rarely feels at the centre of the healthcare journey, with security considerations, logistics and time pressures taking precedence over patient experience. Patients tend to feel rushed throughout the process. People reported being rushed to get out of prison, rushed through the waiting areas at hospital and often positioned somewhere out of public view, rushed through the appointment by clinicians and prison officers and returned to prison at the earliest opportunity.

> *"Then, you're rushed through the hospital. You find the location where you've got to go. As soon as you go up to a desk and speak to a nurse they go, right, boom, we're going to put you in this room. They rush you straight through the room, you can't sit in the waiting area with all the people, they just stick you in a room. Then, I've had people come in the room and say, we're going to take you to do this, we're going to put a tube down your throat or whatever. They tell you they're going to do that. They do it really quickly and try and rush you back out of the hospital as quickly as possible. I've actually spoken to doctors and nurses and they're quite abrupt with you, it's like I don't matter. I've tried asking them questions and they're not telling me everything. They just want you to hurry up and go basically." (Aaron)*

A few participants also discussed how a return from a community visit can also bring into sharp focus the world people are missing from behind the prison walls:

> *"A lot of people come back and they get disturbed or depressed, because the world that they have forgotten about because they've been here for a year or two, they have seen all of it, like Fred said, the smell of coffee, but they can't have any. So, it does haunt them…" (Eric)*

Many of the participants mentioned how these poor quality healthcare experiences can deter and discourage people from seeking further healthcare, as was the case with Gavin:

> *"[…] and if it went bad, the first thing that you don't want to do is ever go back, I don't want to see that consultant ever again, so I'll miss my appointment next time, but rather than tell anybody before, […] when they come to see you or say that you've got an appointment, a hospital appointment, you end up saying no, I don't*

want to go. And when that happens, everybody's lost out, I've lost out on appointment, the officers have wasted their time and the hospital's lost their own time, because obviously they arranged the appointment." (Gavin)

Summary: People in prison report experiencing strong emotional responses when accessing community healthcare, with many feelings a result of their incarcerated status and respective curtailed liberties. People often express acceptance of these feelings as part of the process of imprisonment, however they can result in reluctance to re-engage with the healthcare process.

3.2.1.7 MAJOR THEME 7 - Telemedicine

Prisoners mentioned the concept of telemedicine in five of the 17 interviews undertaken. Participants felt that use of telemedicine consultations would save time and money, reduce missed appointments, relieve anxiety, allow for mental preparation, and offer more confidential consultations:

"I think, with the technology we've got these days, we could save a lot of time and money by using video conferencing type facilities, where we haven't got to go out, inconvenience two officers, taxi services, etc. etc. You can go face-to-face with the medical person down the end of another screen and go, this, that and the other. "(Bob)

It is encouraging that participants mentioned the concept of telemedicine independently. In the following sections of this chapter I try and further relate prisoner's experiences to the concept of telemedicine.

3.3 Discussion

3.3.1 Prisoner experience of secondary care

Delivery of secondary care service to prisoners which are equivalent in terms of access and quality received by community patients, is challenging. Physical and practical considerations such as delays in access are commonplace, as are differences in patient experience such as shame and lack of autonomy. While security issues are often unavoidable, this data suggests that some prison officers may be reluctant to make proportionate accommodations to help lower risk prisoners conduct medical appointments with dignity, comfort

and safety. For security reasons prisoners are not allowed to know when they will be travelling outside of the prison walls, and therefore are not allowed to know the time and date of their hospital appointment, causing high levels of anxiety and stress.

Delayed access to hospital appointments is a harmful consequence of the resource implications associated with transport and security. Other challenges to the prison system have impacted the prison regime and placed further strain on prison and healthcare staff. The epidemic of the synthetic cannabinoid 'Spice' in UK prisons has placed pressure on staff, hospital appointments and ambulance transfers, whilst also fuelling prison violence. Year on year increases in self-harm point to increasing vulnerabilities amongst those being incarcerated and place further strain on escorts to hospital facilities if urgent external healthcare input is required.

The three-way dynamic between security staff, patient and healthcare highlights an area requiring significant improvement and training. The presence of prison officers in hospital appointments undermines both medical confidentiality and autonomy of medical professionals delivering care. This analysis suggests that the power differential between prisoner and security staff can be further exacerbated by hospital staff. Where hospital and prison staff display compassion and understanding this can go some way to mitigating poor experiences at hospitals.

With an ageing and increasingly vulnerable prison population,(79, 80) proportionate security measures for offsite healthcare visits should be established to avoid adverse healthcare experiences and exacerbated stigmatisation of prisoners.(81) As long as appointments take place offsite at local hospitals, these issues are unlikely to change significantly. If equivalence is a goal then alternative methods of providing secondary care must be vigorously explored to overcome the long waits and appointment cancellations, as patients remain unable to take personal actions to ensure that they attend their appointment. Some in-reach models for secondary care services such as sexual health and mental health do exist in English prison sites, but in-reach

remains an unattractive option for hospital specialties with only one or two prison patients each month.

3.3.2 Telemedicine and mitigation of poor patient experiences

Telemedicine in prison has the potential to mitigate many of the issues prisoners report in terms of secondary care provision in England. Figure 5 (p.70) shows where telemedicine may interrupt issues offenders report with the current system for secondary care appointments, by chronological stage of appointment.

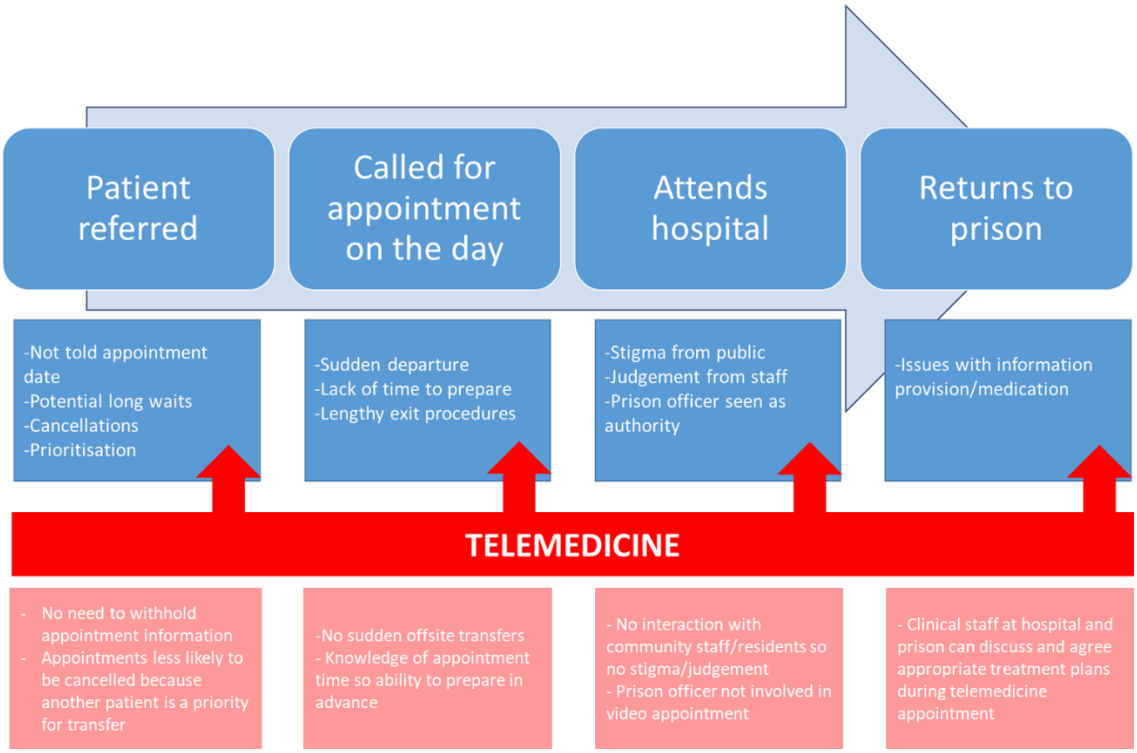

Figure 5 How telemedicine may interrupt current issues with accessing secondary care

An operational telemedicine system between a prison and a local hospital is hypothesised by staff to mitigate many of the issues experienced by prisoners when accessing secondary care, and improve equivalence in comparison to care received by community patients.

A prison telemedicine system removes the need to transport patients offsite to hospital for an appointment, with the appointment conducted over remote video link. HMPPS has agreed to the principle of telemedicine if the system operates from within the prison healthcare department, on static NHS computers, with a member of the prison healthcare team accompanying patients in their telemedicine appointment. This may result in a less extreme 'bottleneck' if healthcare staff are unavailable to chaperone, in comparison to offsite appointments dependent on prison staff for transfer.

The telemedicine process model (Figure 3 p.29), which describes the theoretical operational processes of telemedicine, was interrogated for its ability to mitigate themes arising from the data in this chapter. These are summarised in Table 4 (p.73) as well as described below. Telemedicine should, in theory, be able to interrupt some of the traditional issues with secondary care for patients in prison. Although security of the telemedicine link itself remains critical to its use and establishment within the prison system, telemedicine should remove the need for some of the security procedures associated with hospital visits and also remove the prison officer from the majority of the healthcare experience. Patients should be allowed to know their appointment time and date given that they no longer pose an offsite escape risk, which should relieve some anxiety. Prison officers may be called upon to escort patients to the prison healthcare department for their video consultation, but they will no longer accompany patients within their consultation. Admittedly patients will still not have hospital consultations alone. HMPPS restrictions state that a member of the prison healthcare team must be present with the patient to ensure the system is not misappropriated. However the presence of a trained healthcare clinician within a healthcare appointment is likely to offer a more acceptable alternative to patients. As part of the operational telemedicine model hospital clinicians involved with the direct delivery of prison healthcare may also be granted remote access to prison based electronic patient records. This should act as a complementary adjunct to the telemedicine system, and has been cited as critical to telemedicine success in previous literature. (82-85)

Telemedicine appointments should also be less prone to cancellations by the prison system. Cancellations by the hospital, due to technical difficulties by either party or due to an inability to get patients to the healthcare department (e.g. prison lockdown) remain a possibility and will need to be monitored during implementation.

In regards to the emotional response to healthcare it is unlikely that telemedicine can mitigate all of the issues experienced by participants. Patients will still not be responsible for scheduling their own healthcare appointment, have a choice of provider or act independently to get themselves to the appointment. It is also not improbable that telemedicine may provoke different emotional reactions to healthcare. Patients may still not feel their healthcare experience is equivalent to that of community patients and use of technology alongside known healthcare staff members from the prison may provoke different forms of anxieties.

Patient data should be collected to evidence whether telemedicine mitigates these issues as expected, and whether new issues arise with the use of telemedicine. Some of these issues will only be evidenced by comparison with previous patient experiences of accessing secondary healthcare offsite at the hospital. Patients using telemedicine, who have no prior experience of offsite hospital care, will likely be unable to comment on whether issues with prison officers, public reception or hospital staff are improved with telemedicine, or whether benefits outweigh new issues. Qualitative process and experience data will be required to evidence the effectiveness of telemedicine at overcoming these barriers, alongside quantitative data.

Table 4 Hypothesised effect of telemedicine on patient experience of secondary care, by major theme

MAJOR THEME	POTENTIAL MITIGATION BY TELEMEDICINE
Security overriding healthcare need or experience	○ Patients using telemedicine on site not deemed an 'escape risk' and therefore can know appointment time and date ▪ Reduces patient anxiety ▪ Allows for physical and mental preparation ▪ No time 'wasted' on security preparations to leave prison (can be hours)
Security creating public humiliation and fear	○ No need to travel to community settings in handcuffs ▪ Reduces patient anxiety – both anticipated and experienced
The three way dynamic – patient, clinician and prison officer	○ Use of telemedicine means prison officer does not attend healthcare consultation ▪ Prison officer won't have opportunity to 'speak' for patient ▪ More confidential consultations ○ Prison healthcare staff attends telemedicine consultation with patient in prison ▪ No reliance on prison officer/patient to relay clinical information from hospital (prior to discharge summary arrival at the prison) ▪ Joint discussions with hospital clinicians about medication/realistic onward treatment plan – resulting in better medicinal concordance ▪ Prison healthcare staff can ensure patients have understood all the information relayed from the hospital clinician and prompt relevant questions or concerns ○ As part of the telemedicine model hospital clinicians will have remote access to prison based electronic health care records

	▪ Clinicians can view patient health records in advance of the appointment, improving understanding of the patient's relevant clinical picture.* ▪ Clinicians can document treatment decisions in real time on the patient record, allowing prison healthcare staff who are not in the appointment to understand treatment decisions that have been made. *Identified as a telemedicine benefit to patients in Chapter 4
Delayed access due to prison regime and transport requirements	○ Patients do not have to 'wait in line' for an escorted transfer slot to hospital ▪ Telemedicine clinics will be specialty based, therefore provided slots are adequate for need (which can be assessed at outset of the model by reviewing health care records data) patients should not face long waits for appointments with the telemedicine specialty ▪ Cancellation of telemedicine appointment by the prison system will be less likely given that emergencies requiring hospital transfer, or lack of available escorts, will not compromise the ability to deliver telemedicine care
Inability of patients to manage their own healthcare , emotional autonomy	○ Patient knows appointment time and date meaning they can prepare questions to allow them to take control over their own health and care where possible in prison ○ Three way discussion between patient, prison healthcare and hospital clinician ensures clarity on who will provide specialist information on condition and where this information can be retrieved from
Emotional toll of healthcare	○ Reduced feelings of anxiety due to knowledge of appointment date, removal of the need to travel handcuffed into the community and the removal of lengthy exit procedures ○ No need to have appointments with community patients – less likely to feel subject to judgement or dehumanisation ○ Reduction in 'low feelings' associated with returning to prison after a 'taster' of life outside prison

3.3.3 Mitigation of poor experiences for appointments that continue to be delivered offsite

This research into prisoners' experiences of hospital care may also inform other elements of the prison patient journey for patients that cannot undertake a telemedicine appointment. Even if telemedicine is successfully established in local prisons, and found to be effective for care provision, some appointments will always remain that must be delivered at local hospital sites (e.g. in-person examination required).

The national published HMPPS guidance document for prison escorts (PSI/33/2015) has a specific section on hospital escort procedures.(86) Several of the instructions within this document seem at odds with the information reported by current prisoners, suggesting there may be a need to develop clearer policies to reduce differences in interpretation of this document. Table 5 (p.76) gives some examples of the instructions in this guidance versus reported patient experience.

Table 5 PSI instruction versus patient experiences reported

Prison guidance Instruction	Patient Experience Reported
6.3 – Liaison with hospital authorities Governors must aim to develop good working relationships with the main hospitals to which they send prisoners. The physical layout of the main hospitals used must be assessed (to include in-patient and out-patient waiting and treatment areas, toilet and bathroom areas). […].	**Prison staff unaware of the layout of hospitals** *"Having got to the hospital, the officers didn't know where they were going, so there I was being dragged around the hospital to the main reception area, then redirected down a flight of stairs."(Adam)* **Patients waiting in inappropriate spaces** *"Can we see if we can put him somewhere private or have we got somewhere private where we can let them wait[…]Even if it's for that day, I don't know how often people are going and coming, but this would make sense if they'd have a proper waiting place for this kind of situation." (Gareth)*
6.4 - Handling of confidential medical information Officers who become aware of medical information about the prisoner during their stay in the hospital must treat it in confidence. […]	**Patients not reassured that confidentiality will be honoured by prison officers** *"It's they get too involved in your business and the worst thing, I'm sorry, in HMP (Prison) they're not secret. One thing that I worry, will they be talking my business with other officers"(Fay)*
6.9 – Hospital escort risk assessment Consideration must also be given to the prisoner's need for privacy during treatment, particularly where the prisoner is to undergo an intimate examination or procedure. Privacy should be accommodated in so far as it doesn't compromise the security of the escort. There must be an assessment of whether there is a security need for escorting staff to remain in a consulting room with a prisoner while the examination or procedure is undertaken or whether it would be safe for them to be positioned out of sight and earshot of the examination.	**Patients have no choice but to disclose sensitive medical information in the presence of prison officers** *"I said look, I'm not going anywhere. This small room and you can stand outside, but no, they said we can't do that. Okay and then it is embarrassing, you know? There are so many problems you need to talk about." (Pamela)* **Patients have sensitive medical examinations with officers in sight of the procedure** *"Oh so I went to the hospital for a intimate appointment, I went with a few female officers and they were really nice. However, it was still really embarrassing having someone handcuffed right next to you while you're having your private parts looked at."(Daisy)*
6.10 - Hospital escort risk assessment […] Alternatively, staff may be in the same room but positioned behind privacy screens with or without an escort chain applied as indicated by the risk assessment. Any unanticipated requirement for the prisoner to undergo treatment of this nature must be reported immediately to the duty governor for instructions	**Patients feel that the longer escort chain is not used judiciously** *"Yeah, there's no privacy. You're chained to the officers and you want to discuss your illness or your medication and they don't, like, put a longer chain on and let you have a private conversation with the consultant or the doctor or the GP." (Darren)*

3.4 Strengths and limitations

This study has some limitations. Prison engagement fellows are not generally from an academic, or a qualitative research background and therefore may not be as experienced in gathering qualitative data as academic researchers. In addition Engagement Fellows are not experts on the NHS or prison healthcare systems and therefore may not be able to understand or probe on specific issues pertaining to clinical care received in hospital. Engagement Fellows may also carry biases based on their own personal experiences of prison, meaning they may lead interviews in ways that are biased. However, use of Engagement Fellows with lived experience of prison is likely to have gathered more 'truthful' data from participants in prison than would have been possible if academic researchers alone had attempted to collect this data.

Engagement Fellows tend to build rapport with participants by acknowledging their own experiences of incarceration during research activities. This may potentially lead participants to relay or agree with particular aspects raised in research activities, causing bias in what is disclosed. Academic interviewers however may find it difficult to build rapport due to their own biases about prisoners, and due to the lack of trust prisoners often hold in authority figures.

We did not purposefully sample people who had lots of experience accessing secondary healthcare in prisons (although participants must have had at least one experience). It may be that inclusion of these people would provide more in depth detail and comparative experiences.

People in prisons tend to have limited opportunities for engagement with external agencies (including the NHS) and therefore a platform to relay direct feedback can be seen as an attractive opportunity to raise issues in the hope that they can be addressed on an individual basis. This may mean that those who were incentivised to participate in the research activities were those who had experienced more extreme poor care episodes, and who wished to raise a public grievance.

In addition, participation in research activities is ultimately granted by the prison service, on the basis that the participant must not pose a risk to researchers. This research was not undertaken in any high security (Category A) prisons given the additional security restrictions and permissions required. Therefore those who may experience the closest scrutiny and highest levels of security at hospitals, were not included in the data sample.

Several issues arose during data analysis that were not directly related to the potential role of telemedicine in improving prison healthcare and are not considered in depth in this chapter. For example, healthcare interruption caused by movement of patients between prisons or during repeated cycles of entering and exiting prison.

Finally, my role in the interpretation of data may have been biased by my positive stance on prisoner rights to healthcare. The involvement of a range of perspectives from the wider research team to review and interpret data helped assure objective assessment of the data.

Equally this study has some key strengths. This is the first study to provide robust in-depth qualitative data on the topic of prisoner's experiences of hospital care. This information is applicable to all hospital clinicians and staff that may interact or provide care to prisoners, and provides tangible ideas for how they can improve patient experience. Secondly, as identified in the literature review (Chapter 4 p.81) there is currently no published data based on the prospective evaluation of prison telemedicine models from the patient perspective, which this study adds.

Despite the aforementioned limitations associated with use of User Voice Engagement Fellows, use of peer researchers allowed us to gather sensitive data from a population that is traditionally hard to research in an acceptable format.

Finally, themes were reviewed and discussed by a wide group of experts including representatives from prison healthcare, peers with lived experience

from the prison charity and academic researchers. This ensured multiple perspectives were involved in interpreting data.

3.4.1 How this chapter guides future data collection

At commencement of this PhD research patient data collection through 1:1 interviews and paper questionnaires was proposed as part of the project methodology, and all relevant ethical permissions granted. This data collection was designed to understand the patient experience of telemedicine in prison. However, the COVID-19 pandemic meant that a moratorium was imposed on all research in prisons meaning that this data could not be collected to include within the timescales for delivery of this thesis. Patient data collection will however still take place once research is permitted again in prisons and will be reported separately to this thesis.

For qualitative data collection patients who have been offsite to hospital before should be asked how telemedicine compares to this experience. Patients who have never been offsite to hospital from prison, but who have used telemedicine, could be asked similar questions about the telemedicine experience but where appropriate asked how this may compare to a theoretical appointment offsite.

3.5 Conclusion

People in prison experience considerable issues in accessing secondary care services and are unlikely to be receiving care equivalent to patients in the community, in terms of both access and quality.(4, 68) There is clearly a need to develop alternative approaches to provision of secondary care in prisons if the goal is to achieve equivalence of care.

The findings of this chapter have also been presented in a short (5 minute) animation, freely available from the UCL YouTube channel. This animation has been designed as an engagement tool for clinical staff, to encourage understanding of prisoner experiences of secondary care, to try and prompt improvements.

Telemedicine has the potential to mitigate some of the barriers to care experienced by patients, by removing the need to transport patients off-site and the associated security procedures. To evidence whether telemedicine is effective at overcoming these issues qualitative patient data pertaining to process and experience of telemedicine should be collected, preferably from patients who are able to compare the telemedicine experience to previous off-site hospital appointments.

Chapter 4 What are the opportunities and challenges of using telemedicine to improve access to care for prisoners?

OVERVIEW:

This chapter firstly describes the process and findings of a systematic review and subsequent thematic analysis, of issues associated with the implementation of prison telemedicine models. It also provides information on clinical specialties that appear to be amenable to delivery by prison telemedicine systems. Secondly, recommendations for practice (telemedicine implementation) are presented, based on the themes identified in the review.

Understanding experiences of implementation and use of prison telemedicine in other countries could help improve the implementation experience in England. This chapter provides both an international background to existing prison telemedicine models and also answers the following research question:

What factors are known to affect the implementation of prison telemedicine models in other countries?

A hybrid approach to review of the existing literature review was used, combining scoping study methodology(87) and subsequent thematic analysis of literature identified. Scoping studies aim to map the breadth of evidence available using a five step process: identifying a research question, identifying relevant studies, selecting studies, charting the data, and summarising and reporting results. A scoping study was undertaken to understand the breadth of the current evidence related to prison telemedicine, including the balance of peer reviewed versus grey literature, specialties under study and the countries most involved in publications. A systematic search was used to ensure broad retrieval of available evidence.

Evidence retrieved was then analysed using thematic analysis to understand common barriers and facilitators to prison telemedicine implementation and use. Both authors'

comments/prose and quotations or other primary data reported in each paper were extracted and analysed using thematic analysis. Evidence was not excluded based on appraisal of bias given that implementation issues could be reported despite a poor research study design. Thematic analysis was adopted as the most appropriate way to harmonise a highly heterogenous body of evidence, much of which was grey literature.

Given the different geographical contexts and associated complexities of governance of prison health systems, other approaches such as a realist literature synthesis was not adopted. Realist reviews seek to understand what works for whom, in what circumstances, in what respects and how.(88) The diversity in the evidence retrieved meant that reporting causal contextual assumptions in these differing contexts would have been highly complex and potentially diluted the key themes raised during thematic analysis. Similarly, a meta-ethnographic approach was not adopted for this review. Meta-ethnographic synthesis is a systematic approach to synthesising data from multiple qualitative studies, enabling new insights into patients' and healthcare professionals' experiences and perspectives.(89) This method was also deemed inappropriate, given that studies included in this review were not purely qualitative. (89)

4.1 Background

Prisoners have poorer access to healthcare than people living in the community, despite multiple national and international directives which cite the right of prisoners to equivalence of health care(75, 90). Telemedicine consultations have been used in prisons worldwide to reduce inequities in healthcare access experienced by prisoners(83, 91-96). Numerous reports have been published demonstrating their effectiveness as a method of healthcare delivery in secure settings and a systematic review of cost effectiveness and outcomes(97) is underway. Despite good evidence of effectiveness, adoption in many countries has been limited to date. Interest in the field of telemedicine, especially its application to the field of correctional healthcare is growing, mainly due to the anticipated improvements in both access to care and cost effectiveness demonstrated by individual models elsewhere(98-101). However,

evidence of effect, although vital in making a case for a prison telemedicine intervention, is not in itself sufficient to support the design and implementation of a new local model. It has long been recognised that the implementation and normalisation of technological interventions in healthcare systems is complex and prone to failure(102, 103). Digital interventions although largely fixed in their nature at outset, are inserted into a social system, inevitably modifying resulting use and effectiveness of the intervention. Therefore, when considering locally whether to pilot a previously 'successful' digital intervention such as video consultations, one must consider the context in which it was originally deployed and whether crucial supporting factors for implementation, or known barriers to success are in place in the newly proposed location(104).

Within this review I sought to understand contextual factors that contribute to the implementation of prison telemedicine, and to define higher order constructs that should be considered in the decision of whether and how, to implement prison telemedicine. Introduction of technology into healthcare settings requires cultural and organisational shifts(103) and for this reason I conducted a systematic review drawing on these aspects of implementation as opposed to clinical outcomes.

In this review, the term *prisoner* refers to both convicted and pre-trial (on remand) persons held in prisons, jails, detention and other penal institutions.

4.2 Methodology

This literature review adopted a hybrid approach to analysis(105), combining scoping study methodology following the Arksey and O'Malley scoping review framework(87) with thematic qualitative analysis of documents selected for full review(87, 105-107). I identified a recent scoping study on prison telemedicine(108) however have reported a brief summary of my scoping review given that it included grey literature and no restriction on publication date. A systematic literature search was undertaken (for search terms see Appendix A p.262) with records retrieved subject to title-abstract screen by two independent reviewers, followed by full text review for inclusion in the review. The following databases were searched for literature for inclusion in this review: PubMed, Embase, CINAHL Plus, PsycINFO, Web of Science, Scopus and International Bibliography of the Social Sciences (IBSS). No restriction was placed on

publication date given that the field of evidence was expected to be limited and issues with implementation not necessarily subject to change over time.

Articles were included in the review if they reported information on video consultations for healthcare in a correctional setting. As the literature reviewed were predominantly process papers it was not possible to define quality criteria for inclusion, however the following general inclusion and exclusion criteria were applied.

4.2.1 Inclusion criteria

To be eligible for inclusion within this review the article must report information regarding the use of/advocacy for video teleconferencing for healthcare consultations (telemedicine) for people residing within a secure correctional facility hereafter termed a prison. No restriction was be placed on age, gender or geographical location of participants/participating prisons. No restriction was placed on date of publication as factors such as staff attitude reported in older studies may remain valid barriers/enablers in today's context.

4.2.2 Exclusion criteria

Papers reporting on: a patient population under study/report not set in a correctional setting, not in English language, telehealth not video conferencing, use of remote monitoring by telehealth technologies only, were not eligible for inclusion. Only English language papers were included for review.

Articles reporting empirical research were not excluded from inclusion in the qualitative review based on identification of study bias. Excluding literature based on study methodology may have inadvertently excluded relevant information on barriers/enablers to implementation or local support and enthusiasm for telemedicine and therefore I felt it was important to report contextual information from within these reports. Similarly grey literature was eligible for inclusion in the review. This is in line with traditional scoping review methodology that seeks to report breadth as opposed to weight of knowledge.

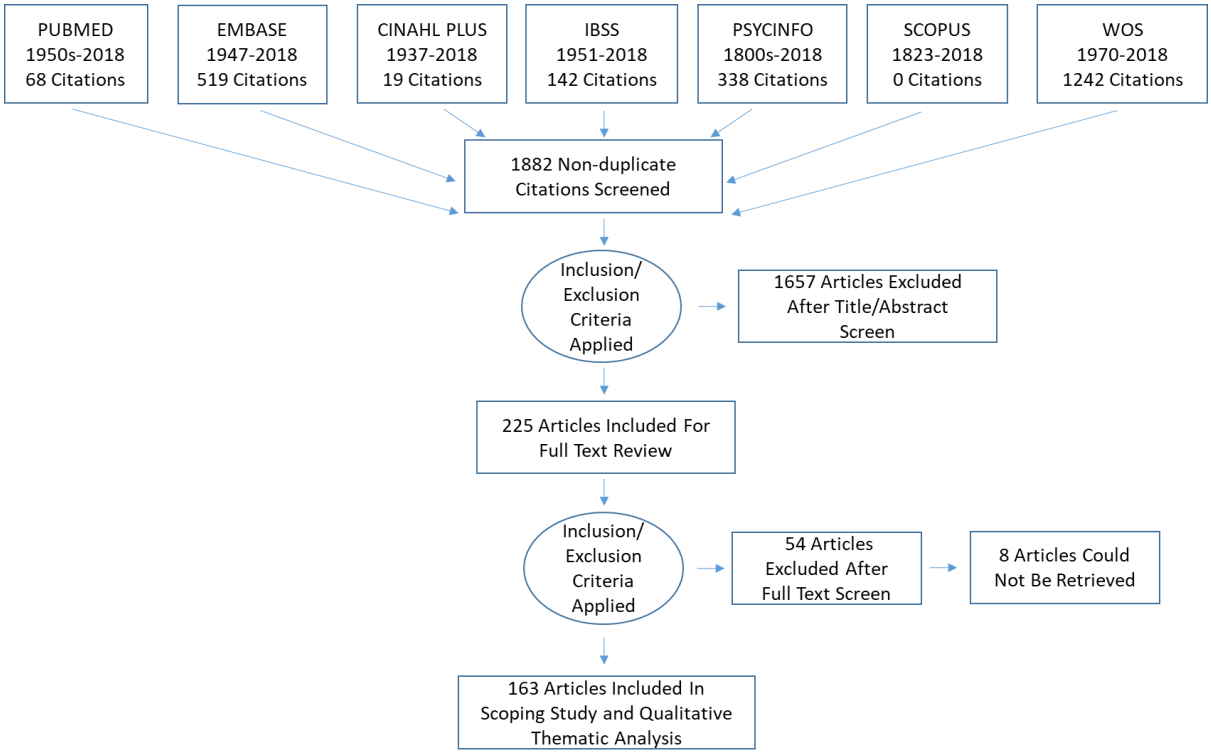

Figure 6 PRISMA flow diagram

Articles selected for inclusion were analysed in NVIVO 12 for implementation issues using an inductive coding process. To scope the field of prison telemedicine articles were also categorised by the following fields if reported: country of publication, clinical specialty, type of research, date of publication, author, adults/juvenile, type of prison, male/female prison, successful/unsuccessful model.

4.3 Results

The systematic literature search yielded 2328 papers of which 446 were duplicates, leaving 1882 papers for initial review. 1657 were removed after title-abstract screen in EndNote by two independent reviewers leaving 225 articles for full text review. Of those remaining, 8 could not be located and 54 were excluded after full text review. In total 163 articles were included in the review and subject to qualitative analysis and scoping review.

4.3.1 Overview of studies in the review

4.3.1.1 Geography

Implementation and adoption of prison telemedicine varied substantially by geography. Prison services in the USA are by far the most prolific publishers of literature on prison telemedicine (n=113), consistently documenting experiences with telemedicine since 1995(109-111) (

Figure 7, Figure 8). Indeed it was not until 2001 that any other country published in this topic area, when Australia entered the domain(112) and continued to become the second most highly published country in this field (n=11).(92, 113-121) Both countries are geographically extensive, making telemedicine an attractive option both for healthcare professionals to avoid long-distance travel, and for prisons to reduce high cost, long-distance inmate transfer.

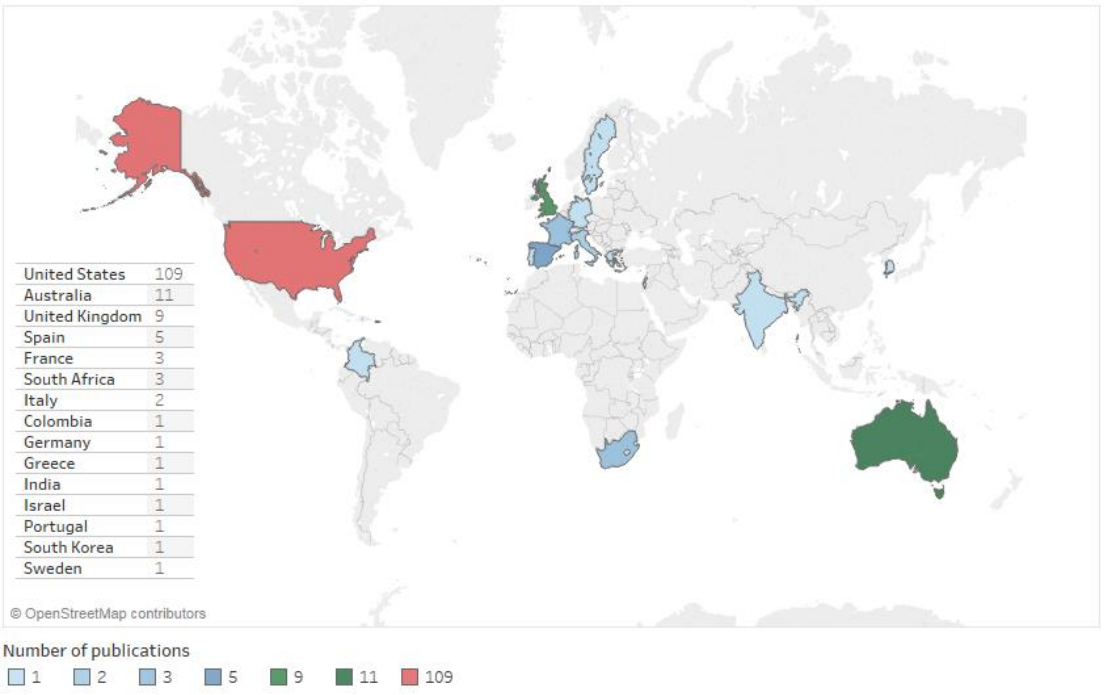

Figure 7 Number of telemedicine publications by country

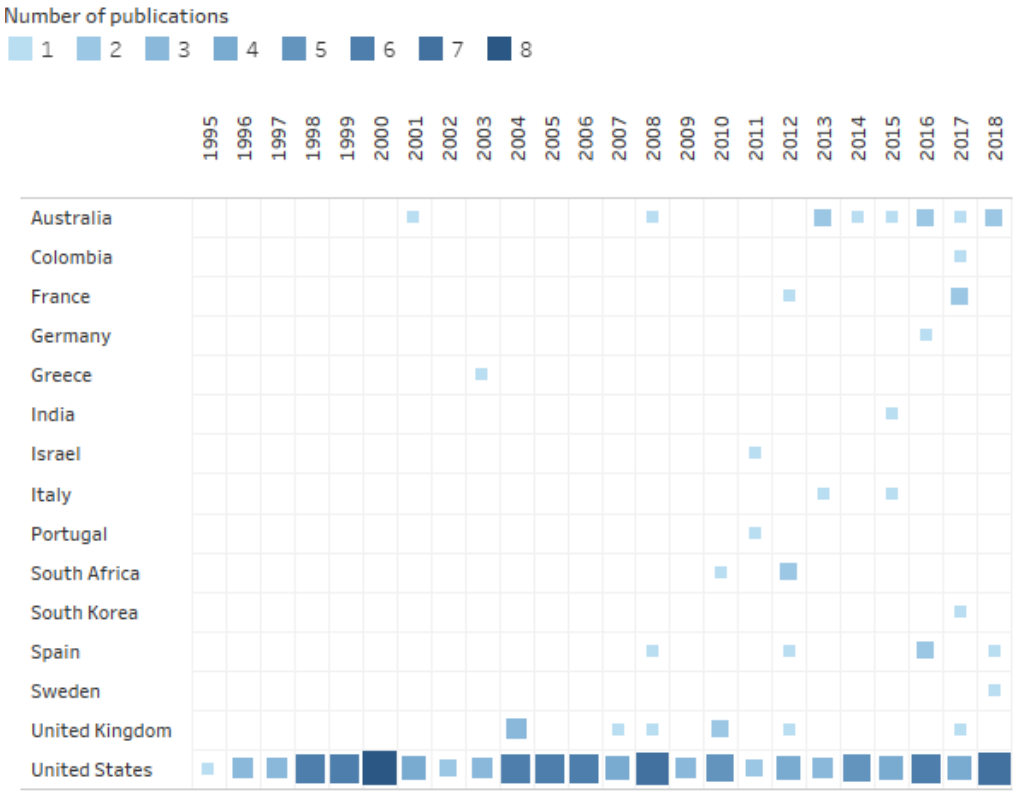

Figure 8 Number of publications on prison telemedicine by year by country

4.3.1.2 Clinical specialty

A diverse range of clinical specialties are reported in the literature as being successfully delivered over telemedicine in prison (Table 6 p.87), with the most frequently reported specialties being telepsychiatry, hepatology, HIV, cardiology, musculo-skeletal and dermatology.

Table 6 Cited telemedicine specialties and associated peripherals

Specialty	Peripherals	Number of times specialty is referenced within literature	References within literature to specialty
General telemedicine	Otoscope(82, 122-125), stethoscope(49, 82, 122-126) ophthalmoscopes(45, 82, 123-125), ECG that integrates with telecommunications device (124, 125)	49	(23, 24, 26, 38, 45, 48, 49, 55, 56, 83, 85, 94, 95, 109, 118, 123-156)

Specialty	Peripherals	Number of times specialty is referenced within literature	References within literature to specialty
	Digital pulse oximetry(124, 125) Micro/intraoral cameras(127)		
Psychiatry		42	(24, 27, 38, 44, 56, 84, 93, 95, 98, 121, 127, 131, 136, 141, 157-184)
Hepatitis	Fibroscan(185)	25	(35, 92, 113-117, 119, 120, 185-201)
HIV	stethoscope(54, 202) dermal & oral lens(54)	15	(25, 54, 59, 82, 122, 136, 141, 202-209)
Cardiology	stethoscope, ECG(47, 136)	13	(23, 24, 38, 45, 47, 56, 95, 123, 127, 131, 145, 210, 211)
Dermatology	Hand held camera(136)	13	(23, 24, 38, 56, 95, 123, 126, 127, 131, 136, 141, 212-214)
Musculoskeletal/orthopaedics		12	(23, 24, 38, 56, 95, 123, 126, 127, 131, 141, 142, 145)
Urology		9	(23, 24, 46, 56, 123, 151, 215-217)
Psychology		8	(43, 136, 141, 218-222)
Gastroenterology		6	(23, 24, 38, 56, 123, 151)

Specialty	Peripherals	Number of times specialty is referenced within literature	References within literature to specialty
Neurology		6	(24, 38, 56, 123, 127, 136)
Infectious disease (general)		5	(24, 38, 95, 123, 151)
Internal medicine		4	(23, 24, 127, 131)
Ob-Gyn		4	(127, 131, 145, 223)
Emergency medicine		4	(141, 224-226)
Pulmonary medicine		4	(24, 38, 56, 123)
ENT	otoscope and laryngoscope(125, 136)	4	(23, 38, 123, 136)
Cancer		3	(56, 145, 227)
Ophthalmology	ophthalmoscopes(123)	3	(123, 131, 145)
dialysis	Dialysis equipment	2	(141, 145)
Dietary consultations		2	(38, 141)
Diabetes	Glucose monitor(58)	2	(58, 95)
colposcopy		2	(145, 223)
ECG		2	(95, 145)
Max-fax	intraoral camera, document scanner to view x-rays, stethoscope(228)	1	(228)
Colonoscopy		1	(145)
Plastic surgery		1	(56)
Haematology		1	(123)
Rheumatology		1	(123)
Addictions		1	(95)
Wound care	Hand held camera(136)	1	(136)
Monitoring of botulism		1	(229)

4.3.1.3 Types of studies reported

The majority of articles retrieved were peer reviewed primary research articles (n=58), closely followed by commentaries (n=51), most often describing operational telemedicine models and advocating for their wider use and implementation (Figure 9 p.90).

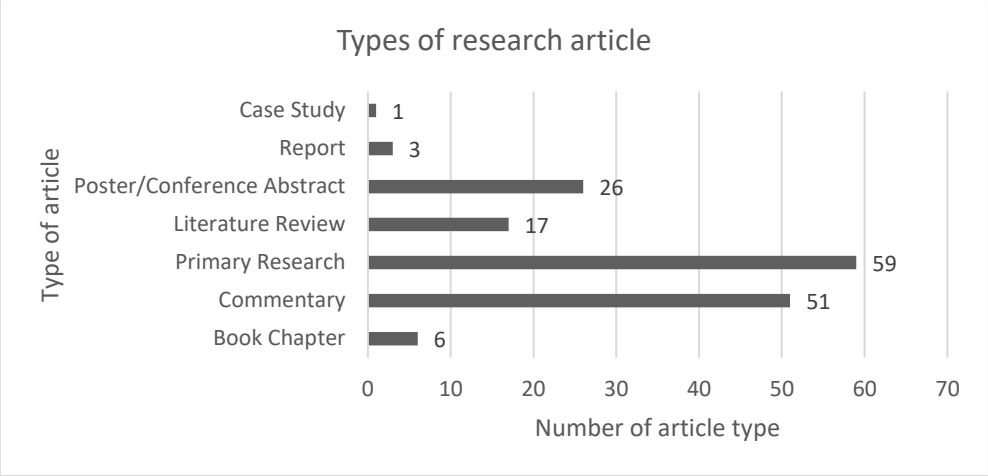

Figure 9 Types of research article in the final selection of literature included in review (n=163)

Type of prison and gender of study population were rarely reported in the literature reviewed.

4.3.1.4 English telemedicine studies

Of all the papers retrieved in the literature search, nine made reference to UK based telemedicine initiatives. Most of these were published in regards to a telepsychiatry model that was piloted in the South of England circa 2004 (17 years ago).(98, 165, 166, 176, 177) No information was available to understand why this model is no longer in operation, or indeed when it ceased to operate. Of the remaining documents two were literature reviews on prison health that acknowledged telemedicine(130, 153) and two documents referred to the privately operated Practice Plus Group Airedale hospital model.(94, 142) Practice Plus Group is a private healthcare provider in England that provides contracted physical health care services in a number of prisons across the English estate. Practice Plus Group contract with Airedale NHS Foundation Trust in the north of England, to operate a telemedicine service from this hospital. The telemedicine consultations are only provided by Consultants based within Airedale. As many of the prisons they serve are not located close to Airedale it is unlikely patients will travel to Airedale to receive any further treatment required. In effect this means that a telemedicine consultation with a remote prison will only serve to confirm that the patient needs to be referred to a local hospital, adding an additional step in their care pathway (Information provided through interview data from Chapter 5 & 7). The

Airedale model also requires a yearly subscription, a set consultation fee and purchase of a bespoke telemedicine trolley costing in the region of £32,000. The cost effectiveness or clinical effectiveness of this service has not been established.

4.3.2 Overview of telemedicine outcomes

Quantitative outcomes data reported varied from correlation between in-person/telemedicine assessment scores(173), numbers of consultations(217, 222, 224, 230), patient satisfaction scores(57), cost effectiveness(26, 47, 50-52, 55, 118, 129) and clinical outcome measures(54, 59). Very few studies reported outright failures of telemedicine(128, 181), with most finding it to offer equivalent or improved care quality(27, 54, 56, 57, 59, 83, 131, 136, 141, 159, 164, 166, 189, 198, 206, 216, 217, 220, 221, 231, 232) at an acceptable cost(23, 25, 27, 35, 38, 44-46, 48, 55, 57, 82, 84, 94, 95, 109, 115, 118, 123, 125, 127-131, 133, 135-138, 141-143, 146, 147, 154-156, 159, 160, 163, 167, 168, 173, 184, 202, 205, 212, 215, 216, 220, 223, 227, 228, 231, 233-235). Of those studies that measured or reported on patient satisfaction, most found telemedicine satisfactory or even preferred by patients(23, 27, 38, 43-45, 56, 84, 94, 98, 123, 125, 126, 135, 136, 143, 148, 156, 158, 159, 164, 165, 168, 172, 179, 183, 184, 197, 227, 234, 236, 237) (Table 1). The process of travelling offsite is generally seen as disruptive and inconvenient by patients, and the environment highly stigmatising due to the handcuffs and presence of prison officers in line with security policies(23, 25, 44, 83, 85, 95, 130, 131, 142, 143, 155, 201, 224, 227). Telemedicine was seen, for the most part, to address these concerns and provide a convenient and low stigma model for healthcare delivery(23, 25, 44, 85, 95, 121, 130, 131, 142, 143, 151, 155, 201, 224, 227). In some instances it even offered a more conducive atmosphere for patient disclosure(62,63,74).

4.3.3 Implementing telemedicine: contextual issues

4.3.3.1 How to combine "Top-Down" and "Bottom-up" support

Many of the identified papers presented evidence or commentary suggesting that senior political buy-in, both prior to and during implementation of prison telemedicine appears crucial to supporting model development. Many areas that have achieved success with prison telemedicine implemented models based on an initial decision made at a senior political level, with the source of this support varying, from Countrywide Acts and Laws,(52, 149) to Ministry of Justice (or equivalent)(43, 126,

173, 238) through to State level support(135, 164, 220). This offer may be in the form of provision of funding(23, 25, 82, 126, 141, 179, 184), or use of a visionary or coalition-building approach to change.(135) Studies also reported that within the prison community itself, the Governor or Prison Warden (the most senior member of the facility) also needs to be fully supportive of the proposed change within their domain.(166) However the ease of engaging with these partners is also context dependant. In countries such as the USA there is a clear chain of command by which prison healthcare services are commissioned or directly provided by and report to the correctional system, who also maintains financial responsibility for healthcare provision in prisons, and sees the financial benefit telemedicine accrues.(38, 138) In countries such as England, the separation of prison and community commissioning within the National Health Service (NHS), and their independence from the justice system means a multiplicity of stakeholders must be engaged at a senior level and convinced to align on a direction of travel that will offer potentially unequal costs and benefits to all involved.(239) For example hospital budgets may not benefit from cost savings attributed to reduced prison escort costs and may even suffer if the tariff provided for a telemedicine appointment is reduced in comparison to in-person appointments.(118, 223)

Even if senior parties are engaged and enthused about telemedicine, the literature suggests models will likely fail without bottom-up staff support upon implementation. Few studies reported failure or focussed on hesitancy surrounding telemedicine, but those that did found staff support and acceptance to be critical.(128, 141, 181) The attitude of staff to telemedicine models at outset tends to be one of scepticism. As concluded by Magaletta et al (1998):

> "*Contempt prior to investigation and the lack of an adventurous spirit are the only limiting factors that would preclude such a revolution*"(222)

Fear of change, provision of substandard care and a loss of personal autonomy are amongst some of the issues that concern staff prior to and during telemedicine implementation, common to both prison and hospital healthcare staff.(166) In Greece a technically well-functioning telemedicine model failed due to staff resistance, with hospital staff insistent they required additional pay to provide telemedicine services

and prison staff reluctant to relinquish autonomy over decisions to transfer patients to hospital.(128) Review of the East Carolina University hospital prison telemedicine system reported the top three barriers to telemedicine success as physician acceptance at the prison, nursing acceptance at the prison, and physician acceptance at the medical school.(131)

In prison health systems with contracted or integrated secondary care clinicians, such as in the USA, use of telemedicine could be seen as a way of raising revenue for private practice, and altered modes of working can be readily included within medical staff job descriptions. This may reduce the need to provide such a 'hard sell' of telemedicine to clinicians, as may be required when financial and contractual levers are not in place to motivate staff. Where staff are not contracted by their primary employer to provide prison specific services, it is less clear how to demonstrate the need for telemedicine implementation and for this to compete with broader service priorities within the health system.

4.3.3.2 Demonstrating need versus benefits

The main anticipated benefits for correctional systems that drove initial implementation of the majority of prison telemedicine models were often unrelated to health. The case for change most frequently cited was reducing off-site transfer of patients, which was generally anticipated to vastly reduce resource costs(23-27, 38, 43, 48, 50, 51, 54-56, 59, 85, 91-95, 98, 106, 115, 118, 123, 126, 128, 129, 131, 132, 134-136, 138, 141, 150-152, 165-167, 169-171, 173, 181, 184, 189, 209, 211, 213-217, 220, 222, 224, 226, 228, 230, 236) whilst also improving security and public safety and reducing the opportunity for prisoner escape(24, 38, 43, 45, 56, 57, 94, 118, 129, 131, 132, 138, 141, 150, 153, 159, 168, 169, 201, 214, 222, 224, 226). Secondary to this, telemedicine was expected to improve access to healthcare specialists in part by reducing the distances required for them to travel to attend prison or for prisoners to attend hospital(38, 45, 46, 49, 55, 59, 82, 92, 98, 121, 123, 126, 131, 134, 136, 138, 141, 157, 159, 168, 171, 173, 176, 179, 205, 220, 222, 227, 230, 232), and also through improved recruitment of staff who may currently be reluctant to work or travel to prison establishments.(45, 85, 121, 134, 157, 168, 176, 187, 202, 220, 222, 232, 237) This improved access was expected in turn to improve quality(24, 38, 46, 56, 57, 82, 126, 128, 129, 131, 136, 138, 148, 150, 151, 168, 202, 209, 219, 220, 222, 227,

230, 236, 240) and continuity of care(24, 46, 48, 49, 82, 129, 136, 187, 202, 205, 222) and potentially reduce litigations resulting from insufficient healthcare access.(24, 26, 38, 48, 56, 131, 138, 162, 214, 230)

These results suggest the most effective way to build enthusiasm and support for a prison telemedicine model is to emphasise the potential practical and economic benefits rather than building a case solely on the need for improved care quality. For example, Sinha (2000) created an argument for telemedicine based on clinicians' reported problems with hospital-based consultations:

> *"[…] this was not a desirable system because it compromised community safety, it was expensive, and physicians did not want shackled inmates in their waiting rooms*"(150)

4.3.3.3 Anticipated versus experienced outcomes

The anticipated benefits of telemedicine did not always match the benefits that were realised. (Table 7 p.98)

As expected, the most frequently cited post-implementation benefit was a reduction in costs associated with prisoner transfer to healthcare facilities,(23, 25, 27, 35, 38, 44-48, 52, 55, 57, 82, 84, 94, 95, 109, 115, 118, 123, 125, 127-131, 133, 135-138, 141-143, 146, 147, 154-156, 159, 160, 163, 167, 168, 172, 173, 177, 184, 202, 205, 212, 215, 216, 220, 223, 224, 227, 228, 231, 233-235) as well as improved security.(27, 38, 44, 45, 52, 55, 57, 84, 94, 95, 127, 129, 131, 141-143, 159, 164, 167, 184, 201, 212, 220, 223, 228, 231, 232) In New Jersey telemedicine was found to save around $100 per consultation(147), whilst more modest savings of $8.48 per consult were seen in Ohio, although these were hypothesised to increase as telemedicine usage increased.(129) In terms of safety a reduction in risk to the public, to the community healthcare providers and to prison officers were all acknowledged.

Additional benefits realised were predominantly health-related such as improved quality of care, resulting from increased access and specialist input.(27, 35, 38, 44, 52, 54, 55, 58, 59, 83, 95, 121, 127, 130, 131, 138, 141, 148, 151, 154, 161, 162, 169, 171, 174, 176, 184, 189, 191, 202, 212, 219, 220, 227, 231, 232, 234, 235, 237) For example, in juvenile justice facilities more timely delivery of behavioural health

counselling over telemedicine gave students improved chances to develop coping techniques for interpersonal relationships, with acceptance of therapy also thought to be improved due to the adolescents preference for use of technological solutions.(162) In Illinois telemedicine facilitated multi-disciplinary input for HIV care, which subsequently improved prescribing practices, patient safety and the management of long-term conditions secondary to HIV infection.(202)

Many studies stated that telemedicine care was equivalent to in-person care,(27, 56, 57, 131, 136, 159, 164, 166, 189, 198, 206, 216, 217, 221, 231) whilst a further subset captured improved patient outcomes as a result of telemedicine introduction.(54, 59, 83, 131, 141, 159, 164, 189, 220, 232) For example, CD4 count in telemedicine treated HIV patients was found to be higher than in those using a traditional treatment model, with higher CD4 counts linked to improvements in morbidity and mortality and a reduction in risk of HIV transmission. This was hypothesised to be due to the specialist care available over telemedicine, as opposed to in-house non-expert care. (59) In Texas telemedicine was found to be central to the effective management of chronic disease in prisoners, showing statistically significant reductions in lipids and blood glucose of those treated using the model. (83)

Other unexpected benefits related to staff, such as upskilling of prison staff in disease management,(23, 35, 54, 186, 211) prison staff collaboration with secondary care specialists(23, 27, 55, 121, 227) and opportunities for wider training.(98, 121, 131, 147, 190, 222, 223, 232) The literature reported a diverse range of specialties that prison staff were able to engage with and learn from including palliative care and oncology, (227) hepatitis C, (35) HIV,(54) and cardiology.(211) Emphasising these staff benefits in advance of implementation could improve staff buy-in and support for model development.

4.3.3.4 Linking prison and healthcare providers

Implementation frameworks acknowledge the important part that provider staff and organisational culture play in the successful implementation and normalisation of interventions to deliver patient care in general settings.(103, 104) Within prison telemedicine an additional challenge is the cooperation between hospital and prison healthcare staff and services acting as ‘providers’, both with different beliefs and

drivers around telemedicine, differing governance structures and receipt of an unequal share of costs and benefits accrued. Indeed, the characteristics of the hospital and prison healthcare staff emerged as one of the most important determinants of success within reports of prison telemedicine. In particular, staff perceptions, beliefs and attitudes were able equally to stifle the success of operational telemedicine models, or to drive them through difficult circumstances to succeed.(27, 43, 82, 138, 238) For example in the Ohio correctional telemedicine system the support of three champions drove the development of a successful model, despite reservations from prison doctors (135) whilst one paper from the UK warns that failure to secure prison staff support for telemedicine may lead to sabotage of the model.(98) It is important to recognise that wants and needs, benefits and fears of telemedicine will vary by provider group and that all partners have anticipations that differ to reality upon implementation, as demonstrated Table 7 (p.98). The literature reviewed suggests few benefits for hospital staff are expected prior to implementation, however upon implementation hospital staff were appreciative of improvements to care that could be delivered such as multidisciplinary input from prison healthcare staff (164), whilst also reporting personal benefits such as increased feelings of safety,(57, 84, 154, 164, 220) opportunities to do research(23, 83, 95, 160, 222) and a reduction in clinician burnout. (164, 222, 232) Prison healthcare staff meanwhile were appreciative of the opportunity to upskill in disease management (23, 27, 35, 54, 55, 98, 114, 121, 123, 130, 141, 186, 187, 189, 211, 227, 232, 237, 241), collaborate with hospital specialists (23, 27, 55, 121, 130, 143, 227) and to ultimately provide more multi-disciplinary care (23, 27, 35, 43, 44, 59, 82, 85, 114, 121, 131, 178, 185, 187, 202, 207, 211, 220, 222, 227, 235, 236), all benefits that were not foreseen at outset of implementation.

There were frequently additional barriers encountered that were not anticipated at the outset of telemedicine usage, showing the importance of process evaluation throughout model development. Hospital clinicians frequently reported concerns over legal issues such as the potential for litigation over clinical care provided (121, 127, 159, 160, 164, 171, 228) and difficulties with practising across state boundaries in the USA. (127, 131, 140, 160, 164, 165, 170, 171, 228) Once the model was in use hospital clinicians also expressed concerns over the lack of formal guidelines for telemedicine usage, (95, 98, 176) most likely feeding into fears of litigation. Prison healthcare providers encountered barriers such as the admin burden of scheduling

appointments, (95, 126, 148, 205) lack of private consultation spaces (141, 237), underestimated demand (164, 173, 184) and the length of time to re-coup the cost of telemedicine set-up (23, 55, 207). Finally patients often showed a lack of trust in the model (43, 141, 143, 197, 219, 241), or were concerned about the privacy it offered (44, 121, 157, 164, 165, 169, 184, 220), showing the importance of engaging service users in model design and evaluation throughout.

Table 7 - Perceived and realised benefits, barriers and wider enablers to prison telemedicine, by stakeholder group (points in italics realised but not anticipated)

	Correctional system	Hospital provider	Prison healthcare provider	Patient[£]
Perceived Benefits	• Reduction in patient transfers(118, 126, 150, 222, 224) • Cost savings(118, 126, 183, 214, 222, 224) (23-27, 38, 43, 48, 55, 56, 59, 85, 94, 95, 98, 115, 118, 123, 126, 129, 131, 132, 134-136, 138, 141, 150-152, 165, 167, 169, 171, 173, 184, 209, 211, 214, 215, 217, 220, 222, 224, 226, 228, 230, 236) • Improved security & public safety(24, 38, 43, 45, 56, 57, 94, 118, 126, 129, 131, 132, 138, 141, 150, 153, 159, 168, 169, 183, 201, 214, 222, 224, 226, 238) • Reduced litigation (24, 26, 38, 48, 56, 131, 138, 162, 214, 230) • Prison officer time freed up(24, 27, 48, 49, 56, 58, 118, 129, 132, 138, 168, 169, 184, 211, 222) • Reduced unrest and violence in prison(27, 38, 183, 222) • Improved access to care$ (38, 45, 46, 49, 55, 59, 82, 92, 98, 121, 123, 126, 131, 134, 136, 138, 141, 157, 159, 168, 171, 173, 176, 179, 205, 220, 222, 227, 230, 232) • Improved quality of care$ (24, 38, 46, 56, 57, 82, 126, 128, 129, 131, 136, 138, 148, 150, 151, 168, 202, 209, 219, 220, 222, 227, 230, 236, 240)	• Reduction in staff travel(121, 134, 165, 173) • Less discomfort for other patients in same waiting room with prisoner(84, 143, 160)	• Improved staff recruitment (24, 38, 46, 56, 57, 82, 126, 128, 129, 131, 136, 138, 148, 150, 151, 168, 202, 209, 219, 220, 222, 227, 230, 236, 240) • Improved access to specialist hospital clinicians(169) • Improved care continuity (24, 46, 48, 49, 82, 129, 136, 187, 202, 205, 222) • Reduced litigations(56) • Staff training opportunity(152, 179, 187, 207) • Reduced clinician isolation(24) • Staff time free'd up(126) • Improved access to care$ (38, 45, 46, 49, 55, 59, 82, 92, 98, 121, 123, 126, 131, 134, 136, 138, 141, 157, 159, 168, 171, 173, 176, 179, 205, 220, 222, 227, 230, 232) • Improved quality of care$ (24, 38, 46, 56, 57, 82, 126, 128, 129, 131, 136, 138, 148, 150, 151, 168, 202, 209, 219, 220, 222, 227, 230, 236, 240)	• Improved care continuity % (24, 46, 48, 49, 82, 129, 136, 187, 202, 205, 222) • Improved access to care% (38, 45, 46, 49, 55, 59, 82, 92, 98, 121, 123, 126, 131, 134, 136, 138, 141, 157, 159, 168, 171, 173, 176, 179, 205, 220, 222, 227, 230, 232) • Improved quality of care% (24, 38, 46, 56, 57, 82, 126, 128, 129, 131, 136, 138, 148, 150, 151, 168, 202, 209, 219, 220, 222, 227, 230, 236, 240)

	Correctional system	Hospital provider	Prison healthcare provider	Patient[£]
Actual Benefits	• Reduction in patient transfers • Cost savings&(23, 25, 27, 35, 38, 44-46, 48, 55, 57, 82, 84, 94, 109, 115, 118, 123, 125, 127-131, 133, 135-138, 141, 143, 146, 147, 154-156, 159, 160, 163, 167, 168, 173, 184, 202, 205, 212, 215, 216, 220, 223, 227, 228, 231, 233-235) • Improved security & societal safety(27, 38, 44, 45, 52, 55, 57, 84, 94, 95, 127, 129, 131, 141-143, 159, 164, 167, 184, 201, 212, 220, 223, 228, 231, 232) • Prison officer time freed up(184) • Reduced unrest and violence in prison(27, 38, 220) • Reduced risks to staff escorting prisoners(137, 141, 231) • Less prisoner complaints about healthcare(38, 160)	• Reduced need for clinician travel(35, 45, 57, 83, 84, 126, 136, 145-147, 161, 164, 173, 198, 205, 208, 222, 233, 242) • *Added dimension of contextual reporting from prison healthcare staff (who do not normally attend hospital appointments)(164)* • *Equivalent/improved quality of care (27, 54, 56, 57, 59, 83, 131, 136, 141, 159, 164, 166, 189, 198, 206, 216, 217, 220, 221, 231, 232)* • *Junior staff training opportunity with unusual patients that may not otherwise get to treat(55)* • *Improved feeling of clinician safety(57, 84, 143, 160, 164, 220, 242)* • *Reduced discomfort for other patients in a hospital setting(85)* • *Reduced risk to other patients in hospital setting(23)* • *Increased revenue from private practice(45)* • *Cost saving(177, 224)* • *Better patient disclosure(121, 160, 162, 179, 201)* • *Reduced clinician burnout(164, 222, 232)* • *Opportunity to do research(23, 83, 95, 160, 222)*	• Improved staff recruitment & retention(35, 84, 154, 202, 234) • Improved access to specialist hospital clinicians(45, 57, 84, 113, 141, 154, 164, 233, 234) • Improved access to care%(26, 27, 35, 38, 46, 48, 49, 55, 57-59, 82-85, 95, 107, 110, 113, 114, 117, 121, 124, 126, 127, 129, 131, 133, 134, 136, 137, 141, 142, 146, 148, 150, 151, 154, 156, 159, 162, 163, 167, 169, 173, 174, 176, 179, 184, 187, 195, 202, 205, 211-213, 215-217, 220, 222, 224, 231, 233-235, 237-239) • Improved quality of care(27, 35, 38, 44, 52, 54, 55, 58, 59, 83, 95, 121, 127, 130, 131, 138, 141, 148, 151, 154, 161, 162, 169, 171, 174, 176, 184, 189, 191, 202, 212, 219, 220, 227, 231, 232, 234, 235, 237) • Improved care continuity(25, 27, 52, 57, 59, 83, 84, 95, 121, 129, 137, 156, 162-164, 171, 174, 190, 208, 214, 220, 231, 242, 243) • Use of telemedicine equipment for staff training (35, 55, 98, 121, 130, 131, 141, 147, 164, 187, 190, 222, 223, 227, 232) • Cost saving& (23, 25, 27, 35, 38, 44-46, 48, 55, 57, 82, 84, 94, 95, 109, 115, 118, 123, 125, 127-131, 133, 135-138, 141-143, 146, 147, 154-156, 159, 160, 163, 167, 168, 173, 184, 202, 205, 212, 215, 216, 220, 223, 227, 228, 231, 233-235) • Reduced clinician isolation(35, 55, 130, 141, 223) • *Collaboration with hospital specialists (23, 27, 55, 121, 130, 143, 227)* • *Upskilling of prison healthcare staff in disease management(23, 27, 35, 54,*	• Improved access to care%(26, 27, 35, 38, 46, 48, 49, 55, 57-59, 82-85, 95, 107, 110, 113, 114, 117, 121, 124, 126, 127, 129, 131, 133, 134, 136, 137, 141, 142, 146, 148, 150, 151, 154, 156, 159, 162, 163, 167, 169, 173, 174, 176, 179, 184, 187, 195, 202, 205, 211-213, 215-217, 220, 222, 224, 231, 233-235, 237-239) • Improved quality of care% (27, 35, 38, 44, 52, 54, 55, 58, 59, 83, 95, 121, 127, 130, 131, 138, 141, 148, 151, 154, 161, 162, 169, 171, 174, 176, 184, 189, 191, 202, 212, 219, 220, 227, 231, 232, 234, 235, 237) • Improved care continuity%(25, 27, 52, 57, 59, 83, 84, 95, 121, 129, 137, 156, 162-164, 171, 174, 190, 208, 214, 220, 231, 242, 243) • *Reduced patient stigma(23, 25, 44, 83, 85, 95, 130, 131, 142, 143, 155, 201, 224, 227)* • *Some patients able to have tele-consultation alone, improving disclosure(168)* • *Reduced need to travel long distances under escort(84, 143, 150, 155)*

	Correctional system	Hospital provider	Prison healthcare provider	Patient[£]
			55, 98, 114, 121, 123, 130, 141, 186, 187, 189, 211, 227, 232, 237, 241) • *Reduced hospital admissions & emergency attendances(49, 94, 121, 154, 164, 234)* • *Opportunity for more multi-disciplinary care(23, 27, 35, 43, 44, 59, 82, 85, 114, 121, 131, 178, 185, 187, 202, 207, 211, 220, 222, 227, 235, 236)*	
Perceived Barriers prior to implementation	• Cost(141) • Healthcare secondary to prison regime(98, 165, 166)	• Altered doctor-patient relationship(98, 157, 222, 236) • Compromised quality of care(46, 56, 98, 152, 173, 176, 222) • Lack of technological expertise(169) • Self-conscious on 'tv'(222) • Reimbursement (46) • Unsure whether patient referred appropriately or simply to save costs(93) • Technological limitations(169, 236)	• Lack of technological expertise(169) • Data security(98, 236) • Confidentiality of consultation(98, 169) • Compromised quality of care(126) • Loss of staff autonomy(128)	• Patient not interested in seeking healthcare treatment(236)
Actual barriers during implementation	• Cost of clinic set up/technology(23, 27, 47, 55, 83, 84, 121, 127, 131, 141, 164, 170, 177, 207, 231) * • *Time to recoup cost of equipment(23, 45, 177)** • *Increased costs due to increased healthcare appointments* (48)* • *Bureaucracy (98, 128, 191)* • *Remand/high turnover(151, 237)* • *Hard to generate meaningful effectiveness data(164)* • *Health services outside prison jurisdiction(128)* • *State communications infrastructure(84, 135, 141)*	• Technological(27, 43, 95, 121, 126, 128, 131, 164, 170, 176, 180, 207, 212, 219, 220) • Staff acceptance(23, 43, 49, 55, 84, 95, 98, 127, 128, 131, 140, 141, 161, 165, 168, 170, 176, 177, 207, 220, 223, 231, 234, 237) • Clinical compatibility – some specialties not suitable, missed clinical cues(23, 24, 38, 43, 44, 55, 58, 84, 95, 98, 118, 121, 123, 126, 136, 141, 142, 164, 165, 169-171, 176, 177, 212, 213, 219, 220, 223, 225, 234, 237) • *Restriction to practicing across state boundaries(127, 131, 140, 160, 164, 165, 170, 171, 228)*	• Technological (24, 27, 43, 52, 84, 95, 128, 135, 141, 166, 207, 219, 224) • Staff acceptance(24, 38, 44, 49, 126-128, 131, 164, 166, 207, 223, 231) • *Increased admin workload (coordinating appointments, sending notes)(95, 126, 148, 205)* • *Demand underestimated(164, 173, 184)* • *Some patients unsuitable for telemedicine medium(219)* • *Admin staff not willing to terminate existing consultant contracts in case telemedicine doesn't work(38, 234)* • *Cost of equipment/clinic set up(98, 207, 237)* • *Time taken to recoup cost of equipment(23, 55, 207)*	• *Patient distrust/nervous(43, 141, 143, 197, 219, 241)* • *Some patients unsuitable for telemedicine medium(219)* • *Lack of patient privacy(44, 121, 157, 164, 165, 169, 184, 220)* • *Preference for in-person consultations(43, 126, 164)* • Patient chooses not to have healthcare(237)

	Correctional system	Hospital provider	Prison healthcare provider	Patient[£]
		• *Financial savings not realised by hospitals(118, 223)* • *Lack of clinical guidelines for telemedicine use(95, 98, 176)* • *Wariness of providing care over a link owned and operationalised by the correctional system(176)* • *Cost of clinic set up/technology(207)* • Reimbursement difficulties(44, 127, 160) • *Fear of litigation(121, 127, 159, 160, 164, 171, 228)* • *Concerns over care if equipment fails(121, 165, 170)* • *Receipt of informed consent(27, 131, 165, 170, 176, 177)* • *Concern over patient lack of confidentiality(160, 164, 165, 171, 177)* • *Concern of inability to intervene if patient self-harms(177)* *Lack of referrals(92)* • *Staff availability(49, 123)*	• *Lack of private space for consultation(141, 237)* • *Fear of litigation(171)* • *Scheduling suitable clinics(205)* • *Lack of staff resource for implementation(160, 210)* • *Difficulties transporting patient to appointment(123, 125, 166)*	
Common barriers to all	• Complexity of multiple providers (23, 94, 95, 181) • Lack of alignment with organisational goals/current priorities(23, 49, 98, 176, 181, 219) • Readjustment to new work practices (24) • Lack of leadership(49) • Isolated telemedicine projects – unaligned with other models/routine healthcare(95) • Information governance(121, 165, 170, 220) • Early engagement on anticipated problems/concerns(164)			
Enablers to use	• Staff training on model(184) • Sustainable/state supported costs(85, 109, 123, 135, 143, 173, 207) • Leadership and support(166)	• Involving staff in model development(151) • Telemedicine champions(127, 151, 164) • Prison staff trained to operate peripherals/assist consultation(23, 43-46, 49, 54,	• Involving staff in model development(118, 219) • Telemedicine champions(83, 95, 127, 135, 151, 166, 205) • Staff understand intervention and reason for its implementation(24, 98, 118, 138, 164, 184, 198, 219)	• Explanation of telemedicine process and completion of informed consent form to address patient concerns/worries(98, 219, 222) • Patient finds telemedicine acceptable/preferable(23, 27, 38, 43-45, 56, 84, 94, 98, 123, 125, 126, 135, 136, 143, 148, 156, 158, 159, 164,

	Correctional system	Hospital provider	Prison healthcare provider	Patient[£]
		58, 113, 121, 123-126, 142, 164, 208, 211, 222, 224, 228, 230, 235, 237) • Staff understand intervention and reason for its implementation(118, 164, 219) • Staff training in technology use(43-45, 83, 126, 138, 165, 170, 177, 240) • Electronic health records accessible by hospital clinicians(27, 58, 82-85, 124, 126, 146, 151, 152, 164, 168, 201) • Upon use - Improved clinician acceptance with continued use(123, 142, 234) • Appropriate peripherals(23, 45, 47, 49, 54, 58, 82, 83, 109, 122-127, 136, 138, 152, 185, 202, 224, 226, 228, 230, 237) • Technology fit for purpose including adequate visual & audio quality, camera alignment(23, 43, 44, 82-84, 94, 123, 126, 127, 136, 138, 142, 143, 146, 158, 168, 170, 173, 177, 180, 202, 219, 222, 227, 230, 237, 240) • Dedicated telemedicine practitioners(26, 49, 83, 92, 162, 164, 202, 210, 222) • University hospital open to research and innovation(35, 147, 195, 220) • Dedicated telemedicine clinic slots(25, 45, 56, 84, 122, 126, 143, 164, 168, 184, 215, 222, 235) • Review of healthcare records in advance of appointment(44, 58,	• Staff training in technology use and troubleshooting(43, 49, 83, 95, 126, 138, 165, 172, 184, 187, 210, 211, 237) • In person visits to operational telemedicine models(49) • Equipment easy to use(168) • Upon use - Improved clinician acceptance with continued use(123, 142, 234) • Training sessions with hospital clinicians to support consultation and upskill staff(54, 185, 198) • Technology fit for purpose including adequate visual & audio quality, camera alignment(23, 43, 44, 82-84, 94, 123, 126, 127, 136, 138, 142, 143, 146, 158, 168, 170, 173, 177, 180, 202, 219, 222, 227, 230, 237, 240) • Backup plan for care provision if technology fails(170) • Secure data transfer(27) • IT support(126, 166) • Private rooms, preferably dedicated to telemedicine(38, 43, 83, 124, 164, 168, 173, 184, 222, 224) • Dedicated telemedicine coordinators(24, 38, 43, 45, 84, 138, 184, 185, 222, 223, 228, 234) • Dedicated telemedicine clinic slots(25, 45, 56, 84, 122, 126, 143, 164, 168, 184, 215, 222, 235) • Patient finds telemedicine acceptable/preferable(23, 27, 38, 43-45, 56, 84, 94, 98, 123, 125, 126, 135, 136, 143, 148, 156, 158, 159, 164, 165, 168, 172, 179, 183, 184, 197, 227, 234, 236, 237) • Referral and use clear(49, 55, 58, 126, 143, 151, 164, 173, 191, 195, 198, 222, 224)	165, 168, 172, 179, 183, 184, 197, 227, 234, 236, 237) • Patients used to video medium for parole hearings and therefore happy to disclose over telemedicine(179) • Patient has existing trusted relationship with prison healthcare staff(24, 56, 190, 237) • Technology of adequate visual & audio quality, camera alignment(44, 180, 197) • Younger patients comfortable with technology use(236) • Patient likes interpersonal distance from telemedicine(160, 179)

	Correctional system	Hospital provider	Prison healthcare provider	Patient[£]
		164, 165, 201, 222, 224, 230, 233) • Staff spent time in prison to understand context(84, 164) • Good relationship between prison and hospital clinicians(82, 123, 173, 223) • Licensing for practice straightforward(121, 164, 176, 237)	• Model used for other purposes e.g. staff training(95, 123, 126, 141, 164, 165) • Good relationship between prison and hospital clinicians(82, 123, 173, 223)	
Enablers common to all non-patient groups	Multidisciplinary implementation teams(38, 82, 94, 95, 123, 126, 138, 178, 219) Formal needs assessment to support implementation(23, 138, 234) Formalised working relationships which at initiation rely on goodwill and enthusiasm(176, 223) Equipment and management plans developed with input of prison and hospital staff to ensure it is fit for both provider purpose Promotion and encouragement of change management(148) Senior buy in and commitment(98, 121, 131, 148, 176) Integrated prison/hospital consultant commissioning/provider(24, 123, 151, 160, 178, 209)			
Table footnotes	*seen as a barrier if correctional system itself is delivering the prison healthcare as opposed to commissioned provider [£]benefits and barriers to patients are seldom reported by patients/through data collected from patients, and are most frequently reported on behalf of staff views of the patient experience [$] anticipated benefits at outset, of access and quality of care were often shared by correctional system/prison healthcare providers. For example, in the USA the correctional system is responsible for provision of healthcare. It was not possible from the information provided in the literature retrieved to discern if only one party perceived this as a potential benefit. [%] No literature retrieved asked patients what benefits they anticipated prior to telemedicine introductions, therefore anticipated benefits for patients are reported as per the opinions of other parties at outset [&]beneficiaries of cost savings are dependent on the commissioning arrangement for prison healthcare. The USA is the most prolific publisher of prison telemedicine literature and is responsible for provision of healthcare services, therefore cost savings are attributed to the correctional system but related to prison healthcare. Therefore separation of cost savings by prison healthcare and the correctional system is not possible in most instances. Where it is not possible to distinguish between correctional and prison healthcare savings these references have been cited for both parties.			

4.3.3.5 Logistics and clinical compatibility

A practical but nonetheless important determinant of success is that of intervention compatibility with clinical care. Clinical and technological factors were the most frequently raised barriers, alongside staff issues, to the use and success of telemedicine in prisons. Equipment issues ranged from poor audio, visuals and connectivity,(43, 84, 141) to problems with immobility or remote control by hospital physician.(224)

Amongst publications reports of successes with general telemedicine models were the most common output (Table 6 p.87). In terms of specific conditions, publications were heavy in the fields of psychiatry and hepatitis, both purported to lend themselves well to the telemedicine medium, and known to be of a high relevance to prisoners, given the large burden of hepatitis C infection and mental health issues often found in this population.

Several studies advocated for a formal needs assessment process prior to a decision to implement change,(23, 45, 95, 123, 184) with this assessment determining priority clinical specialties for delivery, identifying suitable prisons for implementation and to justify and act as a general call to action. Furthermore, within individual clinical specialties there were, as expected, some diagnoses that lent themselves more readily to telemedicine. For example, within telepsychiatry, patients with thought disorders appeared more satisfied with the remote telemedicine medium than those diagnosed with affective disorders.(43) Consideration of peripherals required to make optimal use of the telemedicine consultation or care pathway, the associated cost of these peripherals and the expertise required to operate them, will also be instrumental in guiding the choice of initial specialities to pilot within a prison setting (Table 6 p.87). Technology must be fit for clinical purpose and reliable.

Finally, alongside non-suitability of certain clinical conditions, departments must acknowledge that some patients may be unsuitable for telemedicine consultations given the nature of their condition e.g. acutely psychotic thoughts involving fear of technology.(177, 219) In addition, security considerations around certain patients and restrictions on their access to technology (as part of their custodial sentence) may limit the ability of some patients to access telemedicine consultations.

4.3.4 Comparison to existing literature

Previous literature on prison telemedicine has tended to focus on outcomes, cost effectiveness, patient satisfaction, narrative accounts of individual model successes or scoping the published literature. To date there have been no attempts to report commonalities of success or difficulties experienced in different models, or by different parties involved in the delivery of prison telemedicine, which this review adds.

4.3.5 Limitations

This review sought to understand the breadth of evidence available related to prison telemedicine, and common themes related to implementation as opposed to the strength of the available evidence. This review did not adopt a realist approach to explain the role of context and mechanisms on programme outcomes given the highly heterogeneous body of literature, covering different clinical specialities and different geographical contexts. Future realist reviews on specific telemedicine pilots/services may provide more in-depth information on why they do/do not work in specific contexts.

4.3.6 Recommendations for practice

Prison telemedicine, is conceptually a straightforward intervention offering demonstrable improvements to care quality. It may however be complex to implement given the multiplicity of partners who must be involved and satisfied at both senior organisational and frontline levels, and the juxtaposition of health and justice contexts. The duality of service providers and their differing needs, wants and beliefs must be satisfied within the correctional context. The culture within correctional facilities may be averse to change and “risk-taking”, with most day to day operations focussed on the reduction of risk and security considerations,(166, 176) while health care is typically considered to be secondary to these priorities.

Perceived benefits drive willingness to implement and an appreciation of the barriers and enablers likely to be realised support successful implementation. When considering anticipated and realised benefits, barriers and enablers, it is important to do so by each provider group given that difficulties encountered, and perceived advantages are likely to be different. As benefits are mostly accrued by prison services and patients themselves rather than by hospital services it can be challenging to

convince both senior and frontline hospital staff of potential gains. A careful consideration of local organisational priorities and their potential alignment with telemedicine may help to support the case for change, as can the use of telemedicine 'champions' drawn from a pool of staff enthused about the potential telemedicine may offer. Those planning implementation should separate out the concerns and enablers relevant to these different groups and ensure they are mitigated or communicated appropriately.

The geographical context (in terms of physical distances between the correctional system and healthcare providers) can further influence and shape enthusiasm for telemedicine at both senior and frontline levels (Figure 10 p.106).

Figure 10 Layers of context influencing prison telemedicine implementation

At outset providers should consider carefully which specialty/s to pilot over telemedicine in their setting, having formally considered healthcare need and peripheral equipment required to deliver. The system should be designed to mitigate expected barriers, and staff from all partners should be widely engaged to ensure they understand both the rationale for and the potential benefits of prison telemedicine. The implementation team, ideally comprised of staff from the hospital, prison healthcare and wider prison operational departments should together answer the following logistical questions prior to model design (Figure 11).

The Connection

- Is there sufficient bandwidth to provide a reliable internet connection? (Larsen 2004, Burton 2005, Batastini 2015, Deslich, 2013, Patel 2014, Arndt 2018)
- Is the connection encrypted and secure? (Patel 2014)
- Will prison firewalls need to be breached to secure connection with outside providers? (Deslich 2013)

The System Equipment

- Will the system provide adequate audio and visual outputs? (Magaletta 2000, Sullivan 2008, Weizmann 2012, Deslich 2013)
- Does the system need to be mobile to allow greater flexibility of use (acknowledging potential increase in cost and incumbent security issues)? (Ellis, 2001)
- Where will cameras be placed to provide optimal visuals for consultation? (Sullivan 2008, Deslich 2013)
- Does the clinician need to be able to remotely control the camera movement? (Ellis 2001)
- Are peripherals required? (McCue 2000, Lavertyev 2008, Bedowski 2012, Cain 2016, Olsson 2018)
- Are required peripherals reliable and easy to use? (Swift 2016)

Training and troubleshooting

- Has a full system check been scheduled prior to operation of the telemedicine system? (Mekhjian 1996, Leonard, 2004)
- Who will provide staffing training on equipment use and troubleshooting? (Batastini 2016)
- Who be responsible for equipment maintenance/technical support and at what intervals? (Leonard 2004, Saleem 2008, Batastini 2016)
- Is a clear backup plan available for care provision in the event of equipment failure? (Khalifa 2008, Kaliebe 2011)

Figure 11 Checklist for prison telemedicine implementation

Throughout telemedicine implementation process measures should be gathered alongside traditional outcomes data, to both inform model development and normalisation, guide wider roll-out and to demonstrate improvement in healthcare quality.

4.3.7 Recommendations for future research

To date there has been no prospective analysis of the anticipated barriers to telemedicine implementation and normalisation prior to implementation, particularly for hospital provider staff who are unlikely to see significant financial gains. Little data is available to formally assess how implementation of a new telemedicine system

differed from expectations at outset, and how the model subsequently changed during implementation and use. Research in these areas would complement this review, providing more in depth information to support implementation of new prison telemedicine models.

4.4 Conclusion

In conclusion, existing literature suggests that prison telemedicine has the potential to make significant improvements to the health outcomes of a traditionally underserved population with substantial health needs. It can deliver better access and quality of care whilst offering wider system benefits across all stakeholders involved such as demonstrable cost savings, patient satisfaction and upskilling of staff. Telemedicine has also been praised as an effective intervention to improve continuity of care in traditional community settings.(244, 245) Providing continuity of care for people engaged with the criminal justice system is challenging and has resulted in political calls to action on this topic.(16, 246-249) People in prison move frequently, both in terms of the revolving door between prisons and the community, and movements between different prison facilities. Whilst incarcerated they also face inhibited access to hospital care. Telemedicine within prisons may offer a solution to these issues, but it can only deliver these benefits if the implementation is successful.

Implementation and normalisation of prison telemedicine requires cultural and organisational shifts across a variety of different system partners. This chapter provides information to improve the chances of successful implementation. Those who wish to implement a model afresh will need to scope widely the partners to be engaged, consider the context they work within and the anticipated benefits that will encourage them to commit resource to support implementation or change practice. When implemented well, provider staff from both institutions, correctional facilities and most importantly patients, were generally satisfied with telemedicine care.

Within the UK there is considerable appetite for telemedicine in prisons given the successes demonstrated in other high income countries. However, the UK context, in particular the commissioning and funding of health services, differs from that in other successful models. Therefore there is a need for implementation research within the UK context to inform wider role out if successful.

Chapter 5 Why is individual enthusiasm and good will inadequate to ensure successful implementation of prison telemedicine in local systems?

OVERVIEW:

This chapter explores prison and community healthcare staff experiences and perceptions of local telemedicine implementation, prior to the COVID-19 pandemic. Theoretical frameworks were used to interrogate emergent analytic codes, first by organisation into a structure and then in interpreting the data. Themes are also considered in relation to issues known to affect non-prison telemedicine implementation. Case studies are used to illustrate some of the themes presented. The chapter concludes with recommendations for future prison telemedicine/digital implementation projects based on research findings.

This chapter describes the experiences and perceptions of local telemedicine implementation **prior** to the COVID-19 pandemic, from the perspective of both prison and hospital healthcare staff (providers). There is no published literature which seeks to understand the experience of implementation across the two providers of prison-hospital telemedicine models. Data for this chapter was collected in the six months prior to launch of the prison telemedicine model (August 2019- January 2020), with implementation work having started nearly three years previous, in October 2016.

*"I think **we're all just really frustrated** […] I can't understand why it's taking so long. Everybody seems to be on board with this and saying it will be better for patients, it will be better resource wise, it will be more cost effective. It will be less risk for the patient, the hospital and the prison. It will offer fast access and diagnosis and treatment and care and support. **But it just feels like it's wading through treacle to get it achieved and I don't understand** everybody you talk to "yeah, yeah, yeah we want we want, we want". We can see all the benefits but I can't understand why*

we're so antiquated in being able to deliver what is a relatively straightforward simple project" (Meso1, Prison healthcare)

The pandemic had not yet arrived in England and so had not formed part of the context for telemedicine implementation.

In general, implementation of new interventions can be affected by both context and the actors that are part of this context. For implementation research, 'context' is the set of circumstances or unique factors that surround a particular implementation effort.(2) Context is considered responsible for study-to-study variations in outcomes. Accounting for the influence of context is necessary to explain how or why certain implementation outcomes are achieved and whether they are likely to be achieved in other areas. Within Chapter 4 I hypothesised based on the published literature, that staff willingness and buy-in across prison and hospital providers would be crucial to the successful implementation of prison telemedicine, at all different staff levels within organisations (4.3.3.1 p.91). The staff definitions applied in this chapter can be seen in Figure 12 (p.111).

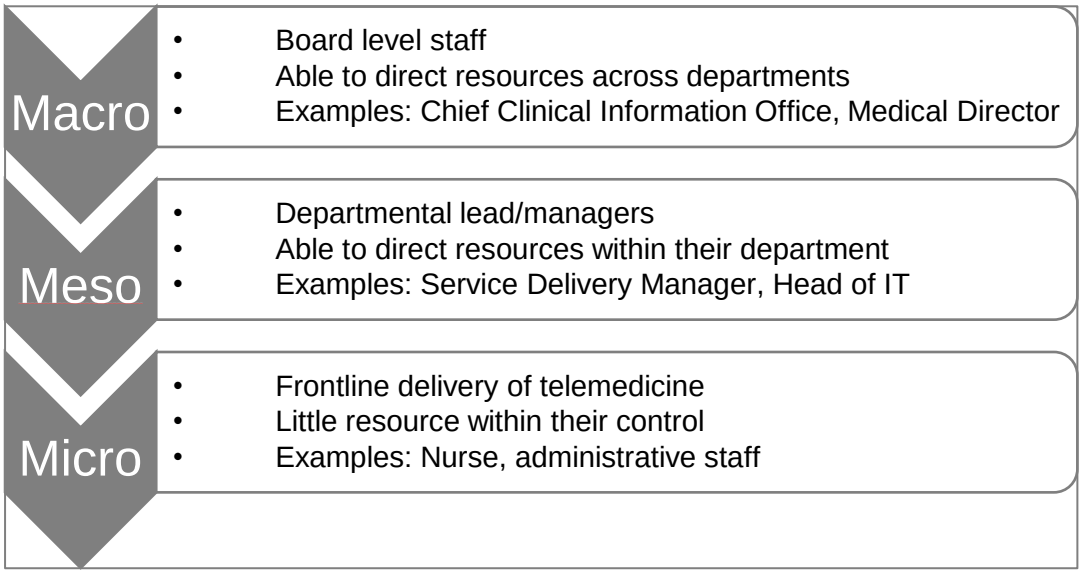

Figure 12 Staff levels

Evaluations of healthcare interventions have shown consistently that staff at macro, meso and micro levels must be engaged and enthused in the provision of the intervention.(1, 103) Telemedicine as an intervention spans a multiplicity of providers (community hospital, prison healthcare, wider prison staff) all who have differing needs, wants and beliefs. (250) Within this chapter I seek to understand how context and individual attitudes and perceptions of telemedicine influenced the adoption and implementation of a locally derived prison-hospital telemedicine model, prior to the COVID-19 pandemic.

This chapter uses qualitative data collected from prison and hospital healthcare staff to understand key issues which may affect both their willingness to participate in telemedicine implementation, and also subsequent implementation success. This chapter aims to answer the following research questions:

- **How do staff values and perspectives affect the implementation of a local prison-hospital telemedicine model?**
- **How do experiences and opinions differ between the two staff provider groups (prison healthcare and hospital healthcare staff)?**
- **How can staff from both provider groups be encouraged and supported to deliver prison-hospital telemedicine model implementation?**

5.1 Methods

5.1.1 Rationale for a qualitative approach to data collection

A qualitative approach to data collection was used to understand staff concerns, perceptions, understanding and experiences of prison-hospital telemedicine implementation. Qualitative research includes appreciation of the context within which results were generated, and ensures findings are not isolated from the environment that gives them meaning,(251) particularly appropriate for the study of context within this implementation.

5.1.2 Theory base for interviews

An implementation theory and framework were used to inform the interview topic guides and also data analysis and interpretation, to ensure all issues relevant to

implementation were considered. These were Normalisation Process Theory and the Consolidated Framework for Implementation Research.

5.1.2.1 Normalisation process theory – staff factors

Normalisation Process Theory (NPT) focusses primarily on the work that individuals and groups undertake to operationalise and normalise an intervention. 'Normalisation' refers to the process of everyday use, where the intervention becomes embedded as part of day-to-day operations. NPT was selected for use in this study to allow an understanding of the process problems of implementation and the structural problems of intervention integration. This is different to understanding the outcomes alone of a new intervention, and can help inform future scale up or spread of successful interventions. NPT focusses on the role of individuals and groups in implementation. My literature review (Chapter 4 p.81) found that the attitudes of staff groups and the roles of individual staff members (4.3.3.4 p.95) can be instrumental in telemedicine implementation, therefore NPT is an appropriate theory for consideration here. Prison telemedicine will be delivered from within prison primary care departments. NPT has previously been used successfully in primary care settings across a multitude of interventions to inform understanding and reporting of interventional processes and outcomes. (252)

The theory proposes four constructs that are critical to implementation and normalisation (1, 253):

Domain 1: Coherence – meaning and sense making of the intervention by participants

Good coherence of an intervention is essential to staff member's decisions to participate. Different providers are likely to have different priorities (highlighted in Chapter 4) so the telemedicine intervention will need to be coherent in different ways, to different staff groups, based on their working context, in order to be successful.

Domain 2: Cognitive participation – commitment and engagement by participants

Cognitive participation refers to the commitment and engagement of participants to deliver the intervention. The importance of context in cognitive participation is implicit.

Staff members must feel the intervention relates to them and have willingness to drive implementation forward. Much of this will be influenced by the context they work within.

Domain 3: Collective Action – the work participants do to make the intervention function

Collective action refers to the actual 'operational work tasks' that staff members must perform to deliver the intervention, including inter-operational tasks and working relationships.

Domain 4: Reflexive monitoring – participants reflect on or appraise the intervention

Reflexive monitoring refers to appraisal of the intervention by staff and its impact (both positive and negative) on them and others around them.

As these interviews pertain to the pre-implementation phase of telemedicine, domain 4 (reflexive monitoring) is not considered within this analysis, however domains 1-3 have been used to guide the collection and analysis of staff interview data (Section 5.2 p.119).

5.1.2.2 Consolidated Framework for Implementation Research - Intervention and Context

NPT also encompasses a description of the intervention and the context in which it will be deployed. NPT has previously been criticised for its focus on individual and collective agency, and not paying enough attention to the wider organisational and relational contexts of the implementation.(254) Therefore, to provide more generalisable contextual information, in parallel to NPT, several constructs from the Consolidated Framework for Implementation Research (CFIR) were used to guide an in-depth description of the context surrounding the intervention itself. (2)

These are:

- A description of the outer setting (economic, political, and social context)
- A description of the inner setting (structural, political, and cultural contexts through which the implementation process will proceed)

For the purpose of this thesis the outer setting has been considered as the wider healthcare system (NHS or Integrated Care System policy/procedures) and the wider prison system (HMPPS policy/procedures). The inner setting is defined as the context within the two different providers involved in the local telemedicine implementation work, the local community-based hospital providing secondary care to the prisons, and the prison healthcare provider hospital who staff the prison healthcare teams. A diagram demonstrating how these theories support an understanding of the factors affecting prison telemedicine implementation is shown in Figure 13.

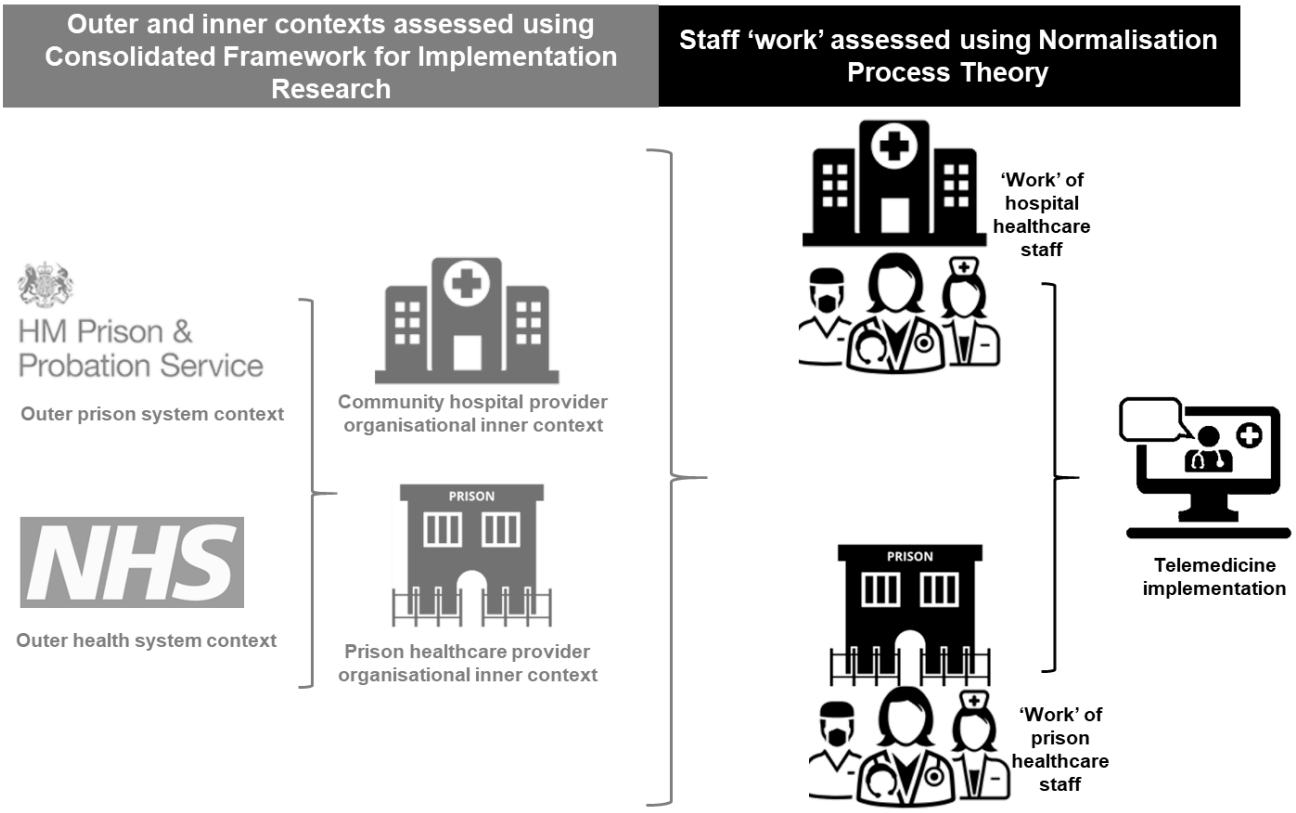

Figure 13 Theories used to inform this research

5.1.3 Data collection

The staff of two hospital trust providers were sampled for staff interviews, one of which provides primary healthcare services within study prisons and the other which provides local community-based hospital care to prisoners. The study prisons and community hospital were both based within an Integrated Care System (ICS), with the community hospital commissioned by a Clinical Commissioning Group (CCG). ICS/CCG staff were included in the community hospital dataset. Both providers had been involved in

the implementation of the study telemedicine model from outset and were geographically distinct from one another. Herewith they are referred to as ‘prison healthcare staff’ and ‘hospital staff’. One-to-one interviews were scheduled with staff who agreed to be interviewed. All interviews were undertaken by the author.

Semi–structured interview guides were developed drawing on the principles of NPT, wider contextual factors of CFIR and evidence from the literature review. Topic guides were split into five overall sections:

1. Organisational/inter-relationships
2. general background to prison telemedicine
3. telemedicine in practice – working perspective
4. telemedicine benefits/concerns
5. telemedicine in practice – technological perspective

The topic guide developed is shown in the Appendix B Table 17 (p.263). Throughout the data collection process I reflected on what did/did not work to elicit responses from participants and adapted my questioning style appropriately. All data collection activities were recorded on an encrypted Dictaphone and transcribed professionally.

5.1.4 Recruitment

Initial participants were selected using purposive sampling, based on known staff relevance to telemedicine implementation. Advice on participant selection was also sought from local clinical Principal Investigators (PIs) at provider sites. Further snowball sampling was undertaken based on advice from initial interviewees. Staff known to have had involvement in telemedicine implementation were approached by email with a leaflet and an explanation of the study purpose and activities. Interviewees were selected to provide a macro, meso and micro staff perspective (see Figure 12) from within the two healthcare provider systems (prison health and hospital health) involved in local prison telemedicine implementation. Participants were also asked to identify other members of their organisation who they thought would be relevant on close of their interview.

A total of 26 people were invited to interview of which 20 agreed to participate. I completed one to one interviews (n=12 prison healthcare n=8 hospital) to collect qualitative data pertaining to the experiences of telemedicine implementation. Twenty interviews were completed totalling 14 hours of data. Participants were selected from macro (e.g. Medical Director, Director of Transformation), meso (e.g. Service Director, Head of IT) and micro staff levels (e.g. nurse, administrative) across both provider organisations, in line with findings from the literature review that suggest multi-level staff engagement is critical to telemedicine implementation (See Chapter 4 p.91).

Six invitees declined to participate due to a perceived lack of knowledge/relevance to telemedicine implementation. These invitees were micro (n=3), meso (n=2) and macro (n=1) level staff. Micro level staff generally felt they had no knowledge they could meaningfully contribute until telemedicine was operational. Most of the people who declined to participate (n=4/6) were from the community hospital. No participants dropped out once they had agreed to participate.

Participant demographics (provider, staff level) are shown in Table 8 (p.118). Staff members were often able to speak from several perspectives as many of the senior clinical managers had Consultant level knowledge in a particular discipline as well as their defined management role. For example, one participant was both a Chief Clinical Information Officer and a Consultant with extensive practice with both community and prison patients, and spoke differently in relation to their different ‘job hats’. Providing in-depth details of overlapping individual staff roles may allow for deductive disclosure of participants and therefore the participant roles table (Table 8 p.118) details the number of participants who spoke from the perspective of ‘x’, without detailing overlaps. Within this chapter, participants are referred to solely as macro, meso or micro staff (as defined by Figure 12) from either the hospital or the prison provider.

Table 8 Interview participant roles

Staff level (main/current job role)		Provider		Total
		Hospital	Prison Healthcare	
Macro level staff		3	3	6
Meso level staff		4	6	10
Micro level staff		1	3	4
Staff role/s and perspectives				
Macro, meso or micro	Staff role	Hospital	Prison Healthcare	Total
Micro	Administrative		2	2
	Nurse	1	2	3
	Health advisor	1		1
Meso	Consultant clinician	4	4	8
	Prison Head of Healthcare		1	1
	Lead nurse		1	1
	Regional Operational Manager		1	1
	Head of Governance	1		1
	Head of IT	1	1	2
	Service Director		2	2
	Head of Outpatients	1		1
Macro	Clinical Director	1	1	2
	Medical Director		1	1
	CCG lead	1		1
	Integrated Care System lead	1		1
	Chief Clinical Information Officer		1	1
	Director of Transformation	1		1

5.1.5 Ethics

This part of the study received ethical approval from the South East London NHS Research Ethics Committee (IRAS 229646) and the Health Research Authority.

5.1.6 Informed consent

All participants gave written informed consent prior to data collection.

5.2 Analysis

Audio data was transcribed verbatim by a secure transcription service. Transcripts were used to undertake Thematic Analysis, by which patterns in data are identified, analysed and reported.(255) Thematic data analysis involves the following steps: Familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing a report.(255)

Following familiarisation with transcripts an inductive approach to coding was employed, developing a coding structure based on interesting features and patterns in the data, as opposed to following a pre-defined coding framework. Resulting codes were subsequently categorised under the descriptions of the theoretical domains of NPT and CFIR (Table 9 p.121) to understand the influence of these domains on implementation. Once coding of all transcripts was complete, resulting codes were compared and contrasted, and subsequently grouped and labelled as major themes. Some codes overlapped between themes. NPT and CFIR domains were used to enhance understanding and explanation of each theme. Coding directly to theoretical domains during data analysis may have limited interpretation of the data by trying to fit patterns identified into existing typologies; therefore this method was not employed. Themes described major issues reported by staff that influenced prison telemedicine implementation. Many themes overlapped in their importance to individual staff, providers and the wider system.

All themes were compared to existing literature on general telemedicine barriers and facilitators to understand whether this was a theme related solely to prison-hospital telemedicine, or whether it was a more generic issue with telemedicine implementation.

5.3 Case studies

Case studies have been used to illustrate some of the points made throughout this research chapter. I was able to collect and report this information by nature of my embedded researcher status (2.4 p.34).

Case studies were selected to describe and explore key events from the implementation process, in depth, in their natural context. I chose case studies to

provide additional context to implementation for the reader. Case studies provide additional contextual information which was not discussed in staff interviews, but which aids understanding of the issues they reported, for example, with the leadership of telemedicine..

Case studies reported here are:

- Getting approval for videoconferencing in prisons
- System maturity
- Champions for prison telemedicine
- Leadership involvement in telemedicine implementation

5.4 Clinical academic reflections

Where relevant I have reported on my role in implementation tasks and what this may mean in relation to future implementation projects.

Table 9 Code table from analysis of provider staff pre-implementation interviews - information on which theoretical domains are informed by each code

Primary Code	Sub codes	CFIR and NPT domains relevant to code
Champions	Champions spanning providers, Clinical champions	CFIR Inner setting NPT Cognitive participation
Clinical concerns	Appointment worries, Clinical appropriateness, Demand grows too quick	NPT Coherence NPT Collective Action
Continuity of staff	Backup staff, Contract stability, Recruitment and retention	NPT Collective Action
Demonstrable benefits	Acceptance of prisoners by community, Contract delivery, Cancelled appointments and re-prioritisation, Continuity of care, Contributing to evidence base, Equivalent care, Escorts, Free time for other activities, Less complaints, Less problems discharging patients, Meet treatment targets, Performance targets and inspections, Reduce unplanned admissions, Reduce waiting lists (RTT), Reduce footfall, Reduced travelling, Safer care, Security risk, Staff time at prison, Streamline clinics	CFIR Inner setting NPT Cognitive participation NPT Coherence
Finance	Competitive edge, Efficiency, Increased business, Investment, NHSE financial, Reimbursement policies, Savings	CFIR Inner setting
IT infrastructure	Accessing electronic health records Abuse of system Accessing electronic health records, Governance, Current IT poor, Different IT systems, IT support, No tech appropriate, Safe and secure system, Tech behind in prisons, Visuals	NPT Coherence NPT Collective Action
Leadership and support	Change in leadership, no managerial ownership, People and technology, Powerless to drive forward	CFIR Outer system CFIR Inner setting
Limitations of prison environment	Can't get patient to clinic, HMPPS factors, Meeting security considerations, Hosted service	NPT Coherence NPT Collective Action
Networked relationships	Communicate, Demonstrate partnership, Not networked to other teams, Not well networked internally	CFIR Outer system NPT Coherence NPT Collective Action
Nuts and bolts of consultation	Auditable, Consent, Easy tech to use, Environment or room, IT works seamlessly, Planned in advance, Referrals for diagnostics, Shared clinics, Staff support clinically, Staff support operationally	NPT Coherence NPT Collective Action
Organisational culture		CFIR Inner setting
Patient factors	Issues with attending or accepting appointments, Perceived patient benefits of telemedicine	CFIR Inner setting NPT Cognitive participation NPT Coherence
Perception of change		NPT Coherence
Personal benefits	None, upskilling staff, meeting performance targets, seen as an innovator	NPT Coherence NPT Cognitive participation
Pre planning and implementation	Becoming business as usual, Confidentiality assurance, Education for staff, Hospital booking mechanisms and triage, Implementation plan, Needs assessment, Operational guidance, Staff don't understand intervention, Staged approach, Takes too long	CFIR Outer setting NPT Coherence
Priorities	Benefits not equal or invisible, Pros outweigh cons, Organisational priorities	CFIR Inner setting
Recognition	Awards and recognition, Reputation and prestige, Teach others	CFIR Inner setting NPT Coherence
Role	Fit with role, role assumed	NPT Cognitive participation
System	Geography, Governance and bureaucracy, Hospitals and prisons commissioned separately, Introduces new stakeholders, Layers of complexity, Legislation changes, New commissioners, Policies or guidance, Prison demographic, Been done previous, Sustainability, Testbed for wider scale up, Wider environment, Targets for delivery, Support for other parts of the system, Support for telemedicine, Champions spanning providers, Organisational priorities	CFIR Outer setting CFIR Inner setting
Work required	Clinical development, Dislike new way of working, Healthcare already manages complex clinic schedules, Not sure how it will work yet, Prison healthcare help in consultations, Staff workload, Too busy doing job to be strategic	NPT Coherence NPT Collective Action

5.5 Results

Four major themes affecting prison telemedicine implementation were identified from the data analysis. These are:

- The Justice System: Added complexity and chaos
- Issues with delivery ‘on the ground’ in prisons
- Difficulties connecting community and prison health
- The differing priorities of community and prison health partners

Figure 14 shows how primary codes were linked to major themes. All themes reflect issues influenced by the CFIR outer and inner setting, whereas influence from NPT staff domains are mostly apparent in the third and fourth theme.

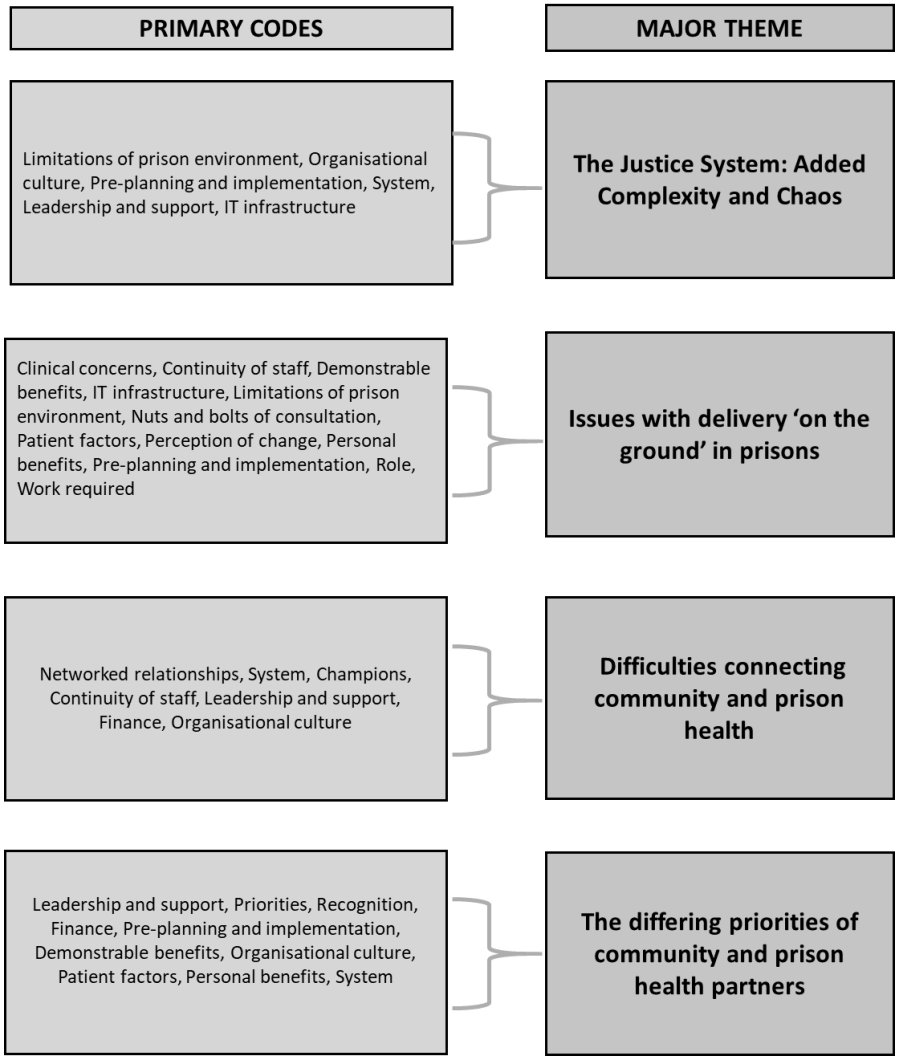

Figure 14 Primary codes and major themes for local implementation staff interviews

The research questions defined at the start of this chapter (p.110) are not answered individually within this results section as this would have limited the ability to report the ‘story’ of prison telemedicine implementation. Instead they are covered across the

themes reported and reflected on in the chapter conclusion. Practical actions pertaining to: *How can staff from both provider groups be encouraged and supported to deliver prison-hospital telemedicine model implementation?* are reported in the discussion (section 5.6 p.165).

Case studies are used to illustrate particular aspects of the themes in more depth.

This work all took place *prior* to the COVID-19 pandemic contextual shift. The project to implement prison telemedicine began during a time of evolution within the community healthcare system, and in a relatively stable phase of provision for the prison healthcare provider. Figure 19 (p.146) provides a case study of one provider and the wider system maturity at the time when telemedicine was initiated. This case study demonstrates that 'on paper' the community system appeared ready to innovate, and the prison healthcare team was in a stable position to consider service developments. The themes further reported in the section provide some explanation for why implementation had been problematic despite this 'ideal context on paper'.

5.5.1 The Justice System: Added complexity and chaos

The interviews revealed that the prison setting introduced challenges to implementing telemedicine related to provider complexity as well as an emphasis on security.

5.5.1.1 Complexity as part of the justice system

The complexity of the health and justice systems was mentioned as a negative by most senior staff from prison and community healthcare providers. Prison telemedicine is unique in that its implementation and coordination does not sit solely within the community healthcare system, but instead straddles the health and the justice system (4.3.3.4 p.95). This introduces a large *outer system* contextual influence whereby two sets of competing priorities and governance structures must be involved in implementation and associated approvals. Both the NHS (256) and HMPPS are considered to be complex systems that are involved in the process of permissions for virtual healthcare consultations. In an interview with a prison healthcare provider, this issue was raised:

> *"For simplifying it **you've got health and then you've got prison**, and those are two big organisations with, with **quite different agendas** in*

terms of what their priorities are for this." (Meso4, Prison healthcare provider)

Here the participant references the different priorities or 'agendas' of the health and justice system, with justice focussed on delivery of the 'orders of the court' as opposed to the health and wellbeing of residents.

5.5.1.2 'Chaos' as part of the justice system

Nearly all staff from the prison healthcare provider teams referred to the chaotic and unpredictable nature of working with the prison service, both in terms of day-to-day service delivery and also longer term strategy given the constant 'transformation of the prison estate' whereby prison functions change.(257). This is summarised in the following quotation from a senior prison healthcare manager:

"[…] you've got organisational uncertainly in terms of the Prison Transformation Board, that's complicated by the political agenda […] before it was less beds, more community work, now it's "No, no, no, sentence people for longer". So that means, ***when you've got a transforming prison agenda, prisons that don't know what their identity is****, because they can be closed overnight." (Macro 3, Prison Healthcare Provider)*

The participant is reflecting that Government policy and HMPPS decisions affect the ability for healthcare teams to make long term strategic plans for service delivery. As an example, the participant referred to a scenario whereby they had been given just weeks' notice that a closed, formally male prison, would be re-opened imminently as a female prison. Other prisons in their portfolio had also been severely impacted by the closure of a different prison, which diverted many new residents to their services, again causing major disruption to healthcare.

5.5.1.3 The importance of security in the justice system

When considering the use of new *digital* interventions, implementation difficulties are even further amplified due to the scrutiny by the risk-averse prison system. Almost all participants spoke with frustration about the delays to telemedicine roll-out due to the required HMPPS security approvals.

HMPPS have concerns that prisoners could use digital technology to make unauthorised contact with 'people on the outside', be that to plan an escape, organise delivery of illicit substances or potentially even to threaten another's safety. As mentioned in 5.5.1.1 the general interface between prisons and health introduces complexity. The addition of technology exacerbates this complexity further.

Participants recognised that telemedicine services must satisfy stringent HMPPS security requirements due to the inherent security risk they present:

> *"I guess a con could be abuse of the system, so it could be not all officers and staff follow all the rules so it is open…it is* ***a medium that is open to abuse*** *potentially so that would need to be carefully managed and overseen." (Meso1, Prison healthcare provider)*

If compromise is required the rules of HMPPS will trump those of the NHS, as several NHS participants mentioned, "*We [healthcare] are a guest of the prison service".*

The case study 'Getting approval for videoconferencing in prisons' (Figure 15 p.127) describes the lengthy process that was undertaken to receive HMPPS approvals for telemedicine software in prisons, and the concerns held by the justice *setting* in regards to remote patient consultations. Issues regarding auditability and misappropriation reported in the case study would be unlikely to be scrutinised in normal patient or community healthcare settings. The rigorous security requirements that had to be satisfied lengthened the implementation process and reduced software options available for practical use.

Case study: Getting approval for videoconferencing in prisons

The prison system has very strict rules around permissions for use of digital equipment within its establishments. This is to ensure unauthorised communications and other illicit activity cannot be facilitated. From outset with telemedicine it was stipulated that prisoners in consultations must be chaperoned by a member of the prison healthcare team, and must not be left unsupervised with internet access.

The total approval process for videoconferencing in prisons took 3 years from the point of initial contact with the central HMPPS IT Management and Security team, who oversee all approvals for digital technology within the prison environment in England and Wales. Not only did the videoconferencing solution have to be suitable for clinical purposes and achievable within current NHS financial envelopes, but it had to satisfy the security requirements of HMPPS. Both the NHS and HMPPS expect secure and rigorous governance processes that ensure personal data is transmitted and stored safely. However, for HMPPS there remain concerns that videoconferencing could be misappropriated by prison staff who develop relationships with prisoners and allow them unauthorised access to the videoconferencing system. For this reason any telemedicine solution needed to be auditable to ensure that any unsanctioned calls could be traced back to individual healthcare staff chaperones supervising prisoner appointments. This also meant that healthcare staff members needed individual videoconferencing log in details and accounts as opposed to shared departmental accounts.

At first the use of a well-known, approved NHS videoconferencing software was proposed, given the secure connection it offered, the possibility to upgrade individual staff NHS email accounts to include this solution and the subsequent relatively small yearly cost per staff member. However, after a long period of investigation this solution was deemed unacceptable by HMPPS due to the difficulty in auditing the calls of individual accounts. Fortuitously, the local hospital committed to delivering telemedicine appointments to local prisons was in the process of trialling a videoconferencing software for virtual multi-disciplinary meetings. Seeing as this solution had already been approved and purchased by the trust it was considered for deployment within prisons. This solution was ultimately found to be secure, auditable and acceptable to HMPPS and was used in the delivery of healthcare consultations.

The software, having been approved, is now approved for use within any prison so long as the agreed operational protocol (SysOps) is followed. This software has a yearly licence cost per staff member/account so recurrent funding for the software is an issue. The number of software accounts required will differ by institution.

Hospitals are able to use departmental accounts so long as they define governance arrangements for shared access. Prison staff chaperones however must hold individual accounts to allow traceability of individual calls, meaning licence numbers will be defined by individual healthcare teams, with licences provided for anyone who may be called to chaperone a telemedicine appointment. For this pilot the prison provider arranged for payment of their staff videoconferencing accounts through available non-recurrent funding to ensure the pilot would progress. Future arrangements for the provision of staff member videoconferencing account funding is yet to be finalised at the time of writing.

Figure 15 Case study - Getting Approval for Videoconferencing in Prisons

Summary: Prison telemedicine requires co-operation and delivery of implementation related tasks by both the prison and the health system, which introduces complexity. This complexity is further increased because the prison system is highly changeable. The function of prisons and wider governmental objectives around the narrative of 'punishment and sentencing' can change quickly, which can impact on healthcare's ability to deliver long term change projects. Digital projects are at even further disadvantage because of the additional security processes HMPPS require to assure their use, in order to maintain their own security related objectives.

5.5.2 Issues with delivery 'on the ground' in prisons

"So I am a little in the dark in terms of how the practicalities of it work [...]"
(Meso4, Prison healthcare provider)

Staff interviewed at this point in the project had yet to start using telemedicine, but had been involved in trying to implement it for the previous three years at the point of data collection. This meant that they had developed their own understanding and assumption of telemedicine and how it would work in practice, reported within this section of the results.

Figure 16 (p.128) shows some examples of work undertaken by staff during the telemedicine implementation period.

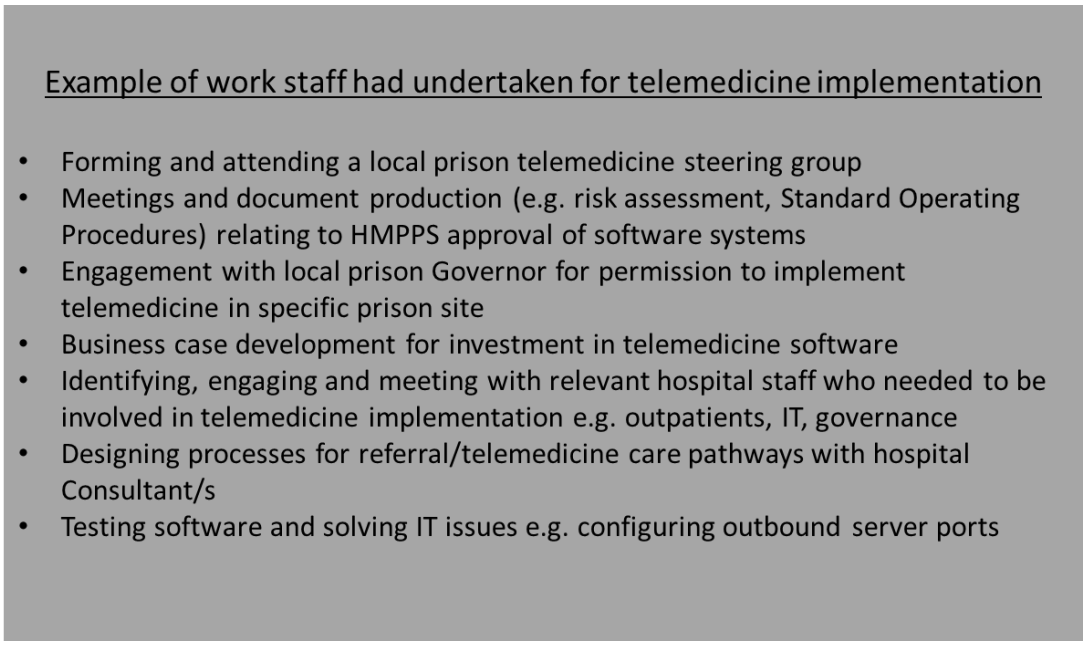

Figure 16 Example of work staff undertook during the local telemedicine implementation period

***Clinical academic reflection*:** In my role as a clinical academic I had assisted with some of these tasks, including writing first drafts of documentation for wider comment and amendment, and attending meetings with HMPPS and hospital staff. I was involved with these tasks because I had time to dedicate to their completion, not because another clinical staff member would have lacked the skills to complete them. In this way I was involved with implementation, but not 'critical' to it. Rather, the *time* of someone with an understanding of prison health was critical to completing these implementation tasks. Introductions to HMPPS were made via the NHSE H&J commissioner, and would have been facilitated regardless of who the relevant liaison was.

As discussed within the theoretical frameworks of Normalisation Process Theory, staff have to understand what an intervention aims to achieve, believe it is of benefit, understand how it will impact their workload and commit time and effort to embedding the new practice before there is any chance of normalisation. These factors are explored further within this section.

5.5.2.1 Staff understanding of telemedicine, the work required for delivery and their roles

'Work' for telemedicine can be separated into the work that had been delivered already as part of the implementation process, and perceived future work of operating the system for clinical consultations. During implementation work multiple stakeholders from across both health and justice settings undertook *collective action* to progress telemedicine implementation. By nature of my embedded researcher status (2.4 p.34) I am able to outline who these stakeholders were and the work they undertook at the implementation stage in (See Appendix D

Table 18 p.266). Hospital staff, by nature of providing telemedicine clinical care and the process for appointment bookings and clinic configurations, tended to shoulder slightly more work during implementation than prison providers.

Provider organisations found the future use of telemedicine *coherent* in different ways, dependant on the benefits they were likely to accrue from its introduction and use. Individual *coherence* appeared to be less well established. Frontline staff such as nurses or administrative staff tended to perceive telemedicine as an extension of their existing role. They felt telemedicine was a new way of doing things, but not necessarily an increase in day-to-day workload to deliver appointments virtually. Frontline staff managers however did hold concerns over a perceived increase in their frontline staff's workload, demonstrated in the following quotation.

> *"I'm envisaging […] for every session of telemedicine it's probably two sessions of work because you do the session, finish the clinic and then you've got all the follow-up[…] there are staffing pressures as it is. So* ***to provide dedicated additional staffing time is gonna be a challenge,*** *and something that will have to be justified[…]" (Meso3, Prison healthcare provider)*

The participant is referring to the rule around telemedicine appointments requiring the presence of a prison healthcare staff member in the appointment as chaperone. The chaperone acts both to safeguard use of the system and also to assist clinically if required in the appointment. When prisoners visit hospitals for face to face consultations the prison healthcare staff are free to deliver other appointments, therefore providing healthcare staff as chaperones in appointments now delivered at

the prison established was seen as an increase in workload for chaperones. This increased workload was elaborated on from a more senior strategic perspective by a manager with oversight for the whole prison healthcare provider:

> *"So, the thing about Telemedicine innovations is, or* ***any IT innovation is that they never really make things easier for people****[…].* ***It's just a different way of doing things****. […] there'll be some winners. So, the people who do all the transport out of the prison […] they'll have less work, but to be able to do it you're going to have a bit more input from IT […]. There's going to be a bit more training. There might be complaints from patients […] So,* ***there will be an inherent increase in work, not a decrease because it's Telemedicine****[…]but you've got to have your eye on the goal which is it's a better patient experience […] So, the benefits are not going to be necessarily blindingly obvious for frontline staff I don't think." (Macro1, Prison healthcare provider)*

This macro manager saw wider staff time costs to their organisation than the chaperone costs alone. Together this information suggests that senior managers are the ones who need most reassurance around the return on investment to commit support for implementation and use.

Some aspects of *collective action* at the provider *inner setting* level remained unclear, for example how appointments would be booked with the hospital. The work and process that participants anticipated to be involved in delivering appointments for the new telemedicine model of care is shown in Figure 17 (p.131).

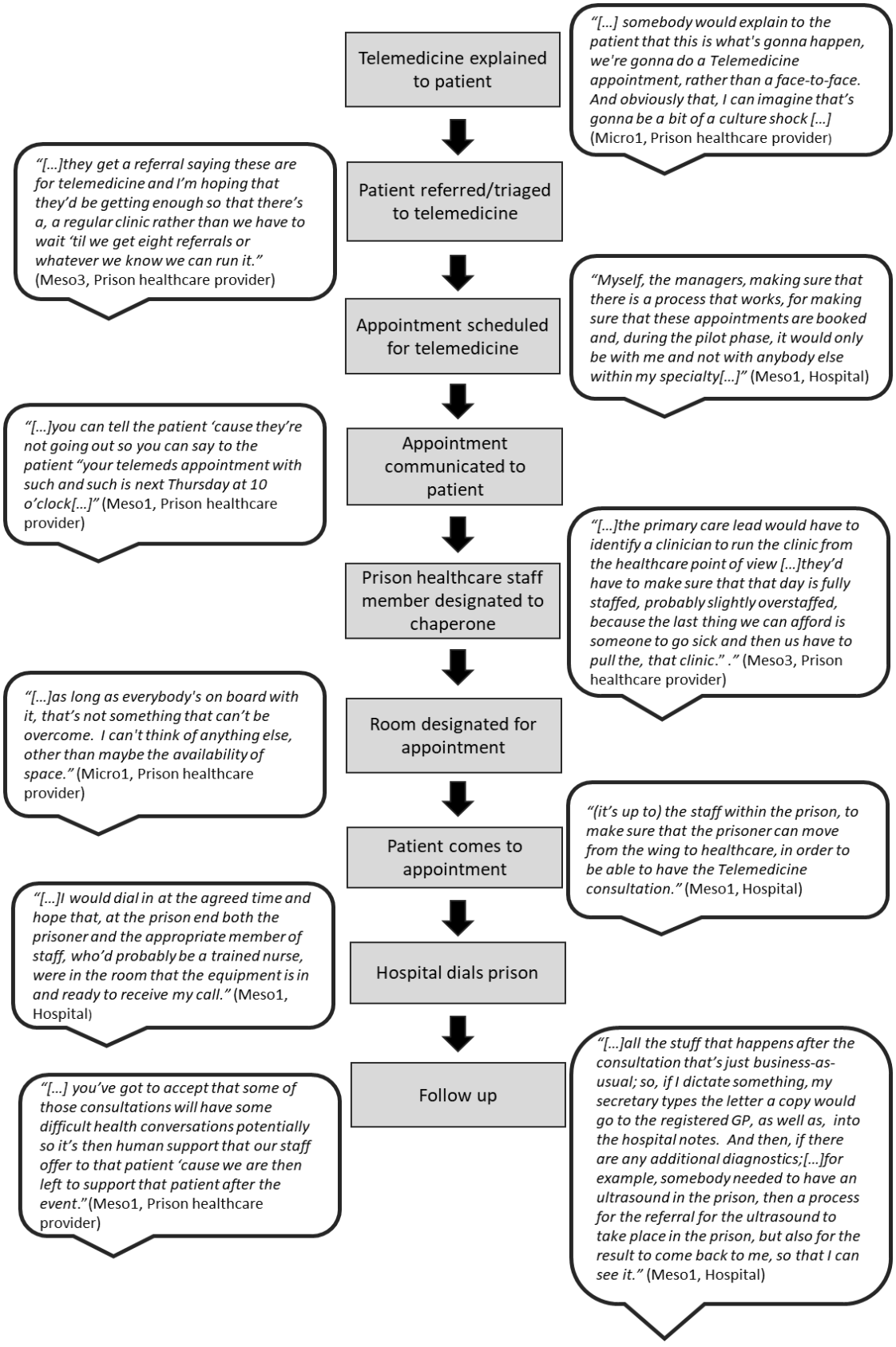

Figure 17 Work anticipated by prison healthcare and hospital provider staff in delivery of prison telemedicine appointments

Middle managers saw their role in telemedicine as one of advocacy or directing resources, removing barriers and acting as a service champion to other departments. These tasks were thought to be aligned to existing roles, albeit a slight 'add-on' given the prison/telemedicine aspect. Senior staff such as Medical Directors or Transformation Leads adopted a more traditional leadership role involving: visible leadership, spotting opportunities, challenging the status quo, setting the strategic direction and overall advocacy amongst their organisation. They generally felt they could help overcome more substantial barriers to progress yet views were mixed as to whether this fell as part of their existing role. Some hospital managerial participants felt prisons were outside their traditional work remit, as discussed in the following quotation:

> *"It's fairly, quite unique, I don't think these discussions would come up everyday* ***if you said to every manager in the health service part of your role is to develop pathways with the prison they would probably look at you in a bit of a strange way****. But it's a population that we serve so depending on the impact we can have and the benefits we can bring we should treat all patients in the same light." (Macro1, Hospital)*

The senior hospital participant is here suggesting that most hospital managers would not consider the development of prison specific pathways as part of their job role, but that failure to consider prisoners is actually treating them unequally, and unfairly, in comparison to community patients.

Willingness to deliver and change practice, an aspect of *cognitive participation,* was linked closely to perceived benefits and interventional *coherence*. None of the interview participants expressed any issues with their commitment to deliver the telemedicine model, simply frustration that it had taken so long to deliver the implementation phase and that so many barriers had delayed progress.

*"[…]it's been a very timely and **infuriating** process."*
(Meso1, Hospital)

*"I think we're all just really **frustrated**[…]"*
(Meso1, Prison healthcare provider)

*"It's been a **frustrating** journey. It's felt like a **frustrating** journey."*
(Meso2, Prison healthcare provider)

*"[…]just extremely **frustrated** that it's taken almost three years when I believe it could have been six months"*
(Meso3, Hospital)

*"I'm just very **frustrated** about where we're at with it at the moment[…]"*
(Macro2, Prison healthcare provider)

*"The main thing I picked up at the beginning was a big sense of **frustration** of trying to get things moving[…]"*
(Meso6, Prison healthcare provider)

As discussed previously, although participants were willing to do these implementation actions for telemedicine, they were not felt to be a priority. Very few people perceived telemedicine would bring huge individual benefits, aside from being linked to the delivery of an innovative service (organisational benefit), altruism appeared to be the personal reward accrued most frequently, cited by the participant below:

> *"[…]**personally, there'd be no gain, really**. I mean, having become involved, **I can see how beneficial it will be for the prisoners**.[…] how much good do I do seeing ten people, who are worried about indigestion, from wealthy [town]? Probably not an awful lot of good. But how much good do I do, being involved with a couple of people in the prison, who actually have got quite severe disease and I change their treatment plan, more, probably." (Meso1, Hospital)*

Some staff also recognised the potential for upskilling of staff at the prison through increased interactions with hospital Consultants.

Despite reasonable individual understanding there was often little communal *coherence* of how telemedicine would work. Each participant was able to describe their perceived contribution to the delivery or operation of telemedicine, be that clinically or managerially; few were able to provide detail about others roles. Frontline

staff in particular had very little knowledge of the work that had been required to progress to the implementation stage of the telemedicine initiative in general, suggesting there had been insufficient cascade of information from managers to frontline staff, alluded to by this participant:

> *"Of course it hasn't been helped by the fact that **there's a lot of smoke and daggers around it**. People have limited knowledge. People think it's just another one of those things. **If we ignore it it'll go away."***
> *(Meso2, Prison healthcare provider)*

The participant here suggests that in the absence of clear information and understanding staff are happy to continue with work as usual and hope change is never actually required.

Other practical considerations regarding telemedicine delivery arose such as space for clinics alongside the appropriateness of this space. Opinions ranged from the use of 'homely' and comfortable environments, to stark rooms which would not identify community clinicians, through to soundproofed and confidential rooms. A requirement to overstaff prison healthcare departments on telemedicine days to ensure clinics could run was considered by several participants. During this project the first ever prison telemedicine clinic was cancelled by the prison when no prison healthcare staff were available to chaperone appointments.

5.5.2.2 Staff concerns about telemedicine

Participant concerns and worries about delivery often mirrored staff worries reported in non-prison telemedicine systematic reviews, with the addition of nuances specific to the *inner* prison context. The overlapping staff concerns from this research project and published evidence involved in staff perspectives on general telemedicine models, are reported in Table 10 (p.137). You can see from this table that issues about data governance, internet connectivity, staff training, clinical appropriateness, Dr-patient relationship, and numerous other issues were common staff concerns, whether telemedicine was delivered to prisoners or to patients in the general community.

Where prison specific nuances were apparent (Table 10 p.137) they tended to further complicate, rather than ease staff concerns around telemedicine.

There were additional issues surrounding telemedicine use that staff struggled with which were specific **only** to the prison environment. Most of these related to the patient group they served and their perceived reception of telemedicine. Prisoners by nature of their incarceration, have much of their autonomy restricted. The concept of telemedicine was expected to be met with mistrust by prisoners, and concerns that they are being offered a lesser version of services provided to community patients:

> *"[…]a fear of the prisoners will be; how are you going to use the information?* ***Will you be recording it?*** *And;* ***will somebody else be looking at it from behind a glass door,*** *you know?" (Micro3, Hospital)*

The participant above suggests that patients in prison will be inherently suspicious of the telemedicine system and the agenda behind its implementation. Several participants suggested some patients enjoyed a trip outside to the community to, "*Smell the green grass" (Macro3, Prison Healthcare Provider)* or may see it as an opportunity to undertake illicit activity. The following participant quotation reflects worries prison healthcare staff had on behalf of their patients regarding telemedicine:

> *"I guess the negative for a patient could be that they feel like, they're not getting the same standard of care as they would at a hospital, even though it's a hospital consultant […]****they will feel that it's not the equivalent care*** *and so they will be quick to leap on that […]" (Meso3, Prison healthcare provider)*

This participant is suggesting that despite a managerial and organisational expectation that telemedicine would improve care equivalence for prisoners, prisoners may in fact feel the opposite.

Participants also expressed concerns that telemedicine may contribute further to the separation of prisoners from normal community patients and that mistrust in the system may mean patients simply choose not to use it and refuse or DNA (do not attend) their appointment. Staff appeared more concerned about patient *coherence* of the system and its effect on uptake and use, than their assumptions and understanding of what it would mean for their own individual practice.

Continuity of staff was felt to be an important acknowledgment in the ultimate ability to deliver telemedicine. Hospital staff were concerned about the provision of back up staff to deliver clinics in their absence, or what would happen if a new provider took over the prison contract. Prison providers were concerned about the high staff turnover within their services and the loss of associated tacit knowledge of telemedicine, but equally hypothesised that recruitment and retention may be improved if staff were upskilled and benefited from the new service model.

Table 10 Overlapping staff issues affecting coherence of prison telemedicine, reported in general telemedicine systematic reviews and in prison-hospital staff telemedicine interviews

Issue reported in general telemedicine literature	Staff group mentioning issue in this study (hospital, prison healthcare or both)	Nuances within the prison environment	Exemplar quotations	Telemedicine systematic review in which issue was reported
Concept of change				
Staff resistance to change	Both	None	*"So, I think training is absolutely essential and, like I said, this is about change and no one likes change."* (Macro3, Prison healthcare provider)	Kruse (2018) Koivunen (2017) Brewster (2013)
Staff Clinical Concerns				
Clinical appropriateness for diagnosis	Both	None	*"I think it's a good idea, but I have no personal experience of delivering it and so as an individual, I'm not sure how it will compare, for me, to a face-to-face consultation*." (Meso1, Hospital)	Brewster (2013) Bradford (2016)
Appropriate patient triage	Prison healthcare	The prison population is traditionally quite sceptical of new interventions, with rumours spreading easily amongst the close confines of prison quarters. Staff were concerned that distrust in telemedicine will be exacerbated if a clinical diagnosis cannot be made over telemedicine and a subsequent face to	*"[..] the last thing you wanna do is someone gets seen in the telemedicine, after a couple of weeks and, "Oh, actually you should've gone out to, to the hospital,"* (Meso3, Prison healthcare provider)	Koivunen (2017)

Issue reported in general telemedicine literature	Staff group mentioning issue in this study (hospital, prison healthcare or both)	Nuances within the prison environment	Exemplar quotations	Telemedicine systematic review in which issue was reported
		face appointment needs to be made for the patient. This mistrust may become spread amongst peer groups in prison.		
Dr-patient relationship	Both	Some additional allowances may need to be made for slightly higher need patient groups traditionally found in prisons	*"It's difficult to, to work out how that would work in that I don't think that necessarily doctors always had the best reputation of people skills and that's gonna be worse over digital technology."* (Meso3, Prison healthcare provider) *We've got lots of patients with complex mental health and PD (personality disorder) they may have an issue with that whole dynamic […] so we need to think about that.* (Meso1, Prison healthcare provider)	Koivunen (2017) Brewster (2013)
Staff Technical Concerns				
Confidentiality of patient consultations and resulting data	Both	Concerns that patients in prisons may be particularly sceptical of telemedicine consultations given that they are under day-to-day scrutiny by the prison system itself, with autonomy severely restricted in prison	*"[…] from a governance point of view we had it all there as soon as we understood how it was going to work, who wanted to on board. All of that, we can make it happen from a data sharing perspective, you know. There's a legitimate legal basis. All of that side of things*." (Meso3, Hospital) *"The confidentiality side of it, I think there'll be some concerns from patients around that because it's a new thing […]. The support that will be*	Kruse (2018) Koivuen (2017)

Issue reported in general telemedicine literature	Staff group mentioning issue in this study (hospital, prison healthcare or both)	Nuances within the prison environment	Exemplar quotations	Telemedicine systematic review in which issue was reported
			offered and the confidentiality aspect of it, people might feel they're being recorded, for example." (Meso1, Prison healthcare provider)	
Security of system and data governance	Both	Security of the telemedicine system must also satisfy rigorous HMPPS criteria, not just healthcare specifications. Security for HMPPS covers both the technical aspects of the system and the security clearance of professionals using it.	*"I suppose, there'd be a fear about people misusing the service. Requesting to come and speak to somebody and who are being manipulative. Maybe, people wanting to access the outside…you know, would there be a fear about blackmail; and that might be the case. And, I suppose, it begs the question, if I'm not going into prisons, do I have to be vetted to the same degree?"* (Micro3, Prison healthcare provider) *"[…]you have to realise, that you know, changing anything in a prison environment is not easy and you know, to carry that systemic risk, I think, will make them anxious, yeah, it will cause a lot of apprehension*." (Macro3, Prison healthcare provider)	Kruse (2018) Koivunen (2017) Brewster (2013)
Appropriate equipment and IT	Both	None	"*So even just the IT, er, we struggle to get system one functioning properly in prison, and being able to open patients' records to give medication – it can be really slow. So we think, "Well, I can't do that. Obviously they're not gonna be doing telemedicine*	Kruse (2018) Koivunen (2017) Brewster (2013) Bradford (2016)

Issue reported in general telemedicine literature	Staff group mentioning issue in this study (hospital, prison healthcare or both)	Nuances within the prison environment	Exemplar quotations	Telemedicine systematic review in which issue was reported
			at the moment." (Meso3, Prison healthcare provider) *"The (hospital) IT is rubbish, so I worry as much about the (hospital) IT being able to connect with the prison as anything else."* (Meso1, Hospital)	
Staff training for telemedicine use	Both	None	"*It's technology. They get scared by it […] "Do you use one of these?" "Yes, I do." "Do you know you've got FaceTime on it?" "Yes, I do. How do you use it?" "Same way as you use videoconferencing. It's the same principle." But they get scared, so they need support and we mustn't laugh. We must actually say, "Look, I can show you how to do this."* (Meso2, Hospital) *"It's a bit like how you interpret a text message sometimes you can think someone's being a bit off with you and they're not, I think there's a danger again when you've not got that physical body language and somebody nodding and ahhing in the right places and all of that I think the people using telemeds perhaps need some training in terms of especially delivering difficult messages"* (Meso1, Prison healthcare provider)	Kruse (2018) Koivunen (2017) Brewster (2013)

Issue reported in general telemedicine literature	Staff group mentioning issue in this study (hospital, prison healthcare or both)	Nuances within the prison environment	Exemplar quotations	Telemedicine systematic review in which issue was reported
Technical support	Both	None	*"I think just a degree of unfamiliarity with it, which is why I think in the NHS and I think a lot of organisations who deploy new technology and new ways of working, who put a lot of effort into doing it and getting it live, but actually if not enough effort into then supporting it post-go live"* (Macro2, Prison healthcare provider) *"[…]what your backup plan is if the server goes down, what your backup plan is if a cable breaks somewhere, computers just die suddenly for no apparent reason*." (Meso6, Prison healthcare provider)	Koivunen (2017) Brewster (2013) Bradford (2016)
Interoperability of IT systems	Hospital	Focusses not purely on interoperability of telemedicine platform with existing IT in the hospital, but also on the compatibility of prison and hospital IT systems	"*And also our application teams, so in the prison side, the prison IT, who looks after SystemOne? How do I ensure that my clinician can get to that on their desktop? So, there's a whole raft of IT that needs to sit in the background and be aware of the consequences of things not working. Or things not being done properly*." (Meso2, Hospital)	Kruse (2018) Brewster (2013)
Bandwidth	Both	None	*"I think, you know, we know where some of your barriers we're, the first thing was line speed, until you had that then this was never gonna really work." (*Meso2, Hospital)	Kruse (2018) Koivunen (2017)

The *inner* prison environment itself appeared to affect both *cognitive participation* and *collective action*, limiting or obstructing the delivery of telemedicine consultations despite staff willingness to deliver the work required. Prisons are subject to strict regimes, whereby prisoners are unlocked and free to move between areas of the prison only at certain defined times in the day, therefore aligning prison unlock times and Consultant clinic times was felt to be problematic. Prisoners often needed to be escorted by prison officers to the healthcare department. Prison participants felt that a large rise in numbers of appointments being delivered onsite at the prison healthcare department may, at least initially, put pressure on prison officers within the prison. The potential of DNAs for appointments was also seen to be high:

> *"[…]clinics in the prison run comfortably 25 to 30% DNA, and if that was replicated in telemedicine clinic, that would not be great." (Meso3, Prison healthcare provider)*

The participant was worried that hospitals will be less understanding of the high DNA rates that traditionally accompany delivery of prison healthcare. If a prisoner had another engagement that clashed with the telemedicine appointment (e.g. a family visit) staff worried they may choose not to attend. Equally wider factors relating to the prison regime such as prison lockdown were seen as a possible barrier to delivering telemedicine, "*you are at the mercy of the regime*" (Macro3, Prison healthcare provider). Participants felt that prison regime issues would affect external hospital appointments in the same way as they would telemedicine, prison staff were concerned that continued interruptions to the delivery of the telemedicine service may however frustrate the hospital Consultants trying to deliver it.

Summary: Staff at all levels tended to understand and agree with the concept of prison telemedicine, although some remained less clear on the work they or others would be required to do to deliver it successfully. Staff at different levels held different perceptions of the benefits but also negatives that could potentially be incurred by telemedicine use. Some concerns were the same as those found in general community setting telemedicine models, whilst others were nuanced or specific to the prison environment. Prison providers' biggest concerns were how to operate successfully within the prison regime restrictions and whether patients would be

accepting of the model. Hospital providers were most concerned about the resource they needed to implement telemedicine.

5.5.3 Difficulties connecting community and prison health

This theme revealed that relationships and networks between community health and prisons were poor at multiple levels, making telemedicine harder to implement. The networks and priorities of the outer and inner settings appeared to influence telemedicine implementation far more strongly than individual staff level issues.

The main reasons causing difficulties in connections were: poor networks at commissioning and provider levels, financial issues, lack of individuals who spanned prison and health roles and a lack of leadership. It was hard to get individuals to take on the role of connecting these systems and providers together for multiple reasons, which are explored further within this section.

For the purposes of this theme the word ‘network’ refers to both organisational and financial relationships between prison and community healthcare providers. The interviews revealed that relationships between prison and community healthcare organisations in this study were underdeveloped, which made telemedicine implementation more difficult. This theme maps directly to the theme identified within my literature review *Linking prison and health providers* (4.3.3.4), but reflects the specific situation in the local English context under study in this research.

Figure 18 (p.144) presents a simple view of the way the system and providers for health and justice interacted during the local telemedicine implementation work. The community health system bodies (the Integrated Care System and Clinical Commissioning Groups) exerted influence over local provider organisations (e.g. hospitals) in terms of their strategic direction for local health services. Within the provider organisation itself, senior (macro) hospital staff were responsible for setting the strategic direction for their frontline staff. On the prison side, frontline provider staff were also equally influenced by senior leaders within their provider organisation, and their NHS England commissioner, however they also had to operate within the limits of local and national HMPPS policies and procedures.

Throughout this section I present data on networks at the health and justice system/commissioning level, and for networks between the provider organisations themselves (community hospitals and prison healthcare teams).

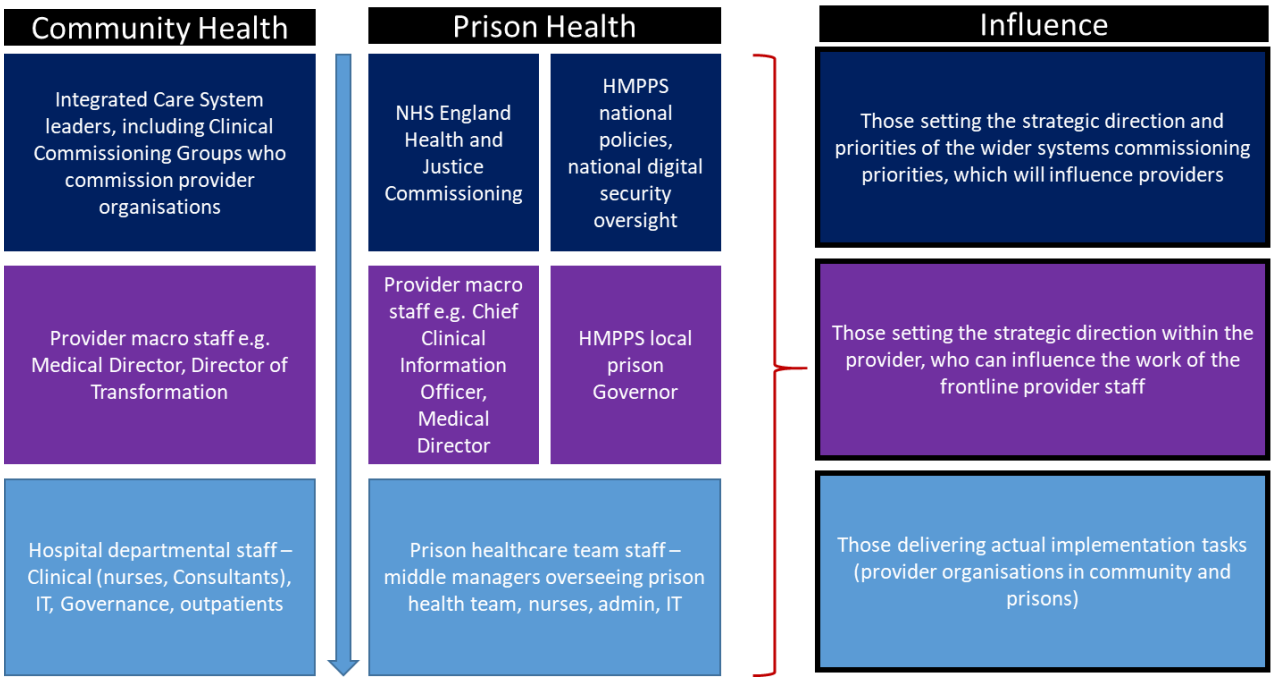

Figure 18 Layers of influence on implementation projects in community and prison health systems

The case study 'System maturity' Figure 19 (p.146) describes the wider (outer) healthcare setting influencing the local implementation work and the length of time it had been acting as an integrated care system. The case study also describes the stability of the prison healthcare provider team. Although not specifically discussed in the staff interviews, at the time of local prison telemedicine implementation the NHS was going through a turbulent period of reorganisation, with local areas in England tasked with the formation and development of new bodies called Integrated Care Systems (ICS). ICSs had been developed to bring about major changes in how health and care services are planned, paid for and delivered, by integrating care across local system partners, including NHS and local Government. ICSs represent a move away from organisational autonomy and the separation of commissioners and providers, and a move towards collaboration and a focus on places and local populations.(258)

Participants revealed that community hospitals remained relatively stable despite the wider ICS reorganisation taking place. Hospitals remained able to make internal

institutional decisions independently, such as those related to the implementation of telemedicine. In contrast, the wider ICS was felt to be in a relatively unstable position. The ICS was starting to consider new 'ways of working', including the digital empowerment of residents, and an understanding of how to relate to populations as opposed to patients. Undertaking the implementation period at this time meant that the ICS had less capacity to engage with the prison telemedicine agenda, and offered no specific leadership for the project, as described here by a senior ICS leader:

> *"What we ironically like doing is watching it at the end and not the beginning, and* ***we don't really like helping in the middle****. […] And you are probably in the middle bit at the moment where you are going, "We want to do the innovation and at the end of this we will have a massive impact, and we know we are going to go in the right direction," but* ***how do you get it into a shape and form****?" (Macro3, Hospital)*

This quotation suggests that aside from capacity, the ICS did not see project development as their role, nor was it at the stage where they traditionally like to support a project.

Case study: System maturity

Community Healthcare System

During the period of prison telemedicine implementation (2016-2020) the local community healthcare system was continuing its evolution into an Integrated Care System (ICS). Integrated care systems are local partnerships of NHS organisations, councils and other stakeholders such as voluntary sector parties. Together they take collective responsibility for managing healthcare resources and delivering high quality care to their citizens. As part of this evolution in 2017 the local ICS signed an agreement with NHS England and NHS Improvement to commit to the '*progressive implementation of devolution'* of funding and commissioning responsibilities from central Government. At the time of writing the local ICS was one of only ten ICSs in the country and one of the first in England to sign a devolution deal, representing a progressive and aspirational healthcare system of the future.

The local ICS had a series of core work streams covering priority areas for the ICS. One of these was the digital work stream, which was committed to promoting the use of digital technology to improve healthcare delivery and outcomes. However, despite the progress of this community system being steps ahead of other areas in England they had yet to realise any digital transformation in the form of virtual consultations for healthcare appointments. This meant that the implementation of telemedicine in prisons was in fact, the first programme of telemedicine implementation *of any form* in this community healthcare system.

Prison Healthcare Provider

The provider of prison healthcare during this period had been in residence in study prisons for a period of three years. This meant they had reached a period of contract stability by the time the main implementation phase of telemedicine was underway, but were not yet in the midst of considering contract re-tendering processes. The prison provider was therefore in a relatively stable and open position to consider innovation that may affect their chances of re-securing the local provider contract in the future, or securing other new prison based contracts. The prison provider was part of a larger NHS trust that specialised in offender healthcare provision, as opposed to the solely private healthcare provider companies that operate within many prison healthcare departments. The hospital trust, and indeed the offender care team, had no experience of the implementation or operation of telemedicine models previously.

Figure 19 Case study - System Maturity

5.5.3.1 Poor networks between prison and community healthcare commissioning systems

Despite their operation within the same geographical footprint and treatment of common patients, prison healthcare teams and community hospitals sit within different NHS commissioning structures. Most senior and middle manager participants from both prison and community providers reported that this limits strategic partnerships, and means their organisations operate almost entirely independently of each other.

This is an example of both *the inner (provider) and outer (system) context* exerting an influence on implementation.

Hospitals are commissioned by Clinical Commissioning Groups, sit on the Transformation Board of the ICS and are well integrated into the community health system. Prison healthcare providers are commissioned directly by NHSE Health and Justice Commissioning teams who have little integration into the wider community health system, sitting as a specialist function in NHSE. A senior ICS leader elaborated on the difficulties of working with the prison commissioning function:

> *"If I am honest as well **the relationship with specialist commissioning generally has almost been a sort of a separate entity**, and I am not saying that the individuals working there were not hospitable but getting anything out of them or working together was always quite difficult". (Macro3, Hospital)*

This quotation suggests that the relationships between community healthcare services and centralised NHS commissioning functions can be poorly established, limiting the ability for community services to network with providers commissioned under this specialised umbrella. In previous studies of telehealth technology, effective collaboration within organisations has been identified as crucial to supporting telemedicine delivery in the community.(259, 260) Further to this, the very nature of increased collaboration itself is seen as a positive outcome of implementation.(261) Collaboration in the sense of prison telemedicine involves the coming together of justice and community health stakeholders.

5.5.3.2 Financial relationships between community and prison commissioning systems

The separate commissioning structures of the prison and community healthcare systems also raised issues with financial relationships between organisations, specifically around reimbursement and benefit realisation. Most participants understood that the main financial benefit expected to be attributed to prison telemedicine was in the reduction of escort costs, which are the costs associated with paying for prison officers to escort patients to hospitals, running into thousands of pounds per prison each month. These escort costs may be borne either directly by the NHSE H&J commissioner or by the commissioned prison healthcare provider within

their contract; in the study site they remained with the NHSE H&J commissioner. Both prison and hospital providers were clear that any savings from prison telemedicine were likely in this instance to fall to NHSE H&J budgets, although there was awareness that at least during the early stages of telemedicine implementation escorts would likely continue to be needed.

For hospitals and community commissioners the issue of finance was contentious. During the main implementation phase of the telemedicine model (2016-2019) there was no national NHS guidance available on the tariff or reimbursement models proposed for virtual healthcare consultations. (262) Hospital managers and commissioners were concerned that virtual consultations would be reimbursed at less than a face to face tariff, meaning that despite all their work to operationalise telemedicine consultations and the potential savings accrued by NHSE H&J, they would in fact lose income at the hospital. This changed during this research study, when in early 2020 the publication of the NHS National Tariff Payment System (2020/21) stated that appointment tariffs would remain the same regardless of the method of delivery of the hospital consultation.(263) Although this may now mitigate future concerns, it is likely to have contributed to a reluctance to drive this model forward during the implementation period. Despite this reassurance, there was still a feeling of inequity due to the escort savings that fell only to the budget of NHS justice stakeholders as stated here by a hospital participant:

> ***Participant: "Savings will go to NHS England."***
> *Interviewer: "What work have they put in?"*
> ***Participant: "They haven't done anything, have they?" (Meso1, Hospital)***

This participant suggests that hospitals felt some frustration that the parties most likely to receive financial benefits from telemedicine had put in little effort to support the implementation. Hospital providers considered whether improving access to planned care through use of telemedicine could help avoid costly unplanned admissions at the hospital and length of patient stay, which would contribute positively to the local community health economy.

> *"[…] it may be that having timely access to advice reduces the unplanned, but the money is all in the unplanned. Yeah, get the health economics people doing it for you.* ***A massive lever as soon as you bring in unplanned."*** *(Macro2, Hospital)*

Potential reductions in appointment cancellation and non-attendances, referral to treatment breaches and instances where secondary care staff travel to provide services in the prisons were also expected to bring financial benefits to the hospital.

In this way, the prison telemedicine model lacked clear financial *coherence* to stakeholders as a result of the poorly networked payment and commissioning structures of prison and community healthcare providers. In the following quotation one participant notes that as yet the financial implications of telemedicine, alongside other outcomes data, remained unclear:

> *"[..]there are people still saying: well, hang on,* ***where's the proof? Where's the evidence?*** *What's it gonna cost? How does it benefit? All of those questions which at the moment are still relatively intangible for us […]." (Macro2, Prison healthcare provider)*

This suggests that more support may have been available for telemedicine implementation if evidence was already available surrounding financial and clinical outcomes.

5.5.3.3 Poor networks between prison and community healthcare providers

The issues with poor networks extend from system commissioning bodies to the commissioned providers of prison and community healthcare services themselves, an example of an *inner setting influence* on implementation.

Providers within prisons are on short-term (maximum five-year) competitive tendering contracts offering little time to build sustainable relationships with a complex network of community health organisations as noted by this participant:

> *"[…]* ***another thing that's particularly unique to custodial service delivery is the concept of competitive tendering of procurement*** *[…] there is a move towards longer service tendering cycles, but that still lends itself to procurement cycles, whether it's every three years or five. So, you're losing that kind of holding of workstreams and it all kind of*

starts again, ***just like the General Election and a manifesto, it's pretty similar, it's, "We're coming in, we're gonna do this, if we're good we'll stay in office, and if we're not they'll go to the public****" (Macro 3, Prison Healthcare Provider)*

The participant is suggesting that this short-term tendering cycle leaves very little room for providers to embed themselves before the re-tendering process commences. With the somewhat chaotic nature of prison healthcare delivery (discussed in 5.5.1.2) providers spend much of their time trouble-shooting issues in the prisons themselves leaving less time to concentrate on building outward facing relationships with community based providers.

Even when time and resource is available to dedicate to relationship building, participants mentioned that it could be difficult to establish relationships between community and prisons providers due to the lack of forums where they interact with one another. In this quotation, a prison healthcare participant named the separate commissioning systems as one reason for poor communication between prison and community healthcare teams:

"[…] there's no real forum where there's any sort of cross-over. Some things have been piloted between prison and the hospital and they've not always worked out brilliantly. […] I think there's a missing link sometimes, 'cause they're so separately commissioned. ***There's almost the left hand doesn't talk to the right hand,*** *a bit. So I think, I think there's some work to be done there" (Meso3, Prison healthcare provider)*

This suggests that local areas need to try and establish some means of allowing prison and community healthcare teams to interact and develop pathways or services that cross into both domains.

Hospital staff that undertake existing work with prisons for delivery of non-telemedicine care mentioned that in the instances where they had managed to build a relationship with the prison healthcare team, it was a labour intensive job to maintain this relationship:

"I have to work really, really hard to keep the good relationship with [prison] health care and the staff in health care to maintain a clinical input there. Many, many times it is such hard work that you just want to walk

away because at times over the years I could make 20 phone calls over a 24 hour working period and that phone won't get picked up. ***You really have to persevere with making a good working relationship and making it all work.*** *It is a lot of work for little return. And the great benefits to providing telemedicine or any service whereby the prisoner doesn't have to leave the prison the benefits lie with the prison primarily. [..]* ***we don't gain even though we do the majority of the work*** *[…]" (Micro1, Hospital)*

The participant here notes that alongside the work required to maintain the relationship, there is an unequal balance on the returns gained from this association. This suggests that among at least some staff, concerns may be most focussed on benefits or harms to the organisation, as opposed to patients.

Finally, several participants from within the prison provider itself mentioned that their provider organisation was so large and complex, that developing robust relationships with the external hospital was seen as a task that was secondary to stabilising internal networks and lines of communication, as discussed clearly in the following quotation:

"[…] firstly there aren't consistent commissioning arrangements for GPs in custodial settings, some are commissioned direct by NHSE, some are subcontracted by providers and some are directly employed by us. So, for example, we subcontract GP services […] but we're not responsible for them from an appraisal and medical leadership governance perspective, they have their own management line. […] ***So if you don't have consistency at provider level, how can you then start to consider the question of consistency in relationships with external providers****?" (Macro3, Prison healthcare provider)*

This participant suggests that inconsistent and confusing commissioning processes for prison healthcare teams can directly impact their ability to develop their services.

5.5.3.4 The role of individual champions in building effective networks

Individuals or "champions" were seen by senior staff to have a crucial role as boundary spanners between community and prison providers, given that the existing networks were so poor. The role of local telemedicine champions in this study is described in a case study in Figure 20 (p.153).

Prior to the pandemic, telemedicine services had generally not been actively commissioned or funded centrally by NHSE, but have arisen through local initiatives and drive,(262) in this instance by motivated individuals (champions) within hospitals and prison healthcare teams. The general literature on telemedicine use and implementation recognises the importance of clinical telemedicine champions in driving forward acceptance of telemedicine models.(259, 260) The champions for prison-hospital telemedicine must find a foot or a connection in both the health and justice clinical services, complicating the role they assume as champion and meaning they must hold influence within an organisation separate to their own. Where these champions had been absent or less effective than hoped, this was noted by senior staff participants:

> *But I think organisationally it's the culture carriers at the right level have* ***just not been in place*** *and those people who have been banging the drum perhaps just* ***haven't had enough impact*** *really for various reasons. (Meso 2, Prison Healthcare Provider)*

The participant above is suggesting champions must carry sufficient weight and influence to be acknowledged at the right levels within the system. This can be particularly hard when trying to influence outside of one's own organisation, for example, a prison healthcare staff member trying to influence at a senior level within a hospital or ICS.

Case study: Champions for prison telemedicine

During this period of implementation several champions for prison telemedicine emerged. The first was a long standing GP at one the prisons who was particularly vocal about the benefits that could be accrued by using telemedicine, and who actively encouraged the NHSE H&J commissioner to provide internet upgrades and telemedicine equipment in the prison. This GP was also keen to visit hospital sites and advocate for improvements in delivery of services to prisons, but found it hard knowing who to approach within the hospitals to deliver these messages.

The second champion that arose was the author of this thesis, who was at the time a public health registrar in the locality. Through her existing connections in the wider

health system she was able to secure audiences with senior personnel for the prison GP at community hospitals (e.g. Clinical Directors forum). In addition she secured the support of a hospital clinical champion and continued to act as an embedded researcher throughout the implementation of the telemedicine model.

The third champion was the clinical hospital champion identified above, who was a well-respected local hospital Consultant. This Consultant had a particular interest in the prison population as she led the local Operational Delivery Network for Hepatitis C treatment, which had particular CQUINS and targets surrounding the coordination of testing and treatment for hepatitis C in prisons.

The presence of all three champions meant one worked in the prison system, one in the community system and one spanned both organisations. However, during the course of this implementation the prison GP champion left his post within the prison and no other staff member stepped forward to assume this role, which left it harder to engage with the prison workforce at an operational level throughout implementation.

Figure 20 Case study: Champions

***Clinical academic reflection*:** I was able to assume a role as a champion spanning both organisations given my honorary clinical affiliation with both the prison and the community hospital teams. My main role was to connect champions from each organisation to one another. I was introduced to the prison GP champion via the NHS England Health and Justice Commissioner. I was introduced to the community champion through my existing connections as a public health registrar in the local area. Therefore, in addition to the information on champions relayed in staff interviews, this section should acknowledge that future implementation projects may require a similar 'bridging' individual, or a different means of allowing prison and healthcare staff champions to identify each other.

I would agree with participants' comments that champions (including myself) did not necessarily have the ability alone to influence upwards for change. For me, this was

in-part a direct reflection on my embedded researcher status, and the subsequent lack of knowledge or influence I had to approach senior individuals within an organisation that I was only 'embedded in' to progress the implementation agenda.

Although I was able to 'connect' organisations through my champion role, the champions from the community and prison provider were more able to influence or raise issues to managerial attention within their own organisation. This issue is evident in the Case Study 'Leadership involvement in telemedicine implementation' (p.156). Lack of leadership with the ability to influence external and internal networks

As discussed in 5.5.3.4, individual champions did not always appear to have effective influence over external system networks. Participants reflected that senior systems or commissioning level leadership for telemedicine may have been able to overcome these difficulties, but that this level of leadership locally had been lacking throughout implementation. Participants were disappointed that NHSE and HMPPS had not driven implementation of telemedicine as much as they would have hoped. Further to this they struggled even to find ownership within the most senior managers in their provider organisation, as stated by this participant:

> *"So you find that when that happens the strategy that's being kind of wielded and developed and cultivated up at the higher levels of the organisation, you* ***don't tend to have that level of ownership really****. If [our] CEO, was having those conversations directly with the Chief Exec at the Hospital then I think we'd be seeing different things developing. […]* ***I don't think there's an organisational culture or an appetite at the moment in order to see that happen****." (Meso 1, Prison Healthcare Provider)*

The participant suggested that senior executives in their own organisation may have had influence with other providers, however at the time they had not managed to secure this executive support. One member of the hospital provider also lamented the lack of middle management support for the telemedicine project:

> ***I'm slightly anxious*** *about the fact there's no one manager, who takes responsibility for this at the [hospital] […]There's no SLA in place, with regards to this.[…] there is no middle manager, who actually says, yes, I am responsible for this project […] (Meso 1, Hospital Provider)*

The participant reflected that this lack of middle management ownership was likely a consequence of the fact that ‘prisons’ or ‘video consultations’ were not seen as the sole property of any one clinical department of management team.

Given the lack of leadership and established networks between senior leaders from NHS commissioning and the community ICS, it was down to individuals within the hospital and prison healthcare teams to make plans for telemedicine implementation, receive technological approvals, direct resources and set the strategic direction of the service. This was an unfamiliar role for some members of staff. A case study of the way leadership evolved throughout the local prison telemedicine implementation period is provided in Figure 21 (p.156).

CASE STUDY: Leadership involvement in telemedicine implementation

The involvement of different staffing groups progressed organically as the implementation proceeded and an awareness arose of who needed to be engaged in support.

The initiation of the telemedicine project was done by three champions who engaged with staff colleagues they worked directly alongside from both providers to form a local telemedicine steering group. This group comprised a mixture of frontline and middle management staff, but at this point macro level staff representation was lacking. Support for the concept in principle was sought and granted by the prison Governor, NHSE H&J commissioner, community hospital Chief Executive and prison provider Clinical Director, although none chose to subsequently attend regular steering group meetings. Support from individual departments within the community hospital was secured (e.g. IT, Governance), but most often because heads of these departments had a particular interest in improving health equity for prisoners.

After a period of stagnation in implementation, mostly due to issues with IT, champions sought assistance from more senior staffing groups to progress things. The hospital champion, a well-respected Consultant, was able to secure support from the new Director of Transformation, who subsequently ensured progress was made, introduced other relevant staff members to the process and celebrated the success of implementation across the hospital. At this point the prison champion (prison GP) had left and so the remaining champions (one hospital, one researcher) were tasked with trying to escalate issues within the prison provider. Eventually, after request from the researcher, the Clinical Director of the prison provider escalated to the Medical Director, who subsequently invited other relevant leads with influence (such as the Chief Clinical Information Officer) from within the prison provider to input into the implementation. At this point far more traction was made with implementation processes.

Figure 21 Case study - Leadership Involvement in Telemedicine Implementation

Within the *inner setting* of provider organisations multiple departments need to be engaged to support implementation of telemedicine but internal management structures and bureaucracy may mean that it is hard to reach and engage multiple different departments without clear senior level leadership. Senior managers such as the Medical Director were aware that their own personal ability to engage directly with other senior staff at the top of the organisation facilitated change:

> *"I think because I've gone straight to the top, then they get it […] I've managed to sort of* ***cut through the red tape*** *and get to the top person who as it happens also wants to digitalise" (Macro1, Prison healthcare provider)*

This participant notes here that not only were they able to navigate the layers of bureaucracy, but had also found a senior influential 'ally' who was keen on the digital agenda to support.

Middle managers often reported feeling powerless in terms of driving forward telemedicine across these multiple departments and providers, and were generally frustrated by the barriers they encountered. Occasionally their resulting lack of influence was seen as a barrier in itself by other colleagues, and perceived as a lack of strategic vision and ownership amongst middle management. The following participant quotation reflects issues with engaging managers from other departments within their organisation:

> *"[…]until you get to really quite senior levels in the organisation,* ***you don´t have a great understanding of what´s going on in each service*** *and to be honest even at the senior levels, if there´s an issue I want resolved in [another department]* ***my general method of getting that would be to go escalate up to the divisional director who will then go back through their service director and back down****, whereas ideally there would be some quick and easy first way between straight to whatever I need."(Meso5, Hospital)*

The participant suggests that the only way they were able to effectively secure support from other departmental leads was to get more senior staff to approach and engage them.

5.5.3.5 The future of networked relationships

Looking to the future there was little clarity on how the rapidly evolving community ICS *outer* system and associated policies would integrate with the centrally operated NHS England prison commissioning teams, and what this would mean for community citizens residing in prison establishments. The quotation below came from a participant who held a senior role within the community ICS:

> *"[…]what I don't know is what the long term plan is with Integrated Care Partnerships where prison health then comes into that, which is very interesting. I have no idea what the long term plan is, but you would imagine that for citizens who are in prison that their rights to access are the same as the rest of the population living there and therefore* ***I would imagine it's a bit of a sticky wicket trying to do it from NHS England.****" (Macro3, Hospital)*

The participant suggests that the separation of prison and community commissioning may cause issues as the ICS continues to evolve, with prison commissioners unable to influence ICS processes effectively. Similar views were held by senior provider managers from the hospital and prison providers. Prisoners as 'local citizens' will be entitled to the same care and access as all community citizens within the ICS region, but the ICS will hold no financial responsibility or accountability for their healthcare provision. It is possible that this may mean further differences in healthcare access and provision may emerge as the community healthcare landscape transforms.

Summary: Networks and relationships between relevant stakeholders are crucial for the successful development and implementation of prison hospital telemedicine systems. Strong networks are required between community and prison commissioning systems, between community and prison providers and between departments within each provider organisation. Development of this relationships can be hindered by financial aspects of commissioning, a lack of forums where providers interface, bureaucracy within provider organisations and the short-term tendering nature of prison healthcare contracts.

Senior level managerial buy-in and leadership for telemedicine, and well supported, enthusiastic champions who span organisational boundaries, can both help to develop or maintain effective networks for telemedicine development.

5.5.4 The differing priorities of community and prison health partners

Community health systems rarely consider prisoner health needs because they're a small population, but they understand the benefits of telemedicine at a conceptual level.

Participants said that it was not just poor networks that caused implementation problems, but that there were also differences between the **priorities** of health and justice systems and providers. Design and delivery of a new model of secondary care for prisoners requires engagement and commitment from the community health system responsible for providing clinical care to patients. It is much easier to secure the support required if the intervention is seen as a priority to relevant system partners.

In reference to Figure 18 (p.144), strategic leaders within provider organisations saw telemedicine as a beneficial intervention for numerous reasons, however this feeling was not necessarily echoed 'on the ground' amongst frontline staff.

5.5.4.1 Prison health is deprioritised due to its minority status in community health systems

All senior community healthcare participants reported that prisoners were not seen as a priority patient group given the small potential patient numbers, and wider challenges facing the broader community population, stated here frankly by one ICS interview participant:

> *"I would say from an ICS perspective I don't think it's [prisoner healthcare] on a radar really." (Macro1, Hospital)*

Participants felt this absence of awareness could be mitigated through use of a strong and convincing narrative around the needs of the prison population, as discussed by the following participant:

> *"So it doesn't feature very highly because they are a small population and in all my commissioning type activity **I haven't ever come across any narrative really about the need of prisoners**." (Macro2, Hospital)*

Both of these community participants suggest that lack of consideration around prisoners' needs may be related to a lack of awareness, as opposed to a conscious

decision not to engage with provision of adequate care services for this population. However, it does mean that community healthcare systems may be unlikely to consider the needs of prisoners when developing general ICS healthcare services or policy, despite the fact they may be accessed by patients from prison.

Prison healthcare interviewees were aware of this apathy towards prisoners and subsequently unsure as to the degree of enthusiasm hospitals held for the ***prison*** telemedicine service, as described in the following quotation:

> *"[…] I mean you can see in terms of the NHS long term plan there isn't a great deal of emphasis placed on health and justice […]* ***we're almost like the Cinderella service of the main health service*** *essentially. It's specialist, it's NHS led […]" (Meso2, Prison healthcare provider)*

This participant describes health and justice as a 'Cinderella service', a term reserved for services thought to be underfunded and often undervalued. The participant is suggesting that health and justice in its entirety is not a priority for the health system, a wider problem than the lack of priority afforded to prison telemedicine by the community health system.

5.5.4.2 Telemedicine as a concept <u>is</u> a priority for community and prison health systems

Although prison health as a topic was not seen as a priority for community systems, most senior participants from prison and community health systems reported that support for telemedicine was a uniting factor (generic '*outer setting')*. This research took part prior to the rapid adoption of digital technologies as part of the COVID-19 pandemic; at this time, many hospital systems were at the outer fringes of consideration for remote digital service delivery. Strategic leaders from the health and justice systems saw future potential benefits that could be derived from development of a working telemedicine pilot. Telemedicine at this time was seen by these community leaders to be a priority not just for prisoner healthcare access, but also for development of remote services across community health system partners. One of the most influential NHS policy documents, The Five Year Forward View (264), strongly emphasised the development of digital healthcare services, and as such all ICSs were required to consider these within their plans. From the ICS perspective, 'cracking'

telemedicine in prisons was seen to be one hurdle that could mean wider rollout across the community health system, as described by this ICS leader:

> *"But if you crack it in the prisons, which is one of the hardest ones, running – heaven forbid – in (hospital) outpatients department, where it eventually runs, it is going to be rocking and rolling and it is not going to be difficult" (Macro3, Hospital)*

The participant here is suggesting that if they could get telemedicine working amongst the complicated networks of the prisons, they could probably get it working anywhere in the community, meaning prison telemedicine was a good proof of principle in many respects.

5.5.4.3 Telemedicine as a concept was less of a priority for provider organisations

Although senior system leaders were clearly convinced on the potential strategic benefits of developing a working telemedicine pilot model once the issue was on their radar, provider teams who were actually required to deliver the work saw it as a lower priority for action.

Within individual hospital and prison healthcare teams (*the inner setting),* the idea of telemedicine was well received and the potential benefits generally well understood. Despite this enthusiasm, both parties consistently reported that **prison** telemedicine was low on their organisational agenda for different reasons. One participant from the prison healthcare team said:

> *"I think the barriers then has been kind of multiple agencies and bureaucracies and* ***getting to the top of anyone´s priority list when potentially the benefit to any one team or individual or whatever is maybe not that huge****." (Meso5, Prison healthcare provider)*

This suggests that if the benefits of telemedicine had been better understood, and perhaps more substantial for the individual provider organisations, then telemedicine may have been more of a priority for implementation.

Like the ICS, prisoners represent a very small and often misunderstood cohort of hospital patients. Despite potentially low patient numbers, implementing telemedicine still required a large amount of work by the hospital. Substantial *collective action* was

required from multiple departments within the hospital such as IT, governance, outpatients and clinical teams, who all had portfolios of competing demands. Senior staff frequently questioned whether this was an efficient use of resources for so few patients, and most community based participants felt it was not seen as an organisational or departmental priority, as discussed by this participant:

> *"I'd like to say it's business as usual in regards to we should have been doing this a long long time ago. But unfortunately from my perspective* ***we have many many, many good projects that hit on our door on a daily basis****." (Meso3, Hospital)*

The participant suggests that it was not simply a lack of value attributed to the telemedicine work which impeded progress, but more that the project was lost in the mêlée of many competing project ideas. Some community staff reported a change in attitude as the project progressed and they came to develop interventional *coherence,* understanding the difference telemedicine could make to the lives of a vulnerable patient group.

Prison healthcare teams provide quite reactive patient care and participants frequently cited other more pressing operational issues that needed attention within the prisons, meaning the telemedicine agenda remained low priority. Some prison healthcare staff acknowledged that hospital care fell outside of their standard on-site primary care remit as described by the following participant:

> *"[…]there's an element of, "****I've done the referral. Now it's the hospital's problem.****" […] We've got probably more priorities of actually being on the ground, so staffing and things to deliver what we're meant to be dealing with." (Meso3, Prison healthcare provider)*

This participant suggests that despite caring for the same patient, there is a clear distinction between responsibility for primary and secondary care, which would be blurred if prison teams became responsible for facilitating and chaperoning hospital appointments at the prison.

The short-term contracting process depleted enthusiasm amongst prison providers. For example, a provider would be less likely to embark on implementation of a

telemedicine model, or relationship building with a local hospital if their contract term was very near to completion.

5.5.4.4 Uniting factors for providers in support of prison telemedicine

Aside from financial drivers, both prison and hospital staff identified ways to make telemedicine more attractive to their organisations. For prison providers, delivering prison telemedicine successfully could benefit them in their competitive tender process, both for retaining current contracts and securing new ones as stated openly by the following participant:

> *"I think if this innovation delivers […]* ***we will be in a very strong position to retain the contract*** *in two years' time" (Meso2, Prison healthcare provider)*

Most participants recognised the potential of telemedicine to improve their reputation/esteem. Both providers recognised that opportunities might exist for awards or prestige resulting from being an organisation involved in delivery, as stated by the following participant:

> ***I think there will be awards****, yeah, I do, and I think this will become a sort of national priority in offender settings, I do, yeah. (Macro3, Prison healthcare provider)*

Telemedicine aligned with existing strategic hospital priorities such as reduction in hospital footfall, reduced waiting lists and reducing inequalities in care quality and access. Both providers agreed that telemedicine would reduce pressure on escorts within the prison system, reducing appointment cancellations. These reduced cancellations were seen by many as an opportunity to improve prison-hospital relations and expected to reduce patient complaints, support prison contract delivery and key performance metrics and impact on externally commissioned reports from bodies such as the Care Quality Commission and Her Majesty's Inspectorate of Prisons.

Prison provider participants consistently noted that security risks were reduced when patients were not being transferred off site. They also felt telemedicine would allow

delivery of a safer care model through a combination of earlier intervention, less complicated patients and improved care coordination.

Staff articulated numerous reasons why telemedicine would benefit patients, who were felt to suffer in the current model of secondary care service delivery. All participants felt that telemedicine would improve access to healthcare for patients in prisons, reduce appointment delays, reduce appointment cancellations and improve dignity and experience in patient appointments. The participant in the following quotation notes that cancellation of a telemedicine appointment due to an arising priority will be less likely than a face-to-face appointment. By keeping the escort slots free for those who have to go offsite, access should improve for everyone:

> *"[..] less bumping because you don't need to bump them if it's a telemeds. Which then allows more space for the escorts so hopefully everybody gets seen, yeah." (Meso1, Prison healthcare provider)*

As hypothesised in Chapter 3 participants expected telemedicine to improve handover of clinical information to prison teams from hospitals and subsequent care coordination, and allow patients to know their appointment time, thereby reducing the anxieties around unknown appointment information. Some also mentioned the concept of 'health deterioration': (1) by improving timely access to care through telemedicine, patients may be less likely to deteriorate and become harder to manage within the prison; and (2) patients would no longer need to deteriorate to become a priority for escorted transfer offsite to hospital. The following quotation highlights the issue of health deterioration, and the benefits to healthcare teams and patients of more preventative action for healthcare:

> *"[…] if you can get the advice quicker and the patient sorted quicker, then it's less likely the patient will be more complicated to manage and complicated patients take up time." (Macro1, Prison healthcare provider)*

Another aspect not previously considered by the research team was whether hospital staff became more used to interacting with prisoners through the increased contact that would be expected via telemedicine.

Summary: Framing an intervention as a priority is important to ensure it receives adequate resource and support for implementation. Despite difficulties gaining senior staff level support for telemedicine implementation, once the concept was on the radar of system leaders, they were quick to see the wider strategic benefits a telemedicine pilot could bring to their relevant health system. The concept of prison health at a community system level was under-developed, with leaders unaware of the need for investing in **prison** telemedicine specifically. Provider organisations saw both positive and negative sides to the prison telemedicine work. On the one hand, improving patient care, aligning with contract related key performance indicators (KPIs) and being seen as a 'progressive, forward-thinking organisation', were considered a strong driver for telemedicine. On the other, competing and/or more pressing priorities limited the engagement with implementation tasks. If strategic leadership had been more visible and compelling from outset (as discussed in Figure 21 p.156), this may have set a clearer trajectory for prison telemedicine at an early stage. This aligns with my findings in Chapter 4 section 4.3.3.1 (p.91) where top down support was seen to be as important as bottom up participation.

5.6 Discussion

5.6.1 Results summary

The findings in this chapter suggest that the outer system (both NHS community health and justice systems) sets the overarching context for telemedicine implementation and can vastly influence the successful progression of projects if they align with system-wide strategic objectives. Alignment may ensure resources within the system are committed to project delivery and oversight, supporting frontline implementation.

Just as HMPPS regimes and security conditions caused problems with equivalence of face-to-face delivery of secondary care for prisoners (Chapter 3, 3.2.1.1, p.53), these same issues have implications for telemedicine services, demonstrating the influence the prison system has on the effective delivery of healthcare. Individual prisons would not be able to make a decision to implement prison telemedicine without national agreement on the solution being deployed, in contrast to the decision making capability of community hospitals, who could implement telemedicine based on internal institutional decisions alone.

Establishing networks between prison and community systems, commissioners and providers was seen as essential to promote collaborative working for telemedicine development. In their absence, individuals had to carry the responsibility for implementation, though they often lacked the influence or authority to push implementation at pace. Once senior level support was secured through communication of the future strategic benefits, telemedicine implementation proceeded more quickly.

Within the following sections of the discussion practical recommendations for prison telemedicine implementation and use are given, based on findings from this research. Some of these recommendations may be relevant to implementation of other digital technologies in the prison environment.

5.6.2 Recommendations for telemedicine based on the results of this research

If prison telemedicine models are to be embraced fully, at the implementation stage the outer and inner contexts of prison and community health systems both need to be conducive to partnership working and support for patients that traditionally fall outside of their remit. The 'outer setting' is comprised of two systems, the health system and the wider prison system, both of which are complex in operation and hold differing priorities. When making the case for telemedicine implementation, senior staff who have an understanding of local system/provider priorities (e.g. organisational values, transformation strategies), should try and align these to the concept of prison telemedicine (e.g. improving healthcare access), to secure high level support for implementation. In section 5.5.4.4 (p.163) participants revealed many uniting factors suggesting that telemedicine was to their benefit and these could lead to information campaigns to raise telemedicine as a priority. Even where telemedicine aligns with local strategic policies, an absence of national targets may mean there is no immediate push to commit resource and deliver operational programmes.

Recommendation 1: *The ICS/community providers should make prison health a priority through integration of prisoner-focussed programmes into existing community health/ICS workstreams, such as 'hard to reach' populations*

Recommendation 2: *ICS/prison healthcare commissioners should establish optimal leaders and champions for the development of prison telemedicine across the health system*

Recommendation 3: *Prison healthcare and community providers should establish telemedicine champions that span the prison and health system, and who are supported to engage at a senior level when required*

Recommendation 4: *Provide national targets and leadership for the delivery of telemedicine services*

Recommendation 5: *Telemedicine champions should clearly demonstrate where prison telemedicine aligns with recommendations from national and local polices when making a case for a new service*

If the outer system context is not providing demonstrable prison-telemedicine leadership then the impetus for implementation will most likely come from within healthcare providers themselves. For prison telemedicine implementation we consider the inner context of two different providers, one who delivers clinical telemedicine services to prisons and one who operationalises the service for patients within prison. This introduces an additional party in comparison to most community-based telemedicine systems, where patients would be expected to facilitate their consultations themselves. Despite working within the same ICS (outer context), prison healthcare teams and hospitals were not well-networked; the study findings revealed that this was caused by the commissioned nature of prison healthcare teams, internal structural complexity and the nature of prison contract re-tendering. It is likely that increased collaboration would benefit both parties not just for the telemedicine work, but also for inclusion in other community wide healthcare initiatives.

Recommendation 6: *Use existing NHSE H&J commissioner links to CCGs contracted to provide secondary care services, to try and establish networks between prison provider and community organisations*

Recommendation7: *The ICS/community providers should establish prison-community healthcare forums to allow hospital and prison healthcare stakeholders to interface and work in partnership*

In addition, despite understanding the benefits that could be accrued for themselves and for patients, prison telemedicine remained a low priority for providers due to numerous competing internal priorities. Even where providers were supportive of innovation as a concept, digital innovations were not well received. Additionally, the perception that prison or hospital services were 'not in our remit' (according to the other provider) stifled implementation. Consideration needs to be given to how to support prison providers to adopt new innovations without compromising their ability to deal with highly reactive workload pressures. Healthcare should not be siloed into 'prison' or 'community' responsibility, and instead place the patient at the centre of holistic person-centred care. Prison staff may also need some reassurance as to whether patients will find the service acceptable before they promote it widely or commit time and effort to implementation.

Recommendation 8: *Raise the profile of prisoner health with community based hospital providers – utilise knowledge and enthusiasm of local champions as advocates and provide data on unmet need/associated poor health outcomes*

Recommendation 9: *Commissioners/macro prison provider staff should consider what additional resource could be made available to support prison healthcare teams with implementation tasks*

Recommendation 10: *Prison healthcare providers and implementation teams should involve patients in the design of the telemedicine service, so staff are reassured they will be likely to accept the model as a method of healthcare delivery*

Recommendation 11: *Frame telemedicine as an intervention to improve equivalence of care and outcomes for patients through a holistic approach to join up partners both internal and external to the prison*

All parties should be made aware from outset that the telemedicine implementation phase will probably be resource intensive, requiring commitment, understanding and key deliverables from multiple stakeholders across the prison and community systems. Budget and resource for implementation will be required. The work required in the implementation phase may well surpass that required to support the ongoing delivery of consultations via this method. Without clear implementation plans, roles and responsibilities, a clear understanding of the rationale for telemedicine and the potential benefits, and the presence of champions to keep motivation high, prison telemedicine implementation may struggle to flourish.

According to the CFIR definition of leadership engagement within the inner context, "*anything less than wholehearted support from leaders dooms implementation to failure*". (265) As found in my literature review(250) support for prison telemedicine needs to be in place amongst both providers and prison establishments, and span senior managerial leads through to frontline staff, if implementation is to be a success. This chapter revealed that not only should support span all staff groups, but also be tailored to the relevant provider (community vs prison) and purposefully identify those with digital interests who may act as a telemedicine champion. Senior staff leaders should be identified at outset, perhaps through scrutiny of management committees to understand whose role has parallels with digital innovation, telehealth or the reduction of inequalities in patient health, and who may therefore be sympathetic to this innovation. Leaders and supporters should be recruited to sit on telemedicine advisory or steering groups to ensure implementation can progress unhindered, with these forums including representatives from both providers.

Recommendation 12: *Champions/implementation teams should map departments/stakeholders (across both providers) who need to be involved in prison telemedicine development at outset and identify and engage senior (macro) managers to form part of the implementation steering group*

Recommendation 13: *Macro provider staff should provide implementation teams with guidance on identifying departmental leadership required to deliver prison telemedicine*

Recommendation 14: *Providers should communicate plans and information about telemedicine implementation through to frontline staff from outset*

Recommendation 15: *Providers should establish local operational delivery groups to build a shared understanding of roles and responsibilities in telemedicine implementation and operation*

Recommendation 16: *Provider macro staff should specify what role/tasks will be undertaken by members of the implementation team, demonstrating their alignment with individual's current objectives even if these are not traditionally prison based*

Recommendation 17: *Communicate expected benefits of prison telemedicine implementation to providers e.g. test-bed for community models, future contract advantage*

Recommendation 18: *Consider how to incentivise delivery of prison telemedicine to provider organisations e.g. contract KPIs, financial reimbursement and appointment tariffs*

Prison telemedicine was generally coherent to both hospital and prison healthcare providers, but with different benefits expected from the introduction of video consultations. Despite existing evidence of financial telemedicine benefits in US and Australian settings (23, 26, 47, 118), unclear financial implications of telemedicine for both providers in the English context represented a large evidence gap to support the case for implementation. Hospital providers shouldered much of the implementation work, often with little potential for perceived direct financial gain. Prison providers, although still actively engaged in implementation efforts didn't appear to have to engage with such a wide array of internal departments (e.g. outpatients, finance teams), however their financial gains were reported as potentially more advantageous. Longer term continuation of telemedicine delivery to prisons will likely be subject to scrutiny of its economic impact on service delivery to prisons from both a community and prison perspective.

Recommendation 19: *Communicate staff benefits realised in other prison telemedicine models e.g. upskilling of staff*

Recommendation 20: *Evaluate operational telemedicine models to provide evidence on cost effectiveness*

In terms of reporting metrics the hospital may potentially see benefits in reduction of referral to treatment time (RTT) breaches, where patients breach the 18 week standard NHS RTT target. For specialties such as hepatitis, delivery of appointments by telemedicine may improve patient engagement and attendance, thereby improving treatment metrics and meeting target treatment run rates.(266) Proactive telemedicine care may reduce unplanned admissions and emergency attendances by prisoners which could reduce associated costs for the community system. However, for prison providers, demonstrating the positive effect of telemedicine to their commissioners via HJIPS is more difficult. (14) The only indicators currently required to measure performance in regards to hospital attendance are:

- **Escorts - Outpatient Appointments** - The number of routine outpatient appointments scheduled during the reporting period, for which, an escort was provided
- **Escorts – Emergencies -** The number of patients requiring an urgent/ emergency healthcare attendance during the reporting period, for which, an escort was provided
- **Escorts – Cancellations -** Any reason - The number of cancellations, for any reason, that resulted in an escort being reorganised.

Thereby prison providers only report on the number of offsite appointments that were honoured, and escorts cancelled, as opposed to RTT times. RTT may improve significantly through use of telemedicine and providers should have an opportunity to demonstrate this to their contract manager. Patient satisfaction with this potentially more dignified and less stigmatising service model should also be measured and considered by commissioners in performance reports.

Recommendation 21: *Consider use of rewards/incentives/telemedicine KPIs related to telemedicine model development and use. Using the same KPIs as community NHS services for telemedicine will help achieve this*

Although complex to operationalise, once established the hospital telemedicine model was not seen as a 'vulnerable' service in terms of operation, aside from standard IT issues and availability of trained staff. This is in contrast to the issues most frequently reported by hospital clinicians in other international settings, with clinicians from the US frequently reporting concerns around the potential for litigation (121, 127, 159, 160, 164, 171, 228) and legal difficulties with practising telemedicine across state boundaries(127, 131, 140, 160, 164, 165, 170, 171, 228), showing another side to contextual enabling or 'disabling' related to geographical outer setting health policies.

Within prisons concerns often centred on problems which could be caused by the prison regime. In addition, the increased staff burden introduced through new chaperone duties for appointments was a concern for many of the service managers, a problem not identified in previous research.

Generic issues common to all telemedicine projects (as reported in current literature) should be considered in prison telemedicine implementation plans including access to training and IT support, compliance with security and governance issues and remote access to electronic health records.

Recommendation 22: *Providers should ensure provision of telemedicine staff training*

Recommendation 23: *Providers should have a clear process for obtaining IT support*

Recommendation 24: *Providers should opt for a videoconferencing software that has been approved by HMPPS already to meet essential security requirements*

Recommendation 25: *Providers should use local telemedicine implementation groups to design appointment triage/booking processes with both providers to ensure they fit the prison and hospital requirements*

Recommendation 26: *Providers should consider staff chaperone requirement within telemedicine business cases and future staff proposals*

Recommendation 27: *Prison healthcare providers should ensure hospitals can access patient electronic health records remotely if they wish to for remote consultation*

Recommendation 28: *Prison healthcare providers should work with prisons to reduce the impact of the regime on telemedicine*

Recommendation 29: *Prison healthcare providers should work with senior prison managerial staff to ensure prison officers understand telemedicine and the need to escort patients to healthcare*

Recommendation 30: *Prison healthcare providers should explain prison regime issues to hospital clinicians in advance of deployment so they understand if appointments are cancelled*

Recommendation 31: *Prison healthcare providers should communicate cancellations to the hospital/prison at the earliest opportunity*

Recommendation 32: *All providers should work with areas that have already implemented prison telemedicine to learn from their experiences*

5.7 Strengths and limitations of this research chapter

5.7.1 Strengths

To my knowledge this is the first study that seeks to understand opinions from both community and prison healthcare staff about the implementation of an intervention that spans both systems. I was successfully able to engage staff from both community and prison health organisations, through from senior to frontline levels, in interviews around telemedicine implementation.

5.7.2 Limitations

At the point of interview I was well known to many of the interviewees based on my embedded researcher status (2.4 p.34), this may have led them to give 'kinder' answers on their opinion of implementation to date, given my involvement in the process. Given my involvement in implementation it is, perhaps, unlikely that participants would have spoken negatively of their colleagues' efforts or roles in implementation, for fear that I may relay their concerns. We were also likely to have a shared understanding of some aspects of implementation, which therefore may not have been mentioned explicitly in interviews, and may have been better surfaced by a non-embedded researcher.

In general, throughout the research I was affected by the multiple roles I held (public health clinician, researcher, embedded team member) and my positionality as a result. As a clinician and embedded team member I was privy to attending internal service meetings and subsequently benefited from the contextual knowledge I could gain through participant observation. However, I remained constrained in my ability to report everything I witnessed throughout my thesis given the possibility of deductive disclosure of participants or of 'upsetting' those who had kindly agreed to host my research. At times it was also a struggle to remind healthcare teams that my primary role was a researcher and not a member of their clinical team, given that my role had become blurred to many. In addition, as an advocate for telemedicine it was at times more difficult to take an objective view as to the value of implementation.

The sampling process followed, whereby staff known to have an implementation role were approached for interview, meant there was no active identification of hospital staff who specifically do not want to try telemedicine or treat prisoners. Several community participants also opted out of the research because they felt they had no knowledge of the telemedicine implementation work. Their perspective on the more general topic of prison health may have provided illuminating information on why the telemedicine agenda was not therefore a priority.

5.8 Conclusion

The implementation phase of prison telemedicine was reported by participants as resource intensive and appeared to be most heavily influenced by the outer and inner

contexts as opposed to issues at the individual staff level. The disconnect between community and prison commissioning systems, and subsequently their strategic system priorities and financial incentives appeared to limit enthusiasm to directly support prison telemedicine implementation. The culture of the outer setting may need to change to make telemedicine a priority to both community and prison providers. One such possible change would be further devolvement of health and justice services to the community ICS(267), bringing responsibility for commissioning, outcomes and associated financial savings in to the ICS function. It is likely that this would improve enthusiasm for prison telemedicine amongst community partners.

Prison telemedicine is relatively unique, in that the patient is 'sandwiched' between two providers, one that delivers clinical advice and treatment from the hospital, and one that facilitates appointments from the prison end. Although similar setups may be required in locations such as inpatient secure hospitals and care homes, for the majority of the general community telemedicine would see patients connecting with only one provider. Prison and hospital providers have different concerns about telemedicine and may see unequal benefits. As recommended in Chapter 4 (section 4.3.3.4 p.95) this evidence supports the need to consider provider's implementation concerns separately at outset, and also the establishment of joint implementation forums to discuss concerns and improve partnership working.

Staff concerns reported suggested there is some overlap in issues experienced or anticipated with general telemedicine models, but also some that are unique to the prison environment. Many of the community hospital staff spoke about a prison telemedicine model as a 'test bed' for wider community telemedicine services. It is not clear yet as to whether prisons are a small yet high need population group which represents a good test case for telemedicine services, or whether starting with a model that spans both community and prison systems is trying to 'run before you can walk'. Given the information reported within this chapter we must consider whether the design and delivery of the prison telemedicine model is likely to be more complex or just different to the design and delivery of community telemedicine models. We expect that the implementation phase of prison telemedicine is more complex given the multiple systems and providers that must be engaged across both health and prison contexts. However, once established, trained prison healthcare staff will act to deliver

the service and support appointment scheduling, normalising the service within the prison provided resourcing is adequate. In contrast, community telemedicine systems could be anticipated to involve fewer issues with implementation due to the involvement only of NHS partners. However, ongoing delivery of the model will involve reliance on individual patients to accept and subsequently keep appointments, and dial in, maintain and operate equipment they use to connect to appointments, which may be more complex than the ongoing delivery in prisons. Whether telemedicine is therefore more ‘effective’ at improving access to care in prison settings than in community settings, which have no ‘restrictions’ on accessing face to face appointments, is another question to consider in future research.

Chapter 6 Prison telemedicine and the Coronavirus pandemic

OVERVIEW:

This chapter, unplanned at the start of this PhD study, relates prison telemedicine implementation to the COVID-19 pandemic. I assumed a national implementation role as part of pandemic response. This chapter uses a combination of autoethnography and staff interviews to understand how the pandemic affected the ability to implement prison telemedicine, and what this may mean in regards to future digital innovations in prisons.

6.1 Background

On the 11th March 2020 the World Health Organisation declared a pandemic situation,(60) caused by the emergent virus SARS-CoV-2, known more widely as COVID-19.(61) The first cases were confirmed in England on 31st January 2020. In March 2020 the British Government took action to contain the growing numbers of COVID-19 cases by introducing social distancing policies and later a full 'lockdown' policy.(62) As discussed in 1.8 I paused my research and deployed my clinical time to the COVID-19 response, assisting NHS England national Health and Justice team with the rollout of prison telemedicine across the English prison estate.

This re-shaped my PhD thesis. My original plans to evaluate the impact of telemedicine on secondary care access and associated cost effectiveness at a local scale were used to inform plans for a national scale evaluation in 2021/22. I supported NHS England to develop this evaluation. Patient perception and acceptability remained important but plans were made to report this separately to this thesis. The final research chapter of this thesis was instead dedicated to reporting on how the pandemic enabled implementation of digital innovation at speed. Telemedicine was implemented throughout general community settings, however the situation in prisons remained distinct due to previously reported issues with dual health and justice contexts (Section 5.5). Telemedicine rollout in prisons, although fast, was not achieved

at the same pace as in community settings (268) suggesting that other factors precluding digital innovation remained in place in secure settings despite the pandemic. An understanding of how to implement digital innovations in prisons may help guide future programmes in a drive towards digital equivalence, whereby prisons would benefit from the same digital equipment and access as health care services in the community.

For the purpose of this chapter, I assigned the following definitions:

Local implementation – Referring to my planned PhD study of the local based prison-hospital telemedicine model implementation, prior to the pandemic.

National implementation – Referring to my experience of leading widespread prison telemedicine implementation at scale, from a national role, during the pandemic

I adopted an autoethnographic approach to reflect on and analyse my experiences of telemedicine implementation at both a local and national level. I documented how COVID-19 changed attitudes and barriers to prison telemedicine implementation in England from my role in this implementation process and from the perspective of other macro level staff.

6.2 Aim

The purpose of this chapter is to understand how the COVID-19 pandemic both supported telemedicine implementation, yet also risked contributing to a widening gap in digital inequalities for healthcare if digital equivalence in prisons could not be fully implemented.

6.3 Methods

In autoethnography, a researcher critically reflects on and analyses their own personal experience of a situation, made possible by their participation and legitimate role within the culture of study. (269) This is distinguishable from ethnography whereby a researcher reports on aspects of a culture under study, but does not reflect on their own experiences and introspections as a primary data source.

I have reflected on my experience of leading the rapid implementation of prison telemedicine at scale across England, from a role within a national organisation in response to pandemic threat, in complement to my experience of implementing prison telemedicine in a defined local area prior to the pandemic.

I present a realist autoethnographic account(270), focussing predominantly on the culture under study as opposed to myself as a researcher, mixing third and first person narration and documenting field work experiences from an objective and authoritative perspective.(271) Realist autoethnography seeks to interpret experiences, using complementary data such as published work, interview data or theories to produce a layered account. I have separated my experiences in to several cultural themes, and sought to critically interpret each as a standalone subject heading.

6.4 Data sources

I have utilised multiple data sources alongside my personal reflections, to provide a layered autoethnographic account.(269)

6.4.1 Personal reflections

Throughout the period of pandemic implementation I kept a research diary, documenting progress and milestones with prison telemedicine implementation which has in part informed my reflections. Within this diary I summarised and anonymised themes and issues defined in key email correspondence, virtual meetings and telephone discussions, as opposed to using verbatim quotations. Working from the national role exposed me to engagement with prison healthcare providers, commissioners, HMPPS colleagues, digital colleagues and prison IT providers across the breadth of England, bringing multiple perspectives to my first-hand experience.

6.4.2 Staff interviews

I also undertook 11 one-to-one interviews with a small sample of macro level staff (see also Figure 12 (p.111) from within the healthcare and justice systems. Staff invited to participate held a national role with oversight across multiple sites or commissioning regions. All participants gave written informed consent prior to data collection.

Semi–structured interview guides were developed drawing on the system context principles of CFIR (inner and outer contextual settings) (5.1.2.2 p.114) and themes participants discussed in pre-pandemic staff implementation interviews (5.5 p.121) indicated were prohibitive to implementation. The topic guide developed is shown in Appendix E (p.269Appendix E

Table 19). Throughout the data collection process I reflected on the nature of the responses from participants, and adapted questioning style appropriately. All data collection activities were recorded on an encrypted Dictaphone and transcribed professionally.

6.4.2.1 Recruitment

Participants were selected using purposive sampling, targeting staff involved in the national telemedicine implementation from within health and justice sectors, and snowball sampling based on further staff suggested by interviewees. Staff were approached by email with a leaflet and an explanation of the study.

I undertook one to one interviews with 11 participants (n=9 health n=2 justice) totalling 6 hours of data. No participants withdrew from the study.

Participant roles are shown in Table 11 (p.180). Staff members were often able to speak from several perspectives. For example, several participants held both national strategic roles alongside a practicing clinical role (e.g. Prison GP).

Table 11 Interview participant staff role and perspective

Staff roles and perspectives		
NHS/HMPPS	Staff role	Total participants recruited to interview who could discuss this role
NHS	GP	4
NHS	Pharmacist	1
NHS	Medical Director	2
NHS	Lead with responsibility for digital services	4

NHS	Representative of relevant professional college (e.g. RCGP)	3
NHS	Commissioner	2
NHS	Head of service	1
NHS	Service provider in prisons	3
NHS	Frontline experience of implementing digital innovations in prisons	1
HMPPS	Digital security	2

6.4.2.2 Key documents

Key documents have been included in this analysis including published reports, governmental guidance documents, newspaper articles and unpublished internal documents. Unpublished documents include:

- Telemedicine in the secure and detained estate briefing note (NHS England document)
- HMPPS SyOps -operational protocol (HMPPS document)
- Prison telemedicine SOP video consultations (NHS document)

6.4.3 Analysis

Interviews were transcribed verbatim by a secure transcription service. Transcripts were used to undertake Thematic Analysis, by which patterns in data are identified, analysed and reported.(255) An inductive approach to coding was followed, drawing on my experiences of telemedicine implementation (Chapter 5) to name and categorise themes. Key documents were reviewed for information that supported or further explained themes. Sub-codes were reviewed and collapsed into major themes.

6.5 Theory

Throughout this autoethnographic account I have compared and contrasted my experience to the same framework domains used in Chapter 5 (CFIR framework,(2) and the staff domains of the NPT model(1)), to understand the impact of the pandemic on implementation. The staff interviews conducted in the wake of the pandemic focussed almost solely on the CFIR inner and outer setting domains, acknowledging

that the main immediate changes to widespread, rapid telemedicine implementation were due to the pandemic context.

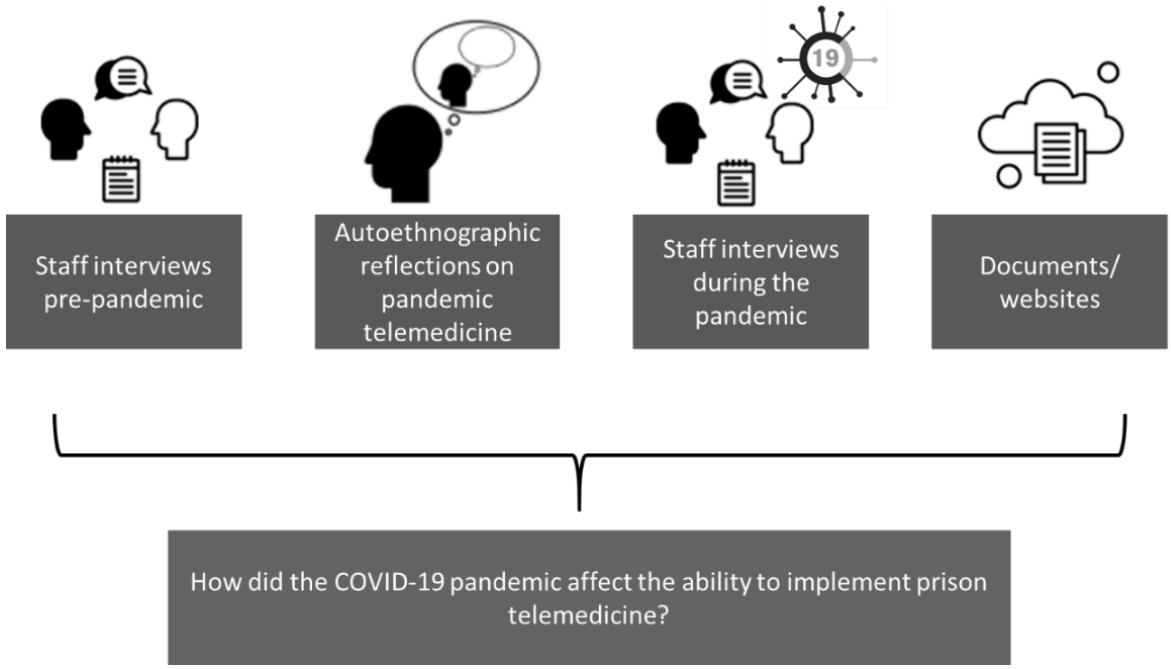

Figure 22 Data sources used in Chapter 6

6.6 Combining data sources

My autoethnographic experience of telemedicine implementation was used to both shape the interview guide and to interpret interview data. It also provided me with knowledge of key documents that shaped and supported telemedicine implementation. I reviewed themes from the analysis of interviews in parallel with my personal autoethnographic reflections in my research diary and key documents to form results sub-headings reported in section 6.8 (p.185). Where relevant I reflected on the staff perception and experiences of pre-pandemic telemedicine, based on information from the interviews analysed in Chapter 5.

6.7 Context to this account

6.7.1 COVID-19 and prisons

The burden of disease amongst prisoners is higher than in the general population, with prisoners suffering from increased levels of infectious disease, chronic conditions and an overall lower life expectancy.(5) Indeed a prisoner is considered ‘old’ at the age of

50-55 years, by nature of the decline in health and function caused by overlapping co-morbidities and lifestyle conditions common amongst this group.(272)

COVID-19 was identified at an early stage as presenting the highest risk to those in older age groups, and to those who suffer from certain underlying health conditions such as cardiovascular disease and respiratory conditions.(273, 274) With the high burden of disease traditionally documented amongst prison populations it was quickly hypothesised that outbreaks within the prison environments could lead to high levels of illness and death attributed to COVID-19. (275, 276) Prisons as institutions are vulnerable to outbreak situations. Close quarters, overcrowding, shared facilities and relative lack of control over environmental cleaning mean that 'explosive' outbreaks can occur in a prison once infection is introduced.(275, 277, 278) This extends not only to the residents themselves, but also healthcare staff and prison officers. Consequent high levels of staff absenteeism due to acute illness and isolation exacerbate substantial existing staffing deficits(279) impacting both healthcare service provision and the daily regime within the prison. Healthcare teams, as smaller units, are particularly vulnerable to staffing shortages, often unable to draw in staff from other local establishments due to the multiplicity of prison healthcare providers across the estate; in contrast to prison officers who could be mobilised more easily between institutions or mutual aid arrangements open to providers in community healthcare settings.

In March 2020 the British Government introduced social distancing policies and later a full 'lockdown' policy.(62) HMPPS, with advice from health authorities, mirrored this approach, and were quick to implement a full prison lockdown to mitigate the risk of COVID-19 outbreaks within the prison system. This included stopping all external visitors, lockdown of prisoners within their cell for up to 23 hours a day, early release of prisoners reaching the end of their sentence and cohorting of the prison population into shielding units, protective isolation units and reverse-cohorting groups.(277, 280)

In parallel a spotlight was cast on the notion of prison telemedicine,(281) alongside other justice related digital interventions such as video visitations.(282) Whilst my research prior to the pandemic found prison telemedicine was considered a desirable, but non-essential intervention (**Error! Reference source not found.** p.**Error!**

Bookmark not defined.), it was suddenly perceived as one of the most important tools to maintaining healthcare service continuity throughout the COVID-19 pandemic, and can be framed as an attempt to achieve a level of 'digital equivalence' in prison settings.

6.7.2 COVID-19 and telemedicine in the general community

In the general community the COVID-19 pandemic was quickly driving large-scale digital innovation in healthcare, including the widespread scale up and use of video consultations, particularly for primary care delivery.(283, 284)

> *"Until a few weeks ago, unless you lived somewhere really remote, it was easy to pop to the hospital or the GP. With COVID-19, if you're a patient and you go to a GP surgery or you're a doctor and you see patients face-to-face, there's a high risk of infection. Suddenly the relative advantage of virtual consultations has changed dramatically." (Professor Trish Greenhalgh(285))*

Clinicians were willing to trial new models of care delivery, so NHS bodies rallied to provide streamlined support for the mass rollout of telemedicine in England with centralised review, coordination and procurement of software solutions for community healthcare settings. NHS Digital supplies information and data to the health service and provides vital technological infrastructure. At the start of the pandemic NHS Digital led on deployment of a 48 hour closed competitive tender process for procurement of software to support video consultations in community healthcare settings.(286) As a result of this procurement 11 software solutions were selected, and the deployment of these solutions to primary care sites centrally coordinated and funded by NHS Digital, making the process of telemedicine rollout in GP surgeries as efficient as possible. Likewise, for secondary care sites NHS England and NHS Improvement procured 12-month licences for an outpatient consultation software entitled 'Attend Anywhere'. Licences were made available free of charge to all NHS secondary care providers.(287)

COVID-19 was repeatedly cited as being the driving force for pushing the NHS into an age of digital transformation, realising strategic objectives around digital services delivery from the NHS Forward View at a pace which may otherwise have taken years.(288)

6.8 Results - How and why did the pandemic support English prison telemedicine implementation?

6.8.1 COVID-19: making prison telemedicine a priority

Chapter 3 describes the barriers to accessing secondary care in prisons. With the advent of COVID-19, provision of adequate healthcare services to prisoners came under intense scrutiny. Her Majesty's Inspectorate of Prisons (HMIP) released statements announcing the immediate suspension of standard lengthy inspections, in favour of proportionate visits to provide independent scrutiny of essential functions such as healthcare.(289) Charities and independent bodies such as the Prison Governors Association were quick to call for actions to protect the health of people in prison.(290) As COVID-19 began to gather momentum in England, attention was quickly turned to the concept of prison telemedicine, aligned with the general drive for digital services in the community.(281) In mainstream population healthcare services the main driver for video consultations was to reduce infection risk. Although this formed part of the consideration for telemedicine use in prisons, the rationale behind telemedicine introduction was multi-faceted.(268) An excerpt from correspondence to English hospitals about the benefits of prison telemedicine is shown in Figure 23.

Benefits of telemedicine in secure settings

Delivery of secondary care services to secure and detained estates via video consultation can improve access and quality of care for detained patients, as well as generating cost efficiencies.

It can also bring numerous benefits to secure and detained healthcare teams, prison(s)/IRC(s)/CYPSE staff and trusts. For example, patient appointments are less likely to be cancelled or DNA and referral to treatment times are likely to reduce. This is true during both pandemic and non-pandemic contexts.

Excerpt from a letter sent to all acute trusts in England by the NHS national video consultations team, August 2020

Figure 23 Excerpt from prison telemedicine letter to NHS trusts

First, even under normal circumstances prison healthcare departments traditionally operate with high staff vacancy rates. (279) Concerns were raised at an early instance that COVID-19 could result in high levels of staff absenteeism due to illness or self-isolation requirements, leaving healthcare staff teams in prisons unable to deliver a minimum standard of healthcare. Use of telemedicine to support the continued delivery

of primary care, mental health and substance misuse prescribing services was seen as a priority in maintaining service continuity. Use of telemedicine would in theory allow pooling of resource between prison healthcare teams, and also allow delivery of care from clinicians based remotely within the community. Second, removing the need for clinicians to travel to the prison and undertake security processes for entry could theoretically allow a clinician to undertake more consultations in their allotted clinical time than normal, thereby reducing the burden of staff absences. Third, if possible to find a way to deliver telemedicine services directly to the prison cell of the individual (as opposed to in the prison healthcare department) this would remove the need to move the patient throughout the prison, thereby reducing environmental contamination, cross infection with COVID-19 patients, and exposure of vulnerable patients to the wider prison environment. This in turn would reduce the risk of outbreaks in these closed and vulnerable settings. Prison officers are traditionally relied on to escort patients to the healthcare department, so high levels of absenteeism would also have affected the likelihood of transfer to a healthcare appointment. Finally, if covering elements of secondary care delivery, use of telemedicine would remove the need to take patients out in to the community, reducing the chance of infection for both prisoners and escorting staff from the COVID-19 community reservoir and concentrated levels of infection present in some hospital settings.(268)

***Clinical academic reflection*:** Prior to the pandemic, the prison provider staff I engaged with suggested that telemedicine in prisons was theoretically beneficial, with clear benefits for patients, yet limited in its ability to rollout due to operational competing demands and pressures on staff resource. Indeed I found that during the local implementation phase the prison healthcare teams appeared content for me to progress telemedicine documentation/meetings on their behalf, but perhaps somewhat unwilling to dedicate their own staff time for an intervention that was not an immediate reality. Although I had support from senior managers who saw the strategic benefits of telemedicine introduction, and opportunities to present at senior level boards, I had far less engagement from frontline staff within the prison who were constantly moving from one crisis or incident to the next.

During the pandemic, an NHSE interview participant suggested that there were system concerns, as opposed to local operational issues, that took priority over telemedicine development before the pandemic arose:

> *"[…] what happened was that there were lots of other […] obviously the growth in numbers in the prison system, there were different levels of mental health, different levels of self-harm, suicide and death in custody, and not to say that telemedicine […] was ignored, but I think, well, actually, what became more important was the digital enhancement of the patient electronic record, and* ***I think it (telemedicine) became, at that time, the backseat to other innovations****." (*Pandemic interviewee 2)

The pandemic re-framed telemedicine in prisons as a solution to many of the pressing concerns and worries facing prison healthcare, making digital equivalence with respect to telemedicine a local and national priority for healthcare delivery. One participant was concerned about ensuring that telemedicine would continue to develop after the pandemic:

> *"Well I think for us because we've got a digital work stream across (our region) we'll be constantly looking at what's the next best thing, how can we maintain that momentum? […] we've never really moved that much on that work stream until very recently simply because pre-COVID we were focusing on things like safer custody and mental health and sorting some of those problems out. And then just as we were starting to put a bit of meat on the bones COVID arrived and then things just moved into a slightly different direction. So we'll probably develop that work stream now to maintain momentum but also to ensure that people are using it (telemedicine)." (*Pandemic interviewee 4)

HMPPS participants were also clear that the pandemic context acted as a facilitator to implementation, as described in the following quotation:

> *"(If there had been no pandemic the telemedicine agenda would have progressed) slowly, very slowly, […] you'd have been wading through treacle to get to where you wanted to be. I still don't think you'd be in a position to have an approved tablet. You might have moved to piloting in another 2-3 prisons. With the pandemic we've got rid of all that treacle and made it a straight line […]"* (Pandemic interviewee HMPPS1)

This participant reflects that as with the health system, the pandemic removed barriers within the justice system to telemedicine implementation.

6.8.2 Leadership and ownership for prison telemedicine

Changes in leadership and ownership for prison telemedicine during the pandemic facilitated implementation though provision of a consistent service offer for providers, and a clear contact point for HMPPS. Local prison telemedicine implementation prior to the pandemic was reported by participants to suffer from a lack of ownership amongst senior *outer* health and justice system partners (Figure 21 p.156) which they felt contributed to the slow progress of implementation:

With the pressure of the pandemic mounting, and the resulting shift in priorities (6.8.1 p.185) NHSE Central H&J team quickly assumed leadership for national prison telemedicine implementation as of March 2020, coordinating regional teams, pursuing centralised HMPPS approvals and sourcing funding to support implementation. One participant described how this national level ownership helped drive through rapid implementation:

> *"[..] when we were giving the funding out to the regions for them to actually do things around digital innovations and solutions[…] it didn't feel like a proper programme of work. […] Whereas, I think what the pandemic gave us is a focus and essential process and way of doing it. And I think also by purchasing the kit and actually working with HMPPS on the security side of that, I think that really helped to actually drive it from a national level. I think there are still areas of the regions[…] have said, "We'd have been better doing it our way". But actually* ***what we learnt from the process is that they weren't better doing it their way because they were just doing it without going through a formal process. And I think what's helped with HMPPS is they've known who to contact to actually sort some of the problems out*** *[…]"* *(*Pandemic interviewee 6)

The participant is referring to NHSE H&J regional teams and issues with lack of coordination between these teams, and also with HMPPS. By centralising the point of contact for HMPPS and streamlining the process so that all NHSE regions received the same approvals and equipment, an equitable service offer was available to all prisons and providers. The benefits of centralisation and the removal of regional mixed messages was also discussed as a positive by a senior prison provider lead:

> *"[…]and I think any support from the centre is helpful in that, it would be really useful if NHS England had some, sort of, centralised influence on*

*this because we deal with a number of regional teams, area teams, and they've all got different ideas and different plans and NHS England as a centralised organisation have a real opportunity to help us to embed this both in the prisons but also by asking the hospital trusts to engage as well." (*Pandemic interviewee 8)

The influence of the NHS H&J team at a national level to drive forward this intervention was foretold by one provider staff member prior to the pandemic:

*"I think (local) commissioners have very little leverage for driving change and innovation, they're just told, "You've got this amount of money, go and spend it and deliver", they have very little influence**. I think above the (local) commissioners, that's where the real influence is, they say, "Okay, you can do this" and then they'll enable**" (Pre-pandemic interviewee 3)*

As prison telemedicine became a national priority for NHSE H&J so did the issue of ownership. Under scrutiny from ministers and NHS leaders, NHSE H&J were required to ensure that continued delivery of healthcare in prisons was sustained in light of the pandemic. With prison telemedicine forming part of this strategy there was no indecision as to where accountability, ownership and financing for this national rollout across all prisons should lie. NHSE H&J were quick to take up the mantle and lead on the rollout of telemedicine across the secure estate. Taking a national stance on leadership and ownership ensured a consistent offer was made to all prisons regardless of the opinions in their regional or local teams.

This national level ownership by the NHS also offered a centralised and more streamlined contact point for the HMPPS digital teams throughout the assurance process, as described in the following quotation:

*"I think that's brilliant (dealing with central NHSE team), you know we have worked with NHS previously, we trust the assurance people to do the right thing as they're dealing with vast amounts of data as are we, so it's in their best interest to ensure it's all secure. So **for them to have that umbrella view, that helicopter view, because we know that if we've got a problem we can go to them and they'll sort it out**. Whereas before it's a case of who do you go to, what part of the country it is, what healthcare trust is it […] that's a nightmare scenario." (Pandemic interviewee HMPPS1)*

The participant here alludes to trust they hold in the central NHS teams, their strategic oversight of the system and the clear lines of contact associated with a centralised lead.

This evidence suggests that ownership and subsequent enablement of prison telemedicine at a cohesive national level was inherently facilitated by the pandemic context.

***Clinical academic reflection*:** My role in the leadership of telemedicine was assumed based on my previous existing knowledge and experience of prison telemedicine. During the pandemic implementation work I led day to day on the delivery of key project aspects, such as securing HMPPS approvals for technology and working with technology companies to develop suitable options for deployment. I acted as the key contact point on telemedicine for the HMPPS digital team. I also led on nationwide engagement with prison healthcare providers and commissioners around the plans for telemedicine rollout, and advocacy as to how it could be used to support clinical care. In this way I once again assumed a cross-organisational champion role as I had in the local implementation work. I acted as a 'meeting point' between health and justice organisations; ensuring forward plans were both reflective of NHS clinical needs and HMPPS security requirements. It is not clear whether other staff would have been dedicated to take up this role in my absence, given the extreme workload staff members were already carrying due to the pandemic. As with the local implementation, it may be that this project would not have progressed at the same speed had I not been able to dedicate my resource to it as an additional 'pair of hands'. However, what was noticeably different from the local implementation work was the ease at which I could progress tasks given that the national team had clearly indicated that this project was a priority for them. This appeared to cut through barriers and ensure staff across the national footprint were aligned to support their own local implementation.

6.8.3 Dual contexts increased the complexity of implementation

Despite the clear rationale for a rapid pandemic prison telemedicine deployment programme to mirror community efforts, and concerns around the vulnerable

institutional setting, several important issues emerged that effectively inhibited the ability to transform healthcare in prison settings at the same speed as in the community in pursuit of digital equivalence. A key issue, apparent both prior to and during the pandemic was that of the overlapping dual *outer* contexts presented by the health and justice systems (5.5 p.121).

The overlapping concerns of both the health and justice systems continued to cause implementation issues during the pandemic context as was seen in published literature (4.3.3.4 p.95) and staff interviews prior to the pandemic (Chapter 5). The rules and regulations of HMPPS regarding technology still imposed some restrictions on what digital solutions could be deployed in the prison estate. As stated in the quotation below, cyber security and the ability for cyber-enabled prisoners to re-purpose digital technology means everything is subject to intense scrutiny:

> *"We did have some questions internally from our SOCT team[...] who are a team who really look at cyber enabled criminals, trying to stop criminals with good cyber skills from exploiting things in prison. So they did ask us a lot of questions around the use of the tablets and obviously we re-assured them with the SyOps and so on and the controls that we had in place[…]" (Pandemic interviewee HMPPS2)*

The participant here refers to oversight by the SOCT (Security, Order and Counter-Terrorism directorate) who assess risk alongside the digital teams, and the need to ensure both teams were satisfied with risk mitigation measures prior to approvals. This included the SyOps, which was the security operational document that specified how equipment must be used.

Implementation of healthcare innovation within prisons is subject to the rules and restrictions imposed by two overlapping contexts, that of the healthcare system and the prison system.(250) NHS services operating within prisons do not own the buildings or hold any control over their management, essentially operating as a hosted service within the prison system. This means their autonomy to introduce digital innovations is constrained in comparison to community settings and very much reliant on strong partner relationships that bridge health and justice settings. This is clearly reflected in the following quotation from a national health and justice leader:

> *"[…]in prisons and Children's Secure and the Home Office IRC […] we're* ***delivering healthcare services in someone else's backyard*** *and so what we have to be is really respectful of our partners, but we also then have to say how do you get the operability with the systems that are part of secure estates and prisons[…]" (*Pandemic interviewee 2)

As discussed in Chapter 5 (p.123) HMPPS rules surrounding technology use surpass those of the NHS and must be adhered to in prison settings. Any digital technology outside of the Prison Authority's direct control is inherently perceived as a risk. HMPPS Central Digital teams must investigate and approve any digital solution that is to be implemented within prisons, including those for the delivery of healthcare services, to assure security around the proposed solution. In March 2020 at the start of the pandemic, only two software solutions were approved for use in English prisons, one of which was approved in the course of the research, having been subject to scrutiny lasting a period of several years. The software solutions procured centrally by NHS Digital for community healthcare teams(286) and secondary care were not approved by HMPPS given the lack of individualised digital audit trails, meaning that centralised support offered to the English community health system was not directly transferable to the health and justice system. A briefing note was prepared and shared with community NHSE and hospital trusts to help them understand why prisons could not accept their current offer of digital services, an extract of which is shown in Figure 24.

Why can't we use the video consultation platform/s our trust is currently using?

The HMPPS approval process for software typically takes over a year to complete. For software to be approved it must meet a range of requirements including the following:

- Must provide a complete digital audit trail of use, by individual staff member, to ensure misappropriation can be tracked in event of a breach (i.e. an unauthorised video call).
- To support auditability, every staff member in the secure and detained estate who chaperones a patient within a video consultation must have a unique, identifiable software login to ensure traceability in the event of misappropriation. Patients are not permitted to use the video consultation platform unsupervised and therefore will always be supervised by a healthcare chaperone who will log into the video consultation.
- Video consultations can only be made from the secure and detained estate to pre-approved contacts, preventing unauthorised users from joining the video consultation. Non-NHS email addresses need to be added by a central software administrator in the secure setting.

Figure 24 Extract from NHS hospital trust briefing note about prison telemedicine consultations

During the pandemic, with widespread implementation of community telemedicine, a digital divide emerged as a result of the need to abide by HMPPS restrictions on use of telecommunications within prisons. Despite centralised NHS support and drive for telemedicine introduction across the breadth of English health settings, prisons were still in no better position for rapid implementation of video consultations given that community based solutions did not meet additional HMPPS security criteria. NHSE H&J was required to source and purchase their own national software solution for prison telemedicine delivery, independent from the rest of NHSE. To fund this they submitted a business case to support the telemedicine work from COVID-19 emergency resourcing (a formal request for funding to provide digital equivalence within prisons), representing an extra step in the process of deployment at a critical time. As discussed in the following quotation, some believe this use of different IT systems between prisons and community organisations will continue to limit telemedicine delivery in prisons:

> *"**So I think where we are not integrated and aligned with what options there are for delivering this remote consultation and technology, I think we will continue to have barriers**, […] starting to work with their local NHS Trust for example or local providers to try and introduce it and somebody says, well I've only used this product to do these remote consultations and they can't use it because the prison has a restriction on that. So I think those are still to overcome." (*Pandemic interviewee 1)

The participant is expressing concerns that other community organisations will be frustrated that they have to adopt a different video conferencing system purely for prison-based patients. Prior to the pandemic few hospitals were operating video consultations and therefore software choice was more of an open dialogue. Familiarity and trust in video consultations may have improved at hospitals given their pandemic adoption of videoconferencing, but the open approach to software choice has been slightly restricted.

Undertaking difficult partnership work with HMPPS to approve a telemedicine system was felt by all participants to bring some benefits for future collaborations. As discussed by this participant, the work that took place between HMPPS and NHS to

approve telemedicine during the pandemic may pave the way for future partnership working:

> *"[..] sometimes because it was (prior to the pandemic) such a slow process to go through the (HMPPS digital) approvals and you were going back and forth and it was almost the answer was going to be, "No" so why bother? […] HMPPS were coming from the, "no you can't" because of all these reasons and I think we were coming from the, "Oh of course you can, you don't worry about it. It will be fine**". And I think the working relationship now has improved so much that actually you can have those conversations and we've got a clear path and process for approvals moving forward, you know, from the MOJ security people**. And I think that they've learned a lot […] and they're looking at doing this in other areas" (*Pandemic interviewee 6)

The participant suggests that both HMPPS and NHSE now have much more understanding of the digital requirements of either party and have established solid working relationships to build on in the future, another welcome by-product of the pandemic response.

From the perspective of HMPPS supporting the NHS was seen as a priority, and indeed they delivered advice and secured approvals for equipment very rapidly to support the telemedicine rollout. Even once national approvals were secured local Governors at individual prison establishments sometimes questioned whether devices were approved and initially refused them entry, as described in the following quotation:

> *"[…]there was some pushback [...] some governors who said we can't allow this stuff in, where's the section 40E, because they hadn't seen it […] basically there was some questions asked about the legitimacy of bringing the devices in" (*Pandemic interviewee HMPPS2)

The participant notes the wariness some Governor's held around the approved telemedicine devices, most likely due to the fact that they required evidence of legislative changes (referred to as the Section 40E) and the unprecedented speed of change at which these approvals were granted.

***Clinical academic reflection*:** During the implementation process I was often required to assist providers as they sought to reassure prison security teams, providing key guidance documents they were unaware of, or connecting them to the relevant

HMPPS staff who could provide this reassurance to the prison. Without this central contact point, there would likely have been more challenging issues with the rollout and introduction of technological devices into the prisons.

6.8.4 Fragmentation and complexity of service delivery influences the ability to implement telemedicine rapidly

Delivery of healthcare in prisons is fragmented, but centralisation during the pandemic acted a facilitator for implementation, levelling the ability for smaller and larger prison healthcare providers to secure telemedicine equipment and software.

NHS Health and Justice services are commissioned via Health and Justice teams across seven NHSE regions. Across the English prison estate there are numerous different contracted prison healthcare providers, some of which operate in only one region, and others which span multiple regions, meaning that they have to engage with multiple local and regional NHSE commissioning teams. Each provider has their own *inner setting* contextual 'quirks'. Some deliver under a prime provider model whereby all prison healthcare services (e.g. primary care, mental health, substance misuse, sexual health, dentistry) are contracted by the relevant commissioner through one main provider contract, although within this the provider may subcontract. In other prisons commissioners hold separate contracts for different elements of healthcare provision. As a result, there are many competing providers operating in the prison healthcare space, some of whom hold contracts for multiple prisons and represent a dominant voice in the offender health arena, and others who may contract with only one prison. The issues arising from this competitive tendering system for offender care services have been previously documented, with suggestions it increases incoherence amongst services and subsequently provides fragmented care for these highly vulnerable individuals.(291) Indeed, data from Chapter 5 confirmed that prison telemedicine 'enthusiasm' was affected by this tendering process. For example, success in delivering telemedicine may be thought to improve the chances of winning future tenders, but an impending contract end date could also dilute enthusiasm for mobilising telemedicine.

The pandemic changed attitudes as described by one interviewee:

> *"I just think COVID was such a crisis that we had to do so much so quickly that people just pulled together […] and all of our previous difficulties and relationship issues were, kind of, thrown out of the window" (*Pandemic interviewee 1)

With the offer of both centrally-funded and organised telemedicine to all providers, there was no reason for providers to shy away from the implementation programme. Indeed to do so would most likely have cast them in a negative and uncooperative light in comparison to their competitors and put them at a disadvantage in future contracting processes. In addition the 'crisis' context made telemedicine a priority for all, not just for the larger providers with more capacity to innovate whilst delivering day-to-day business.

Prison digital 'readiness' and its influence on the ability to deliver new digital innovations should also be acknowledged and addressed. Large, established prison healthcare providers tend to be in a better digital baseline position, with larger and more developed technical support teams, and may have already deployed innovations within their establishments inviting a type of 'digital postcode lottery' in regards to NHS services by prison, as discussed by this participant:

> *"[…] (before the pandemic) we had pockets of innovation, certainly with some of our larger providers […]**I think the leadership and resource that has been made available has pushed it into the reality for everybody, every single prison, so that all prisoners can have the opportunity to have remote consultations** […]and a choice which will benefit them because of the speediness of which they can have that consultation and the less hassle that there is for them to have it, as long as they can believe in the fact that it is given that they have a good positive experience of that consultation […], it means it will empower patients, many more of them, to have that choice today, whereas they would not have had that choice six months ago." (*Pandemic interviewee 1)

The participant reflects that this 'levelling of the playing field' for provision of telemedicine hardware and software benefited not only the less established prison providers through provision of the 'same' central offer for all, but most importantly equalised potential telemedicine access for the patients within their care.

However, one factor I observed was the inequity in resource that could be committed to **implementation** of the centrally provided service. The larger providers had leads responsible for digital technology or transformation who coordinated telemedicine across their sites and took much of the burden away from the stretched healthcare teams in the prison. Smaller providers, however, delegated responsibility for receipt of equipment and actions associated with implementation to staff 'on the ground' in prisons. In this way smaller teams remained slightly disadvantaged in the time and resource they had to commit to telemedicine rollout. Inevitably, the larger providers, who were already more resourced in terms of innovation and staff capacity, were able to implement and start using the telemedicine service much quicker than their smaller competitors.

During the pandemic, implementation issues also arose regarding the close knit and competitive nature of prison provider organisations. Prison healthcare providers tend to be a mix of private companies and local hospital trusts. They wish to operate on the same digital systems across their prison sites and within their own internal organisation to ensure interoperability. Yet they may not consider interoperability with other provider sites and the benefits this may bring, or may be unclear on the digital restrictions imposed by HMPPS. Prior to the pandemic, telemedicine implementation in prisons was locally-driven, and providers were free to choose affordable software that supported their involvement in the local healthcare system, provided it was approved by HMPPS. The pandemic presented an opportunity for NHSE H&J large-scale purchase of software licences at a highly competitive rate, reducing the overall spend on telemedicine from NHSE H&J budgets and associated workload involved in procurement. This introduced issues with free choice, particularly for those who had already invested in a software solution, further highlighting issues with the diverse landscape of provider organisations. Indeed, at the outset of the pandemic telemedicine rollout there were numerous occasions when providers expressed concerns regarding software choices. Many had a strong preference over the options available and some advocated for software that was not approved by HMPPS meaning the top-down rollout was initially viewed with suspicion by some. The NHS in general does not have a good track record of top-down IT projects. In 2002 the NHS launched the ambitious 'National Programme for IT' which attempted to introduce top-down centralised IT systems to harmonise the digital offering across the NHS. The

programme failed spectacularly and was dismantled in 2011 after failing to realise benefits amongst escalating costs,(292) encouraging instead a 'let many flowers bloom' approach to digital services within the health system.(293) Looking to the future, consideration of video consultation system interoperability as opposed to use of the same system by all, may relieve some of the issues associated with different software use.

In contrast with these early views and concerns, once rollout was underway most pandemic interview participants reported that the centralised procurement, coordination and facilitation by NHSE H&J was ultimately an enabler for rapid implementation.

> *"**I think once you've got something that's happening nationally at all sites it's much easier then to get staff to buy in. Otherwise it just feels a little bit experimental** […] if it's a national programme it's going to be better resourced and we can take advantage of that. You find that a lot in health and justice that various providers are all doing various things with similar goals in mind but not linking up […] **So I think the centralised approach has been really useful** and it would be great if post-COVID there was still somebody or perhaps a national steering group that could continue to roll this out because there is more technology that we can use. If we could centralise that sort of thing and get it properly commissioned centrally I can just see that that would be a huge bonus across health and justice and of course you could then roll that out across other services, by using some of the technology that's available. So I'd really like to see that centralised approach continue and being beneficial." (*Pandemic interviewee 8)

This interviewee suggests that as a provider there are some aspects of prison healthcare services (digital technology) that they would consequently like to remain centrally governed by NHSE H&J in a top down fashion after the pandemic. This may help providers to learn from each other, reduce inconsistencies in regional approaches and ensure a more rapid knowledge transfer across the estate of small successful digital pilots. It would also help ensure that smaller and less established providers have the same opportunity for digital growth as their more resourced competitors.

HMPPS participants also noted the benefits of proceeding with approvals for one centralised solution as opposed to working with multiple providers and multiple proposed software solutions, as described by this participant:

> *"Because we've got upwards of 120+ prisons around the county and multiple providers that is resource intensive from our perspectives with different providers coming and asking the same question. […]. So this just getting people together under one hat, one umbrella, to all go in the same direction, it makes our life a lot easier and from an HMPPS senior executive perspective it's easier for them as well who have to approve these things. So rather than me going backwards and forwards with 20 requests for approvals, I've just gone for the one and it's been signed off[…] It would have been difficult […] if we had 20 different providers coming at us with 20 different solution, the speed that we are able to work at to get the devices approved it would not have been that quick, we'd still have been here now going backwards and forward between different providers, it's helped us fast forward things." (*Pandemic interviewee HMPPS1*)*

The participant here states clearly that dealing with multiple providers and multiple contact points would have slowed the progress of implementation and approval.

6.8.5 Infrastructure limited implementation, prompting consideration of novel solutions

Existing prison infrastructure at the outset of the pandemic was not conducive to the deployment of telemedicine technologies. Hardwired internet connections remained unreliable, and mobile internet solutions were illegal in prison settings. The pandemic acted as a catalyst for HMPPS teams to consider how they could support healthcare teams to mitigate infrastructure issues to deliver video consultations.

Prison healthcare teams are known to be somewhat behind in terms of digital innovation in comparison to community settings, as described by this participant:

> *"[…]in terms of digital innovation in delivery of healthcare in prisons,* ***I think it's fair to say that prisons healthcare has often been a significant number of years behind development of wider primary care.*** *So, naturally when start working in a prison setting, you realise you're already quite a significant way behind, in terms of for example, clinical IT systems." (*Pandemic interviewee 3)

In 2017, the prison system embarked on the Digital Prisons Programme to improve prison performance and safety, and prisoner outcomes.(294) Notably, at no point in the programme's lifespan was the use of technology to support NHS services mentioned. Indeed the pandemic appeared to be a major catalyst to support

NHS/HMPPS to collaboratively consider the use of technology in prisons for healthcare function.

Key to the delivery of video consultations is an internet connection sufficient to support use. Poor video quality is known to negatively impact consultations.(262) Within the prison system this presented an important infrastructure issue. Since 2017 all healthcare organisations in England, including prison healthcare departments, have been going through the process of transitioning from the old NHS N3 broadband network to the new Health and Social Care Network (HSCN).(295) Existing N3 connections in prisons lack adequate connectivity to support telemedicine services; therefore, prisons wishing to undertake video consultations need to wait until their HSCN upgrade is completed. At the point of the pandemic declaration, approximately 50 prison sites (out of 118 total prisons) were still operating over the N3 network, meaning they were unable to video call from NHS computers connected to this network in the prison. Indeed, the delays in delivery of HSCN upgrades precluded immediate scale up of the local prison-hospital telemedicine model. Urgent investigations from NHS Digital suggested a handful could be reconfigured by existing network providers, but most remained stuck with this below par connectivity for the immediate future. The introduction of traditional PC based telemedicine alone across the prison estate would therefore have effectively left these prisons ‘out in the cold’.

In community healthcare settings poor connectivity is negated with the availability of secure VPN (Virtual Private Network) connections, widespread availability of Wi-Fi and 4G signal, giving clinicians and patients multiple opportunities to access video calls. Yet at the start of the pandemic all these options were forbidden in English prison settings. HMPPS sets strict standards for digital technology use and as standard prohibits the possession and use of mobile phones and other 4G, Wi-Fi and Bluetooth-enabled devices within prisons, to reduce the risk of unauthorised communications by prisoners.(296) Prisons themselves tend to be antiquated in their use of technology. Secure Wi-Fi is available in only a handful of establishments for very specific purposes and old concrete and iron heavy prison building designs tend to limit install and use of new digital systems.(297) This issue of connectivity, despite being critical to NHS service delivery, therefore became an issue to be solved through the channels and cooperation of HMPPS.

At first, the use of secure video court links for telemedicine calls was proposed as an option to mitigate poor NHS connectivity. Although not present in all prisons, much of the estate had moved to the provision of video links for court appearances, removing the need to transport individuals to court premises for hearings. Delivery of telemedicine services over court links may have been a possibility in some prisons, however this solution was far from perfect. Numbers of court hearings had been limited, but not ceased, throughout the pandemic, meaning the rooms would be required for other purposes aside from health. Questions arose as to how clinicians would dial in to the court links from remote locations, how rooms could be disinfected between uses, privacy issues in open phone-booth type systems and what to do with the remaining N3 prisons with no court facilities.

The pandemic did not only expose clearly a limiting factor precluding digital revolution of healthcare in prisons, but also presented an opportunity to lift barriers and to push for change. The limitations to connectivity drove HMPPS to propose an unexpected solution. To mitigate the issues with poor connectivity in prisons, HMPPS supported legislation changes to allow introduction of 4G-enabled tablets in to the prison environment for telemedicine and medication delivery functions. Use of 4G devices in prisons and other secure settings was prior to this point illegal, risking a prison sentence for anyone in possession of such items in prison. Providers and commissioners had long advocated for consideration of how these items could be introduced for healthcare delivery functions in prisons but their use was considered by HMPPS to carry too much risk. Approval to use these items in prison was an unprecedented change, welcomed wholeheartedly by the NHS, especially since the approval was promised to remain beyond the pandemic. For many this was considered a ‘silver lining’ to an otherwise grave situation. Despite the rapid approvals for 4G technology, tablets still took several months to deploy, and at large expense, due to the bespoke configurations required to operationalise tablets in a secure environment, abiding by HMPPS rules. These rules included guidance and restrictions on SIM cards, removal of items such as web browsers and app stores, multi factor authentication, robust tablets (e.g. use of gorilla glass) and remote wiping of devices.

The pandemic demand gave the prison health service an approved device and system which can now be explored in more settings. Indeed, during the writing of this chapter

I was asked to discuss telemedicine/4G tablet deployment within Welsh prisons, Northern Ireland justice settings, courts, probation hostels and police custody. Despite years of slow progress the COVID-19 pandemic united health and justice digital teams and demonstrated that it was possible to make technology that's main aim and purpose is for healthcare delivery, secure to a level expected by HMPPS. As described by the following interview participant, undertaking this work from a national NHSE perspective most likely gave HMPPS confidence that consistent security rules and guidance would be applied across providers:

> *"[…] I know we've had to negotiate with some our healthcare providers who think that they've got a fairly good system already going that they develop locally and they were way in front of us all and it all catching up with us. But then maybe it's not as secure as it should be and maybe it isn't legally what we now to do as a national system with our partners, and so I think negotiation has had to be how you bring those elements together. […]* ***the outcome is one that we would not have been able to get in security terms and consistency and acceptance without it being a national pandemic partnership response to the way that prisons need to work****." (*Pandemic interviewee 2)

The interviewee also suggests that despite some providers acting as trailblazers with technology, they may have applied less scrutiny to the security and governance aspects, which were more controllable by taking a national stance on deployment. Looking to the future, questions will likely arise from providers as to whether a national stance can be taken to approve top down rollout for other technology on their behalf such as wearables and in-cell monitoring of patients.

One interviewee also spoke enthusiastically about the 'piggybacking' of approvals for mobile electronic health records on the back of the pandemic telemedicine approvals. Prison providers have long advocated for an opportunity to access health records on a mobile device at locations around the prison, to assist with medication delivery to cells, review of patients in solitary confinement and reactive care in emergency situations. Once the mobile devices were approved for pandemic telemedicine the opportunity was seized to request dual purpose use to allow access to patient electronic health records functionality. This was granted by HMPPS and incorporated in the final secure tablet build. The following participant discusses with enthusiasm

how they think mobile medical records will benefit prison healthcare teams and their patients:

> *"It's massive. You can see since we've been working on this,* ***kind of the penny dropping*** *with people and they're thinking 'Wow', if we've got a whole wing that's locked down, not only can we do telemedicine in the cell to a clinician that's outside, but we can also give them some medicine and administer it on the tablet, and it updates in real-time. […] I think having the two things together [...]* ***people are starting to realise all the different things they can use this for****. It's brilliant"* (Pandemic interviewee 9)

6.8.6 The real implementation struggle starts now

Implementing digital innovations in healthcare settings is prone to failure.(1, 102, 103, 298) Changing health care practice through the use of technology represents a complex intervention, requiring staff to adapt working styles, clinical services and administrative support to deliver new or existing functions using unfamiliar technology. During the early implementation period we struggled with even very basic tasks such as encouraging users to activate their software licences, many of whom presumed the invitation to video call in prison was unapproved and consequently the invitation was viewed as 'spam'. In parallel, despite centralised communications surrounding approvals for tablets and telemedicine from HMPPS, many prison Governors missed these messages and initially pushed back on telemedicine deployment due to concerns that it was not approved for use in prisons. Ultimately, all these setbacks were remedied through robust communications, but required dedicated time to raise awareness that the system was approved, let alone support early use.

In prison settings, there was an additional hurdle prior to reaching the staff adoption and acceptance stage, relating to the approvals and scrutiny of HMPPS. Once this approval was received, we struggled to convince staff to adopt the new telemedicine system for use in daily practice. Due to the lengthy approvals process and design of the bespoke tablet technology, telemedicine did not roll out in prisons at the initial peak of the pandemic. Staff were less eager to adopt a new way of working when the benefits of the technology to mitigate service delivery challenges caused by the pandemic were less obvious:

> *"[…]**we're almost going back into restoring and recovering it becomes less high on the agenda.** So we get a second wave and then people start picking this up again. **Because it is easy to go back to what you've always done than it is to continue pushing something new because you've got to invest more time**. You might gain in the long run but it is the initial, starting up and we've found that when we've been implementing new stuff with our clinical IT systems. You know, unless you're constantly picking up with them and on their backs saying, "Have you done this?" Or, "This is an issue" then they'll be, like, "Oh we've gone back to doing it this way". So I think it is that constant messaging." (*Pandemic interviewee 6)

Rollout of the telemedicine system occurred in 135 separate sites concurrently, representing all English prisons, Immigration Removal Centres and establishments in the Children and Young person's Secure Estate. Each of these sites had unique characteristics and stakeholders, meaning that implementation was likely to proceed differently at every site. It is highly unlikely a standard implementation plan would have involved concurrent rollout to all sites prior to the pandemic. This large-scale approach, although equitable and responsive to the pandemic, caused complexities with organisational delivery and a lack of ability to provide in-depth implementation support to individual sites. In the future, individual sites or provider teams will develop usage of the telemedicine system through their own enthusiasm. Services may be encouraged to optimise use of the telemedicine system through judicious use of commissioner monitoring mechanisms, as described in the following quotation:

> *"I think that the Regional Commissioners need to have it embedded into any of their contracts and KPIs moving forward when they're re-commissioning services. Because you need to see a core line in there, around what they expect as service deliverables." (*Pandemic interviewee 6)

The participant is alluding to the point that service providers are more likely to adopt a new way of working if service metrics are required as part of their contract. This point was confirmed by provider staff in the pre-pandemic staff interviews when one participant admitted that hospital appointments were not a priority for development as they were not captured in standard reporting measures. Looking to the future, NHSE H&J regional commissioners may be able to encourage innovation using telemedicine by specifically writing terms within contract tenders requiring service delivery using telemedicine.

There are many barriers to getting technology implemented in prisons (with or without the pandemic), even before staff must be convinced to adopt it: overcoming approvals with HMPPS, convincing prison-based staff that the intervention **is** approved, and breaking down barriers between community and prison-based healthcare teams. These hurdles need to be completed before staff adoption work in practice can even begin to proceed, and before digital equivalence can start to progress.

As a result of the pandemic push for telemedicine every single English prison, Immigration Removal Centre and part of the Children's and Young Person's Secure Estate now has approved videoconferencing software licences for the majority of prison healthcare staff, who will chaperone patient appointments. Where broadband is sufficient, sites have capability to make telemedicine calls on static desktop healthcare PCs using webcams, which also had to be approved by HMPPS given the risks cameras can pose in secure prison establishments. All sites now also have access to a 4G tablet, pre-loaded with both the approved telemedicine software and enabled to access patient electronic health records on a mobile basis, through secure remote connection to the NHS Health and Social Care Network. Tablets are built to a bespoke design to meet HMPPS requirements, removing all unnecessary software and access to the internet, and requiring dual factor authentication for any staff users. Although this hardware and software may seem 'basic' to those working in general community environments, the introduction of this equipment has been seen as 'revolutionary' within the risk adverse prison estate. Prison healthcare teams have been encouraged to think broadly as to how best they can use telemedicine to support service delivery and continuity, with a sample of a staff facing infographic related to prison telemedicine uses shown in Figure 25 (p.206).

Figure 25 Prison healthcare staff infographic on telemedicine uses

At the point of writing this account I am working with NHS England, HMPPS and the Ministry of Justice to understand how telemedicine could bring 'through the gate' contact with community substance misuse teams, 'behind the gate'. This would mean people could engage with their community substance misuse treatment team before release from prison, hopefully improving care continuity. In parallel prison providers are currently trying to establish relationships with individual acute hospital trusts that serve their prisons, to build telemedicine connections. Apart from the technological platform, there is no 'one size fits all' approach to delivering prison-hospital telemedicine which considerably increases the work required and the time taken to establish a shared, sustainable service. The true implementation burden of a national prison telemedicine system stretches further than just prison-based providers,

ensuring external providers are aware of the ability to undertake remote consultations with prisons, designing care pathways and enabling processes are the next steps towards realising the full benefits of this system.

6.9 Discussion

Telemedicine implementation became a priority for both the NHS and HMPPS during the pandemic, and subsequently progressed more rapidly than it ever had before. Previous issues with ownership, infrastructure and HMPPS approvals for technology were rapidly overcome. However, telemedicine implementation remained complicated by the multiplicity of providers across the prison estate and progressed more slowly than in community settings due to the additional approvals required from the prison service. Getting the technology approved and in place was only the first hurdle. Looking to the future staff barriers to use and normalisation are still to be overcome and prisons will need to work with local community healthcare organisations to ensure interoperability of their different telemedicine systems. Despite the pandemic pressures, at what is currently nine months since the first English lockdown, we are now only just at the point where prison providers are equipped with telemedicine technology and trained in its use. As yet few clinics have been established and many providers will now have to continue developing these as we battle a new winter wave of the pandemic.

In Table 12 (p.208) I have reflected back on the practical recommendations for prison telemedicine implementation I concluded with in Chapter 5 (p.165), prior to the unfolding pandemic situation. I have tried to understand whether these were indeed relevant to the national rollout plans as hypothesised prior to the pandemic rollout.

Table 12 Reflections on practical recommendations for prison telemedicine implementation

PRE-PANDEMIC Practical Recommendations For Prison Telemedicine Implementation	PANDEMIC TELEMEDICINE NATIONAL ROLLOUT Actions undertaken
Outer System related actions	
Make prison health a priority through integration of prisoner focussed programmes into existing community health workstreams, such as 'hard to reach' populations	X Not actioned, not required to gain support – may be required in future to get clinics established and running
Establish prison-community healthcare forums to allow hospital and prison healthcare stakeholders to work in partnership	√ Prison providers are being supported to establish these forums with local hospitals, although many lack information on who to approach within the hospital
Establish who is best placed to take ownership and lead the development of prison telemedicine across the health system	√ Ownership taken by the national NHSE H&J team
Map departments/stakeholders (across both providers) who need to be involved in prison telemedicine development at outset and identify and engage senior (macro) managers to form part of the general dual provider implementation steering group	X Not actioned
Establish telemedicine champions that span the prison and health system	√ Network of telemedicine champions established for all sites in England
Clarify the role of NHSE in prison telemedicine implementation	√ Role of NHSE very clearly defined in leading the national telemedicine rollout
Provide national targets for the delivery of telemedicine services	X Not actioned, not required to gain support
Clearly demonstrate where prison telemedicine aligns with recommendations from national and local polices when making a case for a new service	√ General alignment of prison telemedicine with the telemedicine revolution in community settings

PRE-PANDEMIC Practical Recommendations For Prison Telemedicine Implementation	PANDEMIC TELEMEDICINE NATIONAL ROLLOUT Actions undertaken
Use existing NHSE H&J commissioner links to CCGs contracted to provide secondary care services, to try and establish networks between prison provider and community organisations	√ **/X** Commissioner support given to providers to forge hospital links in some regions, but remains inconsistent
Raise the profile of prisoner health with community based hospital providers – utilise knowledge and enthusiasm of local champions as advocates and provide data on unmet need/associated poor health outcomes	√ Prison providers given support to understand data that may be of interest to hospital services when shaping telemedicine services e.g. cancellations, referral to treatment times
Inner setting related actions	
Consider what additional resource could be made available to support prison healthcare teams with implementation tasks	√ **/X** Conversations ongoing
Involve patients in the design of the telemedicine service so staff are reassured they will be likely to accept the model as a method of healthcare delivery	**X** Not actioned given the lockdown in prisons. However ongoing patient acceptability research will help frame the evolving telemedicine model
Frame telemedicine as an intervention to improve equivalence of care and outcomes for patients through a holistic approach to join up partners both internal and external to the prison	√ Pilot models in development to bring 'through the gate' services 'behind the gate' e.g. first contact with community substance misuse team via telemedicine whilst inside prison
Provide guidance on identifying departmental leadership required to deliver prison telemedicine	√ Prison providers given support to understand who may be a good point of contact within hospitals to approach for telemedicine service delivery
Communicate plans and information about telemedicine implementation through to frontline staff from outset	√ Communication via email, online platform, monthly champion forums, webinars, newsletters
Establish local operational delivery groups to build a shared understanding of roles and responsibilities in telemedicine implementation and operation	√ **/X** Varies by region, some local groups established
Specify what role/tasks will be undertaken by members of the implementation team, demonstrating their alignment	**X** Not actioned

PRE-PANDEMIC Practical Recommendations For Prison Telemedicine Implementation	PANDEMIC TELEMEDICINE NATIONAL ROLLOUT Actions undertaken
with individual's current objectives even if these are not traditionally prison-based	
Communicate expected benefits of prison telemedicine implementation to providers e.g. test-bed for community models, future contract advantage	√ Expected benefits of engagement with prison telemedicine were communicated to community providers (e.g. hospitals) via national communication channels.
Consider how to incentivise delivery of prison telemedicine to provider organisations e.g. contract KPIs, financial reimbursement and appointment tariffs	**X** Not actioned, not required to gain initial support but may be a future consideration to retain momentum
Communicate staff benefits realised in other prison telemedicine models e.g. upskilling of staff	√ Expected benefits communicated in provider communications
Evaluation and monitoring	
Evaluate operational telemedicine models to provide evidence on cost effectiveness	√ Health economic evaluation incorporated into onward analysis plan
Consider use of rewards/incentives/telemedicine KPIs related to telemedicine model development and use	**X** Not actioned for pilot, may be considered post pilot period
Operational/delivery actions	
Have a clear process for obtaining IT support	√ IT support channels provided through national NHSE H&J team liaison
Provide telemedicine staff training	√ IT training provided through national NHSE H&J team liaison
Opt for a videoconferencing software that has been approved by HMPPS already	√ An approved videoconferencing software was rapidly chosen for use
Use local telemedicine implementation groups to design appointment triage/booking processes with both providers	√ Prison providers have accepted responsibility to develop booking process with their local community providers
Consider staff chaperone requirement within telemedicine business cases and future staff proposals	**X** As yet this still remained a concern for prison healthcare providers

PRE-PANDEMIC Practical Recommendations For Prison Telemedicine Implementation	PANDEMIC TELEMEDICINE NATIONAL ROLLOUT Actions undertaken
Ensure hospitals can access electronic health records remotely	**X** Not actioned, not required to gain initial support from hospitals who have engaged, but may be a future consideration to retain momentum
Work with prisons to reduce impact of regime on telemedicine	√ HMPPS approved mobile 4G technology for telemedicine use to reduce impact of prison lockdown regime on telemedicine usability
Ensure prison officers understand telemedicine and need to escort patients to healthcare	**X** Not actioned, not required to gain initial support but may be a future consideration to retain momentum
Explain prison regime issues to hospital clinicians in advance of deployment so they understand if appointments are cancelled	**X** Not actioned, not required to gain initial support but may be a future consideration to retain momentum
Communicate cancellations to the hospital/prison at the earliest opportunity	√ **/X** Responsibility for this action passed to prison healthcare providers
Work with areas that have already implemented prison telemedicine to learn from their experiences	√ International collaborations drawn on to inform model development

Reflecting on Table 12 (p.208) some telemedicine implementation actions became less important given the pandemic national 'emergency' context. The presence of national delivery targets, and the need to show how the prison telemedicine agenda linked to existing community workstreams was unsurprisingly not required. With the impetus on a nationally-led implementation programme, local stakeholder mapping and assignment of core implementation roles amongst local teams were also not required. However, many of the suggestions from Chapter 5 remained relevant and were indeed actioned during the pandemic rollout. Regional steering groups were formed, telemedicine site champions formed crucial communication channels and ownership by NHSE was quickly established. As the telemedicine system develops over the coming months and years we recommend some actions are re-visited, such as the engagement of patients in service design and communications to prison officers.

Digital solutions for health are increasingly becoming part of everyday care delivery in community settings, and became yet even more important due to the contextual shift in the form of the COVID-19 pandemic. For nearly 40 years, the importance of achieving a healthcare service for prisoners that is deemed 'equivalent' to that available in the community has been an international ethical and moral principle(299-301). The pandemic further exposed a need to ensure 'digital equivalence' could be rapidly achieved in prisons to maintain healthcare service continuity for their vulnerable population group.(268)

The NHS as a whole has not traditionally been lauded as an organisation which readily embraces digital innovation. Issues with the fragmentation of services and commissioning, the interoperability of digital systems, financial issues and evidence of effectiveness have hampered previous widespread adoption and scale of digital innovations.(293, 302) This situation appeared to be magnified in the prison setting due to the additional presence and security concerns of the prison system. Prison healthcare teams remained bound by both NHS digital frameworks and policy and also the secure boundaries of the prison system. The pandemic appeared to be a major catalyst to support NHS/HMPPS to collaboratively consider the use of technology in prisons for healthcare function. HMPPS digital teams quickly established a strong partnership approach with the NHS to facilitate digital innovation introduction in

support of pandemic response. This is yet one example of the increased collaborative working evident across government sectors which was driven by the pandemic. We must ensure than when we return to service delivery 'as usual' these partnerships remain nurtured and productive. Consideration should be given as to how health and justice bodies continue to work closely to implement novel technology and also to assess whether digital innovations can be repurposed from one department to another.

Despite a national drive to expedite telemedicine usage across England, prisons were unable to use the services rapidly procured and deployed in community health care settings due to security restrictions. Many hospital trusts also struggled to understand *why* they should use a new software for prison-based video consultations when a functional option was already available in their organisation and being used for general community patients. It may be that some education is required for organisations that commission or use IT systems which will interface with prison patients, to ensure they are aware of the dual nature of scrutiny from both an NHS and an HMPPS perspective.

Centralisation of the prison telemedicine implementation process bought both gains and complexities. Procurement of a centrally mandated telemedicine service for use by all providers was complicated by provider multiplicity, resource available to implement and subsequent compatibility with existing provider IT services. Yet, if implementation had been led solely at a regional commissioning level, it is probable that the presence of multiple localised implementation streams may have resulted in patchy services incompatible across the breadth of the national footprint, and poorer purchasing power for software licensing. Prison equity as a consequence of provider digital readiness should be considered in future technological rollout. Large, established prison healthcare providers tend to be in a better digital baseline position and may have already deployed innovations within their establishments inviting a type of 'digital postcode lottery' in regards to NHS services by prison. Future digital funding should acknowledge these inequities and aim to bring those most behind up to the same digital service level as the most advanced healthcare teams.

HMPPS traditionally displays high levels of anxiety regarding introduction of digital technology in prisons and it is likely that familiarity and trust may have played a role in

expediting telemedicine acceptance. Not only has prison telemedicine been adopted safely in high income countries worldwide and subject to a few English pilot models,(250) it also holds similarities to the HMPPS court video link system, whereby offenders dial in to court appearances over a secure internet connection in the prison. In regards to trust, the NHS has safely operated a national healthcare IT system across the prison estate without security incident or threat since 2009, likely to have reduced prison service anxiety over NHS ability to manage healthcare IT securely. Interventions which are new both to the community setting and prisons will probably be viewed with more scepticism. Robust security evaluations of new digital technologies should be undertaken at early time-points to ensure that prisons are not left in a position whereby they can only adopt innovations after they have become commonplace in the community. At a time when the world looks to technology to support and advance healthcare services senior decision makers must ensure the prison healthcare system is able to keep pace with community developments, or risk falling yet even further behind leading to greater patient disadvantage. In future we should look to learn from prisons in countries where digital technology usage is at an advanced stage, such as the USA. Had mobile devices or telemedicine been in place at scale prior to the pandemic English prisons could have essentially 'hit the ground running' in efforts to maintain healthcare continuity.

Although this discussion focusses on the issues affecting rollout of telemedicine, these principles could be applied across the whole spectrum of healthcare technology. Telemedicine, although a big step change in care delivery, will still always be conducted in the presence of a healthcare chaperone, at no point will patients have private possession of the equipment or internet link. Providers will no doubt face further challenges to rollout of in-person possession of technology such as wearables or remote sensors in prisons. With the aging prison population(303) great benefits could be foreseen with the use of healthcare devices that can be worn on the person (wearables) to predict falls. Wearable use is also in development for monitoring of mental health, heart disease and physical inactivity, all known as issues prevalent in prison populations.(304-306) Introduction of widely available telephone systems in prisons which allow prisoners to talk to healthcare providers both internal and external to the prison, and access to healthcare information on the internet would also improve patient autonomy and ability to undertake self-care. The prison environment is not

traditionally conducive to promoting autonomy, fundamentally undermining the principle of equivalence.(307) Allowing patients to independently access community telephone services such as IAPT psychological therapies, or out of hours mental health support would no doubt offer benefits given the huge burden of mental health issues amongst prison populations.(306)

The long-term repercussions of reduced in-prison healthcare services due to in-cell confinement and reduced healthcare staffing will likely echo past the pandemic. At the point of writing the full community lockdown policy in England is starting to lift, yet prisoners still remain in their cells for up to 23 hours per day. Telemedicine will be used to try and provide additional health service delivery in prisons to reduce the widening of existing health inequalities as a consequence of the pandemic. Healthcare teams need to be enabled to make full use of the system, be fully supported with maintenance and training functions and equipped to maximise usage to support benefits realisation. The NHS will also need to consider whether other digital technologies such as remote peripherals and digital healthcare apps have a role in improving health in prison, then work with the prison system to understand how to operationalise these securely. In parallel we must ensure that national bodies charged with the review, procurement and implementation of healthcare technology at scale do not forget the justice system in their efforts.

Failure to keep pace with the rapid adoption of digital innovation in the community in response to the pandemic will widen digital in-equivalence in prisons. Prison are already behind the accelerating curve of community implementation, and risk falling further behind, bringing even greater patient disadvantage, if momentum is not maintained. A period of economic uncertainty is likely to follow in the wake of COVID-19. Austerity alone is known to have wide reaching consequences in prison environments(308) we must hope austerity measures do not negatively impact digital advances in prisons.

6.10 Strengths and limitations of this research chapter

Through my legitimate role in telemedicine implementation I was able to gather insight and rich data based on my personal experience and observations of others, which

would otherwise not have been available to study. I was also able to build connections with national leaders so I could approach them for interviews.

However, this insider access granted through my legitimate healthcare role came at a cost to my research reporting. At the time of data collection for this chapter I had become a trusted person by both HMPPS and NHS England, given my commitment and assistance in telemedicine implementation. Although this gave me access to data and insights others may have struggled to gather, it also caused me conflict in terms of reporting my honest feelings related to implementation issues. I had come to understand through my clinical academic role the pressures and the scrutiny that prison healthcare is subject to, and I had empathy for the people delivering under these circumstances. A non-embedded researcher may have felt more comfortable surfacing honestly the tensions and issues encountered during implementation, yet I was at all times mindful that these were people doing their best under difficult circumstances, and may have made concessions for issues others would have noted. Struggling with concerns about disclosure or betrayal in autoethnography is a topic that is reported openly in the literature.(309-311) I was also aware that my future career path would likely mean that I worked with these teams, or indeed would be interviewed by these individuals in the future, meaning that I guarded myself from harm by ensuring I presented an accurate but potentially less emotive account of my experiences.

Limitations may also include over-reliance on my personal narrative, which could limit conclusions. Use of senior stakeholder interviews and reference of national documents complemented my personal perspective. I was also only able to interview two colleagues from HMPPS. However, this is representative of the people who were involved with the implementation aspect from their organisation.

6.11 Conclusion

In Chapter 5, completed prior to the COVID-19 pandemic I concluded that ‘the outer context needs to change to make prison telemedicine a priority’. The outer context did change with the pandemic, and did indeed make telemedicine a priority, ensuring support, resource and ownership was granted. Yet despite a concerted effort across numerous partners to provide digital equivalence in prisons at speed for pandemic

response, additional barriers meant that prisons remained distinct from solutions deployed in communities and were required to find complex alternatives that satisfied security rules. This was ultimately achieved, but at a slower pace than in community settings meaning digital consultations were not available during the first pandemic peak.

Failure to achieve digital equivalence may further exacerbate health issues in a population who struggles for equivalence across the whole facet of health services. Achieving ‘digital equality’ is a fundamental component to support initiatives aimed at improving health outcomes in prison and it took a pandemic catalyse this. In the absence of digital equality it will become increasingly more difficult to fulfil and measure health related objectives. Healthcare benefits accrued by patients in prisons are known to be transmitted to the wider community on release (312-314) contributing to a reduction in social inequalities in health. Striving for equivalence, and as a sub-theme digital equivalence, therefore aims to both achieve equivalent health outcomes for prisoners and invest in the health of our society(315, 316).

Chapter 7 Conclusion of this research

This is the first research to study the rationale for, and the implementation of, telemedicine for delivery of secondary health care services to prisoners in England. The research within this thesis is made unique by the time periods in which it took place, both prior to the COVID-19 pandemic (Chapter 3-5), and then during the first wave of the COVID-19 pandemic in 2020 (Chapter 6).

The original research plan for this thesis was conceived prior to the COVID-19 pandemic, at which point telemedicine use in English prisons was in its infancy. The original research sought to learn from a small scale prison telemedicine implementation pilot, to inform and scale up telemedicine implementation across English prison sites. In early 2020, just over halfway through this PhD research, the COVID-19 pandemic materialised. My PhD and prior telemedicine implementation experience allowed me to support national prison telemedicine rollout as part of the pandemic response. The objectives of this thesis subsequently changed. Those relating to evaluation of the model as a mode of healthcare delivery will now be assessed on a national scale over the next two years (2021-2022), using the original plans developed for the local evaluation as part of this research.

This thesis answers the following research questions:

- What are prisoner's current experiences of secondary healthcare?
- Does telemedicine have the potential to mitigate any of the barriers and problems to accessing secondary care as reported by patients in prison?
- What factors are known to affect the implementation of prison telemedicine models in other countries?
- What factors affect the implementation and normalisation of a local hospital-prison telemedicine model in England?
- How did the COVID-19 pandemic context affect the implementation of prison telemedicine in England?

7.1 Summary of research findings

The traditional face-to-face model of secondary care delivery at community hospital sites presents considerable issues for the prison population in England. Prisoners are unlikely to receive care equivalent to community patients in terms of access, quality and experience, when they need to physically travel to hospital sites for care. Prior to the pandemic many prisoners found the process of waiting for and attending off-site hospital appointments stressful, undignified and dehumanising. Use of telemedicine appeared to offer an opportunity to overcome many of these issues, as well as potentially offering a more cost effective model for health service delivery. During the pandemic a need to ensure sustainable access to secondary care for patients, plus other healthcare services, meant that the prison telemedicine agenda gained rapid traction in England. In parallel, community settings were switching to widespread telemedicine offerings as part of pandemic response. The adoption of telemedicine in prisons during the pandemic could therefore be considered in alignment with the principle of equivalence of care.(4)

The systematic review in Chapter 4 established that, prior to the pandemic, prison telemedicine had failed to find much traction outside of geographically diverse countries such as the USA and Australia. Countries with established prison telemedicine services reported implementation related issues regarding the priorities of different system partners, the need to secure top-down and bottom-up support, clinical compatibility and expected versus realised benefits of telemedicine. In Chapter 5, interviews with English prison and community health care provider staff echoed many of these international concerns but also revealed more specific implementation problems relating to the English context. Issues with the separation of their commissioning and governance structures of prison and community health, the additional overarching presence and scrutiny of the justice system, and the differing priorities of each party, meant that prison telemedicine had struggled with implementation and ownership despite initial enthusiasm from all stakeholders. Local telemedicine implementation problems appeared to be mainly caused by wider contextual issues of the inner and outer settings for the telemedicine model, as opposed to issues with commitment or delivery at the individual staff level.

Chapter 6 revealed that the ability to implement telemedicine in English prison settings took a dramatic turn with the advent of the COVID-19 pandemic, due to the shift in priorities of these inner and outer contexts. Pre-pandemic implementation barriers associated with a lack of ownership and the differing priorities of prison and community healthcare teams were removed almost immediately. The national NHSE healthcare commissioning team made prison telemedicine a priority, a message that was filtered through to regional commissioning teams and subsequently to their contracted providers in a top-down manner, making it hard for a provider organisation to refuse to support implementation. The challenging approval system and restrictions imposed by HMPPS on technology use were also quickly overcome in comparison to experiences before the pandemic. Evidence and case studies of prison telemedicine success in other countries was actively used to support the prison telemedicine agenda. Prison telemedicine, having struggled to find foothold in one small region of England over a period of four years, was subsequently rolled-out across 135 secure sites in England over the course of five months. The urgent nature of the pandemic prompted enhanced engagement and collaboration between the health and justice systems, and rapidly opened doors for approvals of novel technologies in prisons such as 4G tablets, which prior to the pandemic were illegal in prison settings. Yet, despite the 'can-do attitude' prompted amongst all parties by the pandemic, barriers remained relating to prison infrastructure, the complexity of prison commissioning and the inability of prison settings to adopt rapidly procured community telemedicine solutions which did not meet HMPPS security requirements.

7.1.1 Changes in the effect of theoretical domains throughout the research

The following theoretical frameworks were used to inform this research throughout:

Normalisation Process Theory (NPT)

- Coherence
- Cognitive Participation
- Collective Action
- Reflexive monitoring

Consolidated Framework for Implementation Research (CFIR)

- Outer setting (economic, political, and social context)
- Inner setting (structural, political, and cultural contexts through which the implementation process will proceed)

At the start of this research, with the goal of studying local prison telemedicine implementation to provide evidence and information for wider rollout, there was a perception that implementation itself would proceed quickly, but that adoption and normalisation amongst staff would be more troublesome. Pre-implementation staff interviews were designed to capture in-depth information relating to the staff based domains of NPT and also to the wider inner and outer cultural influences through the CFIR domains. Upon analysis of the data collected it became clear that implementation had not proceeded at pace as originally expected, mainly due to inner and outer setting influences. Staff understanding of and willingness to participate in telemedicine was evident, with frustration mainly directed at that the fact implementation was taking so long. I concluded that the inner and outer contextual conditions posed the biggest challenges to successful implementation.

The pandemic represented a contextual shift for implementation, significantly changing the ability to implement telemedicine. A comparison of the influence of the NPT and CFIR theoretical domains, both pre and during pandemic implementation are shown in Table 13 (p.222). NPT domains relating to staff commitment did not change significantly during the pandemic. Reasonable levels of individual staff understanding and buy-in had been generated in the local model during the previous three years of implementation work and the pandemic added further to coherence around use. Providers who were less familiar with telemedicine were quick to understand the rationale given the national leadership on the topic from NHS England. However, the urgency for implementation, and the national coordination prompted by the pandemic contextual shift in favour of telemedicine prioritisation (inner and outer setting factors), supported and permitted the rapid and widespread implementation efforts.

Table 13 Comparison of theoretical domains pre and during pandemic

Theoretical domain	Brief description	Pre-pandemic description	Pandemic description
NPT - Coherence	The **sense-making work** that people do individually and collectively when they are faced with the problem of operationalizing some set of practices	Good coherence (understanding) of the benefits of telemedicine and role of staff within implementation – built over a period of several years	Enhanced coherence around potential benefits for **pandemic** telemedicine. Telemedicine coherence was less established for providers who were new to the telemedicine agenda but quickly established through top down communications
NPT - Cognitive Participation	The **relational work** that people do to build and sustain a community of practice around a new technology or complex intervention	Other priorities for delivery meant providers could not always commit to initiation work however legitimation and enrolment (i.e. buy-in) in the tasks of implementation were built over a period of several years	Legitimation and enrolment limited for some providers who were new to the telemedicine agenda, but quickly established through top down communications and support National scrutiny on activation of the telemedicine service encouraged cognitive participation
NPT – Collective Action	The **operational work** that people do to enact a set of practices, whether these	Focus on collective action at the provider level. Willingness to deliver operational work was based	Collective action undertaken nationally on behalf of all providers (e.g. software approvals) by NHSE/HMPPS. National top-down emphasis on provider operational

Theoretical domain	Brief description	Pre-pandemic description	Pandemic description
	represent a new technology or complex healthcare intervention.	on provider enthusiasm/engagement	delivery of telemedicine encouraged implementation. Ongoing collective action required to deliver actual clinics.
NPT – Reflexive monitoring	The **appraisal work** that people do to assess and understand the ways that a new set of practices affect them and others around them.	Not assessed at implementation stage	Onward plans in development to evaluate the telemedicine service. Champions community established to allow for communal reflexive monitoring and sharing of best practice nationally
CFIR – Inner setting	Characteristics of the implementing organization such as team culture, compatibility and relative priority of the intervention, structures for goal-setting and feedback, leadership engagement, and the implementation climate.	Telemedicine not a priority for delivery amongst providers. Provider issues such as internal complexities and short term contracts also limited ability to implement	Telemedicine a priority given national and local operational emphasis to ensure continued delivery of healthcare. Focus not just on prison-hospital telemedicine, but on in-provider telemedicine (e.g. GPs) to maintain in prison service continuity, reducing the need to build community relationships to start using the model immediately

Theoretical domain	Brief description	Pre-pandemic description	Pandemic description
CFIR – Outer setting	External influences on intervention implementation including patient needs and resources, cosmopolitanism or the level at which the implementing organization is networked with other organizations, peer pressure, and external policies and incentives	Prison telemedicine was not a system priority which limited resource available for implementation. Community and prison health providers were not networked, complicating implementation.	Prison telemedicine became a priority for systems as it was in general community settings. Outer setting system partners (NHS/HMPPS) took responsibility for assuring and delivering the telemedicine capability, and providing resource and support for implementation

From this evidence we can surmise that implementation success for prison telemedicine was most strongly related to the inner and outer contextual settings and priorities. Individual staff engagement and enthusiasm, although likely to affect the level of engagement with telemedicine henceforth, did not heavily influence the ability to implement the telemedicine infrastructure.

The resulting telemedicine network across English prisons will now be appraised for its ability to improve the access, cost and quality of healthcare to prisoners on a larger scale than originally proposed at outset of this research.

7.2 How this research fits with the existing evidence base

This research builds on the existing evidence base in the following ways:

1) **Providing an in-depth study of issues that support or hinder telemedicine implementation processes in the English prison healthcare context**

To my knowledge this is the first study to research in detail, prison telemedicine implementation as opposed to the more traditional research focus on prison telemedicine outcomes. This builds on the evidence that in general supports use (through the demonstrable good outcomes of prison telemedicine 27, 113, 119, 129, 144, 149, 151, 175, 184, 193, 205, 206, 211, 223, 227) and considers what may be required to support successful implementation (Section 5.6.2 p.166, 7.4.3 p.239). A specific focus on the influence of the outer and inner contextual setting (5.5.3 p.143, **Error! Reference source not found.** p.**Error! Bookmark not defined.**), and the experiences of hospital staff in prison telemedicine implementation (5.5.2 p.127), provides new knowledge about the disparities between prison and community healthcare settings that has not been considered in-depth within previous prison telemedicine studies (4.3.7 p.107).

Previous non-prison studies have reported on the influence of organisational context on healthcare implementation projects. These found that similar ‘inner’ contextual issues were related to implementation success as were evidenced for prisons in this research, for example the influence of senior level leadership (4.3.3.1 p.91, 0 p.154), organisational champions (5.5.3.4 p.151) and good team networks (5.5.3 p.143) and

collaboration.(317-319) Similarly, existing evidence shows the importance of context on e-health implementation projects.(320) Lack of policies, standards and financial incentives have been shown to affect e-health implementation success at the outer context level, which I also found to be important in my research (4.3.3.4 p.95, 5.5.3.2 p.147, 5.6.2 p.166). This thesis builds on this evidence, to consider inner and outer contextual setting factors when a digital intervention is required to span two very different systems – prison and health (5.5.1 p.123, 5.5.3.1 p.146), and two different organisations (5.5.3.3 p.149), and the difficulties encountered relating to the different priorities (4.3.3.2 p.93; **Error! Reference source not found.** p.**Error! Bookmark not defined.**) and levels of benefits (4.3.3.4 p.95, 5.5.4.4 p.163) attributed to these systems. The lessons learnt in regards to problems and facilitators to bridge these differing systems (5.6.2 p.166, 6.8 p.185) may be applicable to future interventions that span prison-community contexts, for example remote health monitoring or 'through the gate' substance misuse service liaison.

The evidence in this thesis relating to the practical security considerations of prison related technologies (5.5.1.3 p.124, 6.8.3 p.190) and the influence of the prison regime on the ability to attend video appointments (5.5.1 p.123), adds another lens to recent research describing how to consider designing a community healthcare telemedicine model in terms of infrastructure and workflow.(321) Failure to consider prisons and their ability to access newly designed community digital appointments/infrastructure, will only serve to exacerbate existing inequalities (6.8.3 p.190, 6.8.6 p.203). Equally, some aspects of this wider community evidence, such as information on how best clinician-patient interactions can be managed (322) will likely be directly applicable to prison contexts. There is little evidence available yet as to which clinical specialities are best suited to telemedicine, however when available this will likely be applicable to both community and prison settings.

2) **Providing evidence of the issues prisoners face in accessing secondary care in England**

To our knowledge this is the first study to research prisoner experiences of secondary care in England (Chapter 3 p.45). This builds on previous research on prisoner healthcare experience related to in-prison services such as primary care, and

suggests that poor healthcare experience for prisoners is found in both internal (prison) and external (community) health services. (323, 324) My research has shown that secondary care presents some significant barriers to good clinical outcomes for prison populations, including long delays prior to appointments (3.2.1.4 p.60) and difficulties relaying accurate clinical information to prison healthcare teams via prison officers after appointments (3.2.1.3 p.57). Secondary care appointments include additional challenges for prisoners in comparison to in-prison primary care relating to the role of prison officers (3.2.1.3 p.57), the behaviours of secondary care staff (3.2.1.2 p.55, 3.2.1.3 p.57) (who unlike prison healthcare staff, will not be used to caring for prisoners) and the stigma and reaction of the public (3.2.1.2 p.55).

The research in this thesis highlights the important role that prison officers exert in hospital attendances (3.2.1.3 p.57). Prison officers do not have a routine role in attending in-prison primary care appointments and therefore the influence of the prison officer role does not appear to have been previously studied in relation to prisoner healthcare interactions. This research contributes to the large body of literature on the conflict prison officers face between providing support and maintaining authority and control, (325, 326) the role of soft-power,(327) and the type of 'care' they can provide more generally within the prison environment.(328)

There are some remaining research gaps in this area. Research to understand the feelings and experiences of prison officers acting as hospital appointment escorts, particularly during sensitive or emotive prisoner appointments, would provide further evidence to the 'caring' role prison officers have to assume by nature of their job. Understanding in more detail the role of the prison officer as an immediate information mediator when relaying clinical information from the hospital to prison healthcare teams would also be beneficial. Understanding these issues would support considerations of structural changes that may be required to improve the quality of the secondary care process. For example, identifying prison officers who hold a more caring and supportive role in the prison as preferred external escorts may be one way to improve healthcare experiences when people need to attend hospitals, equally the role of the prison officer as a patient advocate could be explored.

3) Highlighting similarities or differences in international/English evidence and between prison/non-prison telemedicine research

Research about prison telemedicine in England is in its infancy. While English prison telemedicine implementation projects can draw on the US literature there are some crucial differences. The US operates under very different healthcare and prison systems to England.(329) The US literature found core themes around benefits that did not occur in my research, related to litigation (121, 127, 159, 160, 164, 171, 228) and safety (66, 139, 149, 210, 223). The differences between the English and US health systems, including the outer commissioning context which I found to be critical to telemedicine implementation (5.5.3.1 p.146), suggest that telemedicine implementation projects in England should retain a specific focus on generating evidence directly relevant to the English context.

Some themes around benefits were reported consistently in both published US research and my staff interviews (5.5.3.2 p.147, 5.5.4.4 p.163), however even within these there were differences. For example, there were many reports relating to potential cost efficiencies of prison telemedicine (23, 25, 27, 35, 38, 44-48, 52, 55, 57, 82, 84, 94, 95, 109, 115, 118, 123, 125, 127-131, 133, 135-138, 141-143, 146, 147, 154-156, 159, 160, 163, 167, 168, 172, 173, 177, 184, 202, 205, 212, 215, 216, 220, 223, 224, 227, 228, 231, 233-235). My research shows that understanding the financial benefits in English settings are more complex given that prison telemedicine crosses several organisational budgets (5.5.3.2 p.147). The true cost/cost savings of English prison telemedicine models (including opportunity costs) to different stakeholders are yet to be determined, and is an area requiring future research. Other shared themes included those around improved access and care quality (27, 35, 38, 44, 52, 54, 55, 58, 59, 83, 95, 121, 127, 130, 131, 138, 141, 148, 151, 154, 161, 162, 169, 171, 174, 176, 184, 189, 191, 202, 212, 219, 220, 227, 231, 232, 234, 235, 237) however the US evidence cannot relate these to English principles such as referral to treatment targets.

I also identified additional themes not previously reported in the international prison telemedicine literature, particularly in relation to the interplay of the health and justice system in England. The dynamics between community health systems and prison

health systems (5.5.3 p.143), the lack of existing networks (5.5.3.3 p.149), the separation of commissioning (5.5.3.1 p.146) and the differing priorities (**Error! Reference source not found.** p.**Error! Bookmark not defined.**) were hugely important to the implementation work. This was evidenced not only under normal circumstances, but also to an extent in the pandemic context (6.8.3 p.190). This evidence shows the importance of context to prison telemedicine implementation work, as opposed solely to the traditional focus on transactional approaches to intervention delivery. These results also justify the macro to micro approach that was taken to examine influences on prison telemedicine implementation (5.1.2 p.112). Given the importance of organisational and systems context on the ability to implement prison telemedicine, future studies should also consider these domains in their evaluations of appraisals of the implementation climate.

Many factors relating to general telemedicine implementation studies were also related to prison telemedicine implementation, for example connectivity, confidentiality and clinical confidence in use. (259, 260) As understanding of these areas increase findings should be applied to the prison setting.

4) Providing evidence of the impact of a pandemic on implementation

This research, already in progress when the COVID-19 pandemic commenced, offered a unique opportunity to consider prison-telemedicine implementation factors influenced by a pandemic context (Chapter 6 p.177). There is not yet a definitive theorised account of how COVID-19 affected telemedicine implementation, which this research provides (Table 13 p.222). I discovered that the pandemic context positively influenced all of the theoretical domains under study in my research, making the inner and outer contexts view telemedicine as a priority (6.8.1 p.185), subsequently increasing staff coherence and commitment to delivery. Questions remain unanswered as to how staff and organisational attitudes towards telemedicine will develop and change as the pandemic subsides and re-starting face to face appointments at scale becomes more feasible.

Both the pandemic and non-pandemic staff interviews highlighted issues related to the complicated landscape of prison contract tendering (5.5.3.3 p.149, 6.8.4 p.195). This

has rarely been discussed in the existing evidence base.(291) This research expands on this issue and provides a concrete example (through study of telemedicine) of how prison contracting can affect implementation of new interventions, particularly relating to the short term nature of contracts (5.5.3.3 p.149) and the multiplicity of different providers (6.8.4 p.195).

7.3 Strengths and limitations of this thesis

Strengths and limitations of individual research chapters are reported in their chapter discussion. This section focusses on overall strengths and limitations of this research.

As discussed on page 110, the research plan for this thesis was conceived prior to the pandemic contextual shift in prison telemedicine deployment. Due to the pandemic changes in the telemedicine landscape and the moratorium imposed on prison-based research, several research questions originally proposed persist for future research. These questions remain important to stakeholders and include:

- Is telemedicine acceptable to patients in prison and staff delivering care?
- How does the access, quality and cost of secondary care in prison change with telemedicine?

These will be answered using data gathered on a national scale over the following 1-2 years pilot period.

The research plan at the start of this thesis aimed to gather information on prison telemedicine implementation and outcomes in a local geographically defined pilot site, to inform wider sustainable implementation efforts across England. Due to the pandemic influence prison telemedicine rolled out nationally at scale and pace, meaning an iterative implementation process could not feasibly take place as planned. Although this means more prisons sites have equipment in place as a result, it removed the option to refine implementation plans based on local findings, to offer implementation the best chance of success nationally, as advocated for in implementation literature.(64) For example, the original research protocol planned to deliver a validated NPT staff questionnaire to healthcare staff involved in use of the telemedicine system, both at outset of use and at a later stage in the research period.

This was unable to take place due to pandemic staffing pressures and hence missed a potential learning opportunity over the early use period.

Due to the research moratorium I was also unable to gather pre-telemedicine data from current prisoners as planned. The purpose of this data collection was to understand pre-emptive concerns about telemedicine, so that the model could be designed in light of these and also to ensure we could check whether these concerns had been mitigated in the post telemedicine interview series. A national advertising campaign within prisons for telemedicine has now been launched (on prison radio, TV and via posters) and it is likely most prisons will have had some experience of telemedicine by the time the research moratorium is lifted, therefore data collection may be biased. Although not specifically aimed at understanding views on telemedicine my qualitative research on the barriers faced by prisoners in accessing secondary care shed light on some of these issues. Future post-telemedicine interviews can ask participants how the experience compared to their pre-empted concerns for telemedicine.

Patient experience is a cornerstone of the NHS and failure to capture this data leaves a question mark hanging over the acceptability of telemedicine even if we have succeeded in implementation. Although failure to gather this data was a result of the pandemic moratorium on prison research, it stands as a gap in this thesis which needs to be filled in onwards research.

Another unusual factor in this research was my role as an embedded researcher with responsibilities for implementation. My presence had an effect both on the progress of the implementation and on my interpretation of the data gathered. I have reflected on this in 1.8 and throughout the course of this research with my supervisory team. This approach to implementing and understanding prison health reform was beneficial and may be a valuable approach to adopt in future research.

The strengths of this thesis lie in the methodology, which drew on an implementation theory and framework, alongside multiple data sources, to understand prison telemedicine implementation in both pre-pandemic and pandemic contexts. This thesis is the first to research implementation of a prison telemedicine model and to

consider in depth the interplay of the health and justice context in relation to interventions that span both systems.

7.4 Implications of these findings

When we consider the future of prison telemedicine in England we can contemplate both the operational future and complimentary research. Within a few years we will know more about the sustainability of the model without pandemic pressures and initial enthusiasm.

7.4.1 Future research

The widespread pandemic 'boom' of video consultations in general community settings has opened the door for a wealth of research on remote consulting. Although not necessarily related to prison settings, much of the evidence on community telemedicine consultations will likely be transferable. Recent research by Shaw et al(330) using conversation analysis to understand and improve remote interactions between physicians and patients is one example. Prison practitioners and commissioners should remain aware of the developing evidence base, and where possible, use community based data to inform telemedicine practice in prison settings.

Thinking more specifically of research in prison settings, alongside the aforementioned research questions relating to the patient experience, cost, access and the role of champions there are several other areas of prison telemedicine which may benefit from future research.

Firstly, as discussed in section 6.8.6, although the technical and operational hurdles for implementation on a national scale have been achieved, prison sites now face the very real task of reaching normalisation of telemedicine amongst staff users. Research to understand the clinical experience of healthcare staff in using telemedicine, and factors that help or hinder normalisation would be beneficial to improve adoption at 'laggard' sites.

Secondly, healthcare staff are rightly concerned that patients may disengage with the model if they find that having waited for a video consultation this was deemed inappropriate in practice, and they are subsequently referred to a long in-person wait

list for care. Although this situation may arise in the community, in prisons it is exacerbated by the effect of the prison escort system as discussed in Chapter 3. Once telemedicine has been running for some time it may be beneficial to gather data from clinicians, or if possible from electronic health records, as to which appointments were most suitable via telemedicine and which should/should not be triaged to telemedicine.

Thirdly, throughout the implementation process, both locally and nationally I have detected some dissent from clinicians, particularly amongst mental health professionals, that the virtual medium will be insufficient for consultations.(67) Research to understand more specifically their pre-conceived concerns about telemedicine, and how these concerns unfold over continued practice would be beneficial. There is a wide range of published literature from other countries such as the USA suggesting telepsychiatry/psychology is wholly effective over a virtual medium as described in Chapter 4. It would be of interest to understand whether English clinicians reach a similar conclusion after extended use, or whether differences between English and American practice preclude this shared acceptance of video mental health care in prison settings.

Fourth, amongst all these questions we must also remain alert and vigilant to the effect of telemedicine on health inequalities. We perceive telemedicine as a solution to improve access to care and care quality for patients, and this may indeed be the result for the majority of patients. However we must ensure that we do not widen inequalities if some patients are less able or willing to engage in telemedicine appointments for example aging prisoners, people with learning disabilities or people with mental health issues.

Fifth, we should consider the impact of digital inequalities beyond the prison gates. Many community healthcare services may remain with some default digital appointments after the pandemic. Failure to equip prison leavers with both the equipment and the skills to engage with digital healthcare initiatives will perpetuate these inequalities post release.

Finally, although not related solely to the telemedicine agenda, research to understand the opportunities and challenges presented by the future commissioning

arrangements for health and justice in parallel with the integration agenda, should be considered.

7.4.2 Lessons for telemedicine implementation

The findings in this thesis as a whole suggest that context is the most influential driver for prison-hospital telemedicine implementation success. By context we mean the policies, priorities and subsequent networks that exist in the health and care system at the time of implementation. Significant barriers were raised throughout by the separation of community and prison healthcare contexts, inner contextual issues within and between prison healthcare providers and the constant additional presence and scrutiny of the justice system. These barriers were overcome by enthusiastic individuals to maintain momentum, and by the circumstances of a national emergency to support rapid funding and action. Implementation of future digital interventions in prison settings may wish to consider some of the lessons learnt from the telemedicine implementation work, as many may be applicable to more general digital implementation projects.

A summary of the key recommendations from for prison telemedicine implementation drawn from the research in this thesis are shown in **Error! Reference source not found.** (p.**Error! Bookmark not defined.**).

Table 14 Key recommendations for prison telemedicine implementation

Research Chapter	Key recommendations for prison telemedicine implementation
Chapter 3 – What are prisoner's current experiences of accessing secondary healthcare?	Assessment of patient experience of telemedicine should include questions about: • Effect of knowing appointment time and date in advance (e.g. reduced anxiety, ability to prepare for appointment) • Effect of removing the prison officer role from the appointment, and subsequent effect of the presence of a healthcare chaperone in the telemedicine appointment • Effect on patient anxieties related to public shame and stigma e.g. use of handcuffs in public Assessment of telemedicine effectiveness should also consider: • Whether access delays are reduced • Whether cancellations decrease • Whether handover of clinical information improves
Chapter 4 – What are the opportunities and challenges to using telemedicine to improve access to care for prisoners?	• Consider barriers and benefits to implementation by provider (prison/community) • Consider local organisational priorities and their potential alignment with telemedicine to make a case for change • Make use of telemedicine champions • Consider carefully which clinical specialties to pilot based on healthcare need and peripherals required • Consider logistical questions regarding connectivity, equipment, training and troubleshooting prior to implementation • Gather process as well as outcome measures in evaluation work
Chapter 5 – Why is individual enthusiasm and good will inadequate to ensure successful	• Integrate telemedicine programmes into related community health/ICS workstreams • Provide national targets and leadership for the delivery of telemedicine services • Demonstrate where prison telemedicine aligns with recommendations from national and local polices

Research Chapter	Key recommendations for prison telemedicine implementation
implementation of prison telemedicine in local systems?	• Communicate expected benefits of prison telemedicine implementation to providers. It may help to frame telemedicine as an intervention to improve equivalence of care and outcomes • Consider how to incentivise delivery of prison telemedicine to provider organisations, using the same KPIs as community NHS services for telemedicine may be beneficial • Use existing commissioning links to establish networks between prison provider and community organisations • Try to raise the profile of prisoner health with community based hospital providers • Consider what additional resource commissioners could provide to support prison healthcare teams with implementation • Establish prison-community healthcare forums and telemedicine local operational delivery groups • Provide implementation teams with guidance on identifying departmental leadership • Identify champions and support them to span prison and community health providers • Map departments/stakeholders (across both providers) who need to be involved in prison telemedicine development at outset and identify and engage • Specify what role/tasks will be undertaken by members of the implementation team • Involve patients in the design of the telemedicine service • Communicate plans and information about telemedicine implementation through to frontline staff from outset, including staff benefits realised in other prison telemedicine models • Opt for a videoconferencing software that has been approved by HMPPS to meet essential security requirements

Research Chapter	Key recommendations for prison telemedicine implementation
	• Use local telemedicine implementation groups to design appointment triage/booking processes with both providers to ensure they fit the prison and hospital requirements • Work with prisons to reduce the impact of the regime on telemedicine and explain their role in the service (e.g. escorting patients to the healthcare department) • Explain prison regime issues to hospital clinicians in advance of deployment so they understand if appointments are cancelled. Communicate cancellations to the hospital/prison at the earliest opportunity • Provide staff training and a clear process for obtaining IT support • Facilitate remote access to prison patient electronic health records if required by the hospital • Consider staff chaperone requirement within telemedicine business cases and future staffing proposals • Work with areas that have already implemented prison telemedicine to learn from their experiences • Evaluate operational telemedicine models to provide evidence on cost effectiveness
Chapter 6 – Prison telemedicine and the Coronavirus pandemic	• Consider how best health and justice bodies can continue to work closely to implement/assess novel technology • Educate organisations that commission/use IT systems which interface with prison patients, to ensure they are aware of the dual nature of scrutiny from both an NHS and an HMPPS perspective • Approach digital implementation projects with the knowledge that centralised approach to digital technology and HMPPS approvals can possibly expedite roll-out • Consider how prison provider digital readiness may influence implementation of digital projects • Future digital funding should aim to improve digital equity amongst prison providers

Research Chapter	Key recommendations for prison telemedicine implementation
	• Robust security evaluations of new digital technologies should be undertaken at early time-points to ensure that prisons are not left in a position whereby they can only adopt innovations after they have become commonplace in the community • Learn from prisons in countries where digital technology usage is at an advanced stage, e.g. USA • Consider whether other digital technologies such as remote peripherals and digital healthcare apps have a role in improving health in prison • Consider possible implementation barriers at outset including: the dual nature of the health and justice systems, the limitations of prison infrastructure and the complexity of provider relationships in prison health.

7.4.3 Future challenges to normalisation of telemedicine

It is likely that the future of prison telemedicine will depend in part on the overall future of telemedicine in community settings, and the adoption and normalisation that takes place. Increased acceptance and delivery of virtual appointments may remove barriers to normal attendance of outpatient appointments, however other operational barriers relating to digital approvals and equipment may remain in prison settings.

Operationally the system is currently in its infancy, requiring nurturing and attention if it is to grow and develop sophisticated networks which improve healthcare services. Although telemedicine has in essence been 'implemented' across the prison estate as a result of the pandemic, this is not the same as being in full usage. Implementation of digital technology could be argued to represent a two-stage process. The first stage being the lengthy negotiations and assurance process with the prison and health system to agree on technology deployment, and then the process of establishing this intervention to sites spread across England. The second implementation stage refers to setting up and running telemedicine clinics. Although this is relatively straightforward for providers to organise with their own services (e.g. primary care) the separation of commissioning and poor networks means the task of establishing telemedicine clinics with community providers such as hospitals is burdensome. Prison providers now face the very real task of engaging with their local secondary providers at scale to set up care pathways over telemedicine. Although hospitals are now 'au fait' with video consultations given the pandemic shift in digital care delivery, they most often operate on different platforms to that approved for prison use, adding further complexity to day to day implementation and use. In addition, community NHS services continue to deal with on-going pressures of the pandemic. It is likely that the prison population will remain a low priority for new service development during this time, and also for service recovery post pandemic.

The staff interviews in Chapter 5 provided some specific advice and recommendations for establishing secondary care telemedicine clinics, which are important given that all prison healthcare providers are embarking on secondary care clinic development. These are summarised below:

- To ensure optimum benefits realisation for the telemedicine model, prison providers should also be encouraged to ‘think big’ around the potential uses of telemedicine, aside from the focus on secondary care

- Opportunities may include:
    - Pooling scarce resources across prison sites
    - Setting up specialist remote GP clinics with clinicians who have a particular interest in certain conditions (e.g. COPD, diabetes)
    - Remote virtual MDT hubs
    - Hub specialist services (e.g. gender dysphoria)
    - Remote GP services out of hours (e.g. medication reviews for people arriving at prisons)
    - Remote triage
    - Remote assessments under the Mental Health Act with secure hospitals
    - Through the gate contact with community services such as substance misuse

- To fully realise some of these benefits providers may need to adopt a more collaborative approach with their competitors, considering how to share best practice, how to work in partnership to design care pathways with the same local hospital trust, and potentially the benefits of pooling staff resource amongst multiple neighbouring establishments

- It is likely that the best uses of telemedicine will be discovered when providers start with a ‘blank sheet of paper’ approach to virtual consultations, as opposed to solely slotting in telemedicine appointments into existing healthcare service structures

7.4.4 Lessons for broader prison health reform

The House of Commons Health and Social Care Committee report on Prison Health (2018) states under the heading ‘Prison Reform’:

> *“Supporting prisoners to lead healthy lives is consistent with the Government’s aim to use prisons to rehabilitate offenders. Health,*

wellbeing, care and recovery need to be a core part of the Government's plans for prison reform."(279)

The report suggests a 'whole prison approach' to health should be implemented, including the development of local strategic relationships with shared ownership and collaborative commissioning, to improve prison health and care.

Use of telemedicine to increase the access and experience of secondary care and other health services will support this agenda, improving prisoner's access to timely care, to address health needs. Telemedicine will not be suited to all patients, or to all appointments, so it remains imperative to consider how to ensure dignified and prompt access to secondary care for people in prison.

The NHS is currently in a period of championing integration and collaboration between health and social care organisations at a local level.(331) As yet the future of national and regional commissioning for health and justice functions remains undefined within these organisational plans. In alignment with the House of Commons report, this research suggests that closer integration of prison healthcare commissioning with community health and social care organisations, may help improve collaboration and feelings of shared responsibility for the healthcare of prisoners. Stronger partnerships would also support the development of interventions or care pathways that span prison and community systems. Information on barriers to telemedicine implementation from this research could be considered applicable to future interventions, for example, innovations in social care or remote monitoring technologies. Closer collaboration between community and prison systems would also support the continuity of care agenda. (332) Clear benefits could be envisioned for people leaving a prison in their own local community, flowing seamlessly into community based services under the umbrella of a shared commissioning arrangement between prison and community systems, or through use of telemedicine to bring community appointments "behind the gate".

7.5 Concluding statement

The widespread implementation of prison telemedicine in England, expedited by the pandemic, has been seen as a ‘silver lining’ to many. Prior to the pandemic enthusiasm for prison telemedicine was high but implementation remained slow, laborious and fragmented. The pandemic context accelerated digital innovation in prisons in-line with community settings, and caused changes in contextual settings which ultimately supported and facilitated widespread rollout. Although the barriers to implementation have now been overcome the big task of promoting normalisation and everyday use is just starting.

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Appendix A

Table 15 Major topic guide questions used in focus groups, to collect data about accessing hospital care in prison

Topic Guide Section	Major topic guide questions
Attending hospital from prison	○ What is different about attending hospital as a resident instead of a community patient? ○ What are some of the barriers to going to hospital? ○ What has to happen before you can go to a hospital appointment outside the prison?
Patient journey in the prison context	<u>GETTING REFERRED TO HOSPITAL</u> ○ What does it feel like when you are told you have to go to hospital to see a specialist? <u>WAITING TO GO TO HOSPITAL</u> ○ Are you given any idea when you will actually get to go out for your hospital appointment? ○ How do you feel while you're waiting for your hospital appointment to actually happen? <u>FINDING OUT YOU'RE GOING OUT FOR AN APPOINTMENT</u> ○ When do you get told you're going out for your hospital appointment? ○ What have you heard or experienced about going to hospital while you're in prison? <u>BEING AT THE HOSPITAL</u> ○ What are you feeling/thinking while you're waiting in the hospital waiting room? <u>SEEING THE DOCTOR</u> ○ What do you think the doctor thinks or feels about seeing you in their clinic? ○ At the end of your appointment do you feel you've understood all the medical information you've heard and what's going to happen with your treatment? <u>AFTER THE APPOINTMENT</u> ○ How are you feeling on the way back to the prison? ○ It's been a month since your hospital appointment. ○ *Have you had any test results or letters back?* ○ *Has anyone followed up with you?*
Leaving prison	○ Once you're living back out in the community is it easy to carry on with hospital treatment that you started in prison? ○ What happens if you don't get your hospital treatment once you leave prison and remain unwell? ○ Imagine you did get back to the hospital and sort out your health problems, what does this mean for you?

Appendix B

Table 16 Literature review search terms

Database	Prisons search terms	Telemedicine search terms
Embase MeSH (exploded terms)	Prison, prison nursing, prisoner, offender, detention camp	telemedicine
Pubmed MeSH (exploded terms)	Prison, prisoners	telemedicine
Psycinfo MeSH (exploded terms)	Prisons, Incarceration, prisoners	telemedicine
CINAHL major concepts	Prisoners, correctional facilities, correctional health nursing, correctional health services	Telemedicine, telerehabilitation, telepsychiatry, telehealth, teleradiology, telepathology, telenursing, remote consultation
IBSS keyword	Prison*	telemedicine
Text word searches for all databases, SCOPUS title-abstract-keywords, WoS topics	prison* OR inmate* OR jail* OR gaol* OR correction* facilit* OR penitentiar* OR penal institut* OR detention camp* OR custod* OR incarcerate* OR imprison* OR correctional setting* OR detain* OR detention* OR correction* centre* OR compulsory drug detention OR compulsory drug detention OR compulsory drug treatment OR compulsory rehabil OR re-education through labor OR laojiaosuo OR long-term detention OR labor camp*	telemedicine OR tele* OR telehealth OR telerehabilitation OR teleradiology OR telepathology OR remote consultation* OR teleconsultation* OR telepsych* OR telenursing OR telecardiology OR teledermatology OR telediagnosis OR telemonitoring OR teleradiotherapy OR teletherapy OR telesurger* OR telerheumatology OR teleneurophysiology OR teleobstetrics OR teleopthamology

Appendix C

Table 17 Staff interview topic guide prison telemedicine, prior to local implementation (prior to pandemic)

Introduction, consent taken
<u>Organisational/ inter-relationships</u> ➢ How does prison health/secondary care access fit into your organisational priorities/culture/norms? ➢ How does telemedicine fit into your organisational priorities/culture/norms? ➢ Thinking about national or local policies now, how do they influence your decision to introduce telemedicine? ➢ How networked would you say your organisation is with (relevant prisons/hospital)?
<u>General background to telemedicine in prisons</u> **We are planning to introduce telemedicine in HMP xxxx.** ➢ What are your views on/what do you think about telemedicine? ➢ Why do you think we are planning on introducing telemedicine? o *FOR HOSPITALS ONLY – do you know of any barriers to accessing secondary care for prisoners which might influence the decision to introduce telemedicine ?*
<u>Telemedicine in practice – working perspective</u> ➢ How do you perceive your role in progressing telemedicine between hospitals and prisons? o *How does this fit with your current role?* ➢ Talk me through how you think a telemedicine consultation might work in practice

- *What are the pros and cons of this consultation?*
- *What else has to happen to make sure this consultation takes place successfully?*

- How might telemedicine impact on the work of other people in your organisation?
- How might your organisation react to this type of innovation? – why?
  - *What about the wider political/ professional system?*
- What has been your experience of introducing telemedicine so far?
- If we were to launch telemedicine tomorrow, is there anything else you think would get in the way?

Telemedicine benefits

- How might telemedicine affect you and your role?
- How might telemedicine affect patients in prisons?
- How might telemedicine affect your wider organisation (as opposed to just you or the patient)?
- How might telemedicine affect other associated partners (e.g. HMPPS/NHSE)?
- How might telemedicine affect you personally? (eg Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary, and less tangible incentives such as increased stature or respect).

Telemedicine in practice – technological perspective

- What would an ideal system look like technology-wise?
- How easy or hard is it to work with other departments in your organisation to get the technology set up and ready to use?
- What might make people reluctant to use the telemedicine system (technology wise)?

Wrap up

Is there anything else you would like to add about prison-hospital telemedicine?

Thank and close

Appendix D

Table 18 Local prison telemedicine implementation tasks

Implementation Action	Prison healthcare action, hospital action or both	Additional stakeholders to be involved	Can other regions undertaking implementation benefit from work completed?
Engagement work			
Seek senior level approvals for prison telemedicine implementation	Both	HMPPS and Prison Governors, Integrated Care System, NHS England Health and Justice	NA
Establish stakeholder group	Both	HMPPS, Integrated Care System, NHS England Health and Justice	Yes – core team members from other areas may help identify ideal group membership
Technology implementation associated work			
Test/upgrade network speed capabilities for videoconferencing	Likely only prison healthcare	Commissioned prison IT provider, HMPPS, Prison Governors	NA
Identify videoconferencing software suitable for both prison and hospital use	Both	\	Yes – other regions may wish to start investigating software that has already been used elsewhere successfully

Undertake approvals process for videoconferencing software in prisons	Prison healthcare	HMPPS, NHS England Health and Justice	Yes – once videoconferencing software has been approved by HMPPS Central IT team it does not need to be re-approved locally
Procure videoconferencing software	Both	NHS England Health and Justice	NA
Install videoconferencing software	Both	Commissioned prison IT provider, Videoconferencing supplier	NA
Train staff in videoconferencing software use	Both	Videoconferencing supplier	Yes – staff using telemedicine may be willing to share best practice and train staff in other prisons
Procure videoconferencing equipment	Both	NHS England Health and Justice, Commissioned prison IT provider	NA
Procure laptop for hospital clinician if required	Hospital	\	NA
Enable hospital clinician to access prison electronic health records remotely	Both	NHS England Health and Justice, Commissioned prison IT provider	Yes – guidance can be provided on the steps that need to be undertaken to grant this access
Operational guidance development work			
Design and write overall telemedicine system operational protocol	Both	NHS England Health and Justice, Commissioned prison IT provider, HMPPS, Videoconferencing supplier	Yes- other areas may wish to base their own protocol on the approved existing version of the protocol
Design and write individual telemedicine care pathways	Hospital	\	Yes- other areas may wish to base care pathways on existing telemedicine care pathways
Design telemedicine appointment booking process	Hospital	\	Yes- other areas may seek advice on how this has been actioned in an operational area

Ensure the hospital can record activity for telemedicine billing	Hospital	\	Yes- other areas may seek advice on how this has been actioned in an operational area
Write telemedicine business case if required	Hospital	\	Yes- other areas may wish to base business cases on existing templates
Design informed consent procedures	Both	\	Yes- other areas may wish to base informed consent forms on existing templates
Embed informed consent template on prison electronic health records	Prison healthcare	\	NA
Sign data sharing agreement if prison electronic health records are to be accessed remotely	Hospital	NHS England Health and Justice,	NA
Design advertising/mythbusting materials for patients/prison staff	Prison healthcare	Prisoners	Yes – other areas may wish to use the advertising materials designed

Appendix E

Table 19 Staff topic guide - during pandemic implementation

Topic guide: What is the influence of context in implementing prison telemedicine?
Introduction • To start, can you explain to me a bit about your job role, in relation to prison health/digital technology in prisons? • Can you tell me about your previous experience/involvement with prison telemedicine, prior to the pandemic? *As you know, in response to the pandemic telemedicine is being rolled out across the secure estate. I want to understand what changed as a result of the pandemic to support this rapid implementation seeing as progress was notably slower before the pandemic.*
Pandemic influence • Can you tell me about the shift of the health and justice agenda/s at the onset of the pandemic? o What became a priority for health and justice settings? • How did this changing agenda support the concept of prison telemedicine? o What did people expect prison telemedicine to 'do' in regards to supporting pandemic response? o What changed to support telemedicine as a result of the pandemic? o What funding was available to support rollout that wasn't available before? o What resource was available to support rollout that wasn't available before? • Who had ownership/leadership for pandemic prison telemedicine? o How was this different (if at all) compared to prior to the pandemic? o What was your role in supporting pandemic prison telemedicine? o Did anyone or anything (e.g. national directives) specifically direct or support you to progress prison telemedicine? o What scrutiny was the implementation process subject to?

- What ‘work’ did other partners have to do to support the national rollout of prison telemedicine?
    - NHS/justice system partner
    - Inner context – prison health providers and regional commissioners

- What benefits did these other parties expect to receive from assisting with implementation?

- IF RELEVANT -What was it like working together with different parties to support prison telemedicine implementation?

- How do you think prison telemedicine implementation would have progressed if the pandemic hadn’t happened?

- Looking to the future, what do you anticipate happening next with prison telemedicine?

- How do we keep enthusiasm up as services return to ‘normal’?

- What other digital innovations do you think this might open to door for in prisons?

Wrap-up, thanks and close