Telehealth-Mediated Medication Assisted Treatment and Online Engagement (TMAT-OLE)

Increasing the engagement of people who use opioids in treatment through online consultations.

May 2024

TMAT-OLE St Andrews project team

Professor Alexander Baldacchino
Dr Susanna Galea-Singer
Dr Alberto Oteo Perez
Mr Joe Schofield
Dr Joseph Tay Wee Teck
Ms Xujun Tan

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Executive summary

Overview

Scotland is facing a drug related deaths epidemic and there is a need to engage people who use drugs, especially those who use opioids, into treatment. The 20-month TMAT-OLE project was funded by the Scottish Government's Digital Lifelines Initiative and the ministerial Drug Deaths Taskforce and ran from 1st September 2022 to 1st May 2024. The project pursued two specific aims:

- Identifying clinical and care elements and risks that need to be considered if a test of change to integrate online service in addiction care is pursued.

- Finding evidence for the core elements of digital interventions that enhance the therapeutic relationship.

Methods

We conducted semi-structured interviews with professionals who deliver, manage, plan, monitor and evaluate addiction services at local and national levels to understand their perceptions and experiences of risk in the delivery of digitally connected addiction treatment and care.

We subsequently recruited people with lived / living experience (PWLE) and the providers of addiction services in NHS Fife to participate in co-design sessions where they described their experiences of digitally connected services and developments they would like to see in the field of addiction service provision.

Finally, we conducted a scoping review of the literature on co-design in the context of addiction services. The purpose was to identify the extent and types of use of these methods in addiction services, their benefits and limitations and unintended consequences.

Key Findings

Whilst the benefits of remote and digitally connected addiction care are readily identifiable, there are significant risks to patients, staff, and healthcare organisations. Ensuring patient safety was a key concern, especially in the context of prescribed medications for opioid use disorder which can cause harm including death if consumed in excess and/or with other substances. Expanding access to addiction care is a positive development but can contribute to pressures within wider systems of health and care.

There is a small, but growing, body of literature on the use of co-design in addiction treatment and care services. This method allows for the direct involvement of key stakeholders, including service providers and current / potential patients, in service (re)design. However, most work appears to have been consultative, asking them to describe their preferred services. Greater efforts should be taken to meaningfully engage stakeholders in more collaborative service design methods.

PWLE and service providers reported experience of remotely connecting to services, especially during the COVID-19 pandemic. Both groups recognised the potential to further develop digitally connected addiction care to reduce barriers to access and other burdens on staff and patients. Several challenges remain to the delivery of safe and effective addiction care, including digital exclusion and the limited information available in remote consultations.

Recommendations

The use of digital interventions for addiction care should be further explored, tested, and evaluated with the involvement of PWLE and service providers. Stakeholders, and especially service users and providers, should be engaged in human-centred approaches to research and design services. Subsequent work should seek to engage with, and minimise, the risks identified here. It will also be important to describe and quantify the additional supports required to translate learning into accessible and equitable clinical practice.

Conclusion

The TMAT-OLE study identified several opportunities for the development of greater integration of digital health and care delivery with current models of addiction treatment and care.

1 Introduction

Scotland is experiencing an ongoing public health crisis of drug-related deaths (DRD). There were 1,197 DRD in 2023 (National Records of Scotland, 2024). The appearance of potent new synthetic opioids, in the heroin supply is a new cause for concern for the number of DRD in coming years (Public Heath Scotland, 2023).

For people who use drugs (PWUD), engagement in treatment not only increases the chances of recovery but also decreases the chances of DRD and all-cause mortality (Santo *et al.*, 2021). However, there are several barriers to engagement with treatment services for PWUD. These can include lengthy and costly traveling times to treatment facilities, especially for people living in more rural and remote areas that are not well served by addiction services. For some PWUD, including women and especially those with children, the stigma that is associated with visiting facilities is also a deterrent (Beynon *et al.*, 2008). There are also challenges engaging PWUD from socially deprived areas.

There is strong evidence that digital health and care can facilitate engagement in treatment, improve outcomes, knowledge, and self-care management among populations subject to health inequity (Armau *et al.*, 2019).

1.1 Rationale for the TMAT-OLE project

NHS Scotland´s *Near Me* (Digital Health and Care Scotland, 2024) platform for online health consultations was not widely adopted by addiction services to ensure continuity of treatment and care during the pandemic. Reasons for this are unclear – however, there are some known barriers. From the PWUD´s side, limitations such as lack of digital resources or a lack of digital literacy could act as a barrier. From the treatment provider´s side, it could be a lack of interest by management or staff to implement this new working systems, lack of adequate tools to perform accurate diagnostics, or others. Exploring barriers and facilitators to implementation of a digital approach will help understand what changes are needed to promote the use of *Near Me*, which is already embedded in the Scottish healthcare system and can be an ideal tool to provide online services for PWUD.

In any healthcare setting it is important that real or perceived risks are identified and managed to reduce the potential for harm to patients and service providers. Addiction services are settings with a particular set of risks including the risk of harm including overdose and death for people who use drugs who are not engaged in harm reduction or treatment; risks to patients and care providers associated with prescribing medications, especially those for treatment of opioid use disorder which increase risk of harm if taken with other substances; and risks to staff and patients following exposure to distressing reports of complex trauma, (drug-related) bereavement, and the consequences of complex multimorbidity.

Findings from the Digital Lifelines' DHI 'Discover and Define' exercise indicated that PWUD want to be actively involved in making decisions that affect their care, including in service design. Where lived experience expertise is meaningfully integrated, services have an opportunity to design digital solutions that offer more flexible forms of access (Digital Lifelines, 2023). Human-centred design approaches seek to involve all stakeholders in the design and development of interventions, to ensure that these interventions are user-friendly, accessible, and relevant to the needs of individuals. Co-design typically involves a series of iterative and collaborative activities with the goal of creating services that are more relevant, effective, and user-friendly. By avoiding a top-down approach, co-design can also foster a collaborative and trusting relationship between service users and providers, leading to improved communication, and shared decision-making.

Using human-centred design and other inclusive methods to engage stakeholders in the review and design of digitally connected addiction care, including the *Near Me* platform, in Scotland has the potential to inform acceptable, accessible, and effective developments in care delivery.

1.2 Aim of the project

The general aim of this project was to co-design, with People With Lived / Living Experience of opioid dependence (PWLE) and their healthcare service providers, an online platform to increase treatment coverage

and engagement with treatment of people who use opioids in Scotland. This was pursued through two specific aims:

1. Identifying clinical elements that need to be considered if a 'test of change' is pursued.
2. Finding evidence for the core elements of digital interventions that enhance the therapeutic relationship. In other words, finding out what works to enhance the therapeutic relationship through digital platforms.

1.3 Project funding and duration

The TMAT-OLE project was funded by the Scottish Government's Digital Lifelines Initiative and the ministerial Drug Deaths Taskforce for 20 months from 1st September 2022 to 1st May 2024.

1.4 Project governance

The Digital Lifelines Scotland Portfolio Board reviewed the project and evaluated progress on a quarterly basis.

DigitAS St Andrews managed the contractual, financial, and other operational and legal arrangements on behalf of the University of St Andrews. It was also responsible for the supervision of the TMAT-OLE staff.

TMAT-OLE St Andrews research group met weekly to track progress and plan ahead. Professor Alex Baldacchino was the Chief Investigator for the TMAT-OLE study and Dr Joe Tay and Dr Susanna Galea-Singer were the Principal Investigators, with Dr Galea Singer having an additional responsibility for involvement of NHS Fife Addiction Services. Dr Alberto Oteo was the TMAT-OLE project manager and Xujun Tan and, in the final 6 months Joe Schofield, were the TMAT-OLE researchers.

1.5 Work packages and deliverables

The TMAT-OLE project was organised into two work packages:

Work Package 1. Identifying clinical and care elements and risks that need to be considered if a test of change to integrate online service in addiction care is pursued, achieved through:

– Interviews with service providers.
– Systemic exploration of risks associated with TMOUD and digitally connected addiction care.

Work Package 2. Finding evidence for the core elements of digital interventions that enhance the therapeutic relationship through two action points:

– A literature review on the topic .
– Involving service providers and people with lived/living experience through human-centred co-design sessions to identify features that would make the most impact if added to an online service.

Deliverables:

– **Deliverable 1**: A report summarising health and care professionals' understanding and experience of risk associated with telemedicine-delivered medication for opioid use disorder.
– **Deliverable 2:** A report summarising available evidence on the implementation of co-design in the development and improvement of substance use services, based on a scoping review of the literature.
– **Deliverable 3:** A report summarising the outcomes of human-centred co-design sessions with providers and clients of addiction services on the integration of digital interventions in the delivery of addiction care.

These three deliverables are interconnected and contained within this report, but should be read as separate sections. They have been summarised for conciseness. We are preparing peer reviewed publications based on these reports and we will share them with funders as they are published.

2 Operational issues and approvals

2.1 Project governance

Recruitment, interview and induction processes took place between **March and September 2022**, resulting in the successful recruitment of Xujun Tan.

The Chief Investigator arranged contractual arrangements with NHS Fife for the distribution of funds for the performance of the study within its premises and with its staff and services users (Appendix 1).

In September 2022, the team created a set of project initiation documents which included (Appendix 2):
- An extensive research protocol, detailing all phases of the project, flowcharts, procedures of co-design and usability testing sessions, logistics, etc. The final form of this protocol is within the IRAS form which was submitted to the NHS Research Ethics Committee (REC) in its final version on **27 January 2023** .
- Confirmation of insurance.
- Funding approval.
- Sponsor approval letter.

The project obtained ethics and IRAS approval from NHS Research Ethics Committee on **15 March 2023** (Appendix 3).

The University of St Andrews School of Medicine Ethics Committee granted approval on **18 May 2023** (Appendix 4).

Once above approvals were obtained from NHS REC and the University of St Andrews School of Medicine Ethical Committee, the team applied for governance and management approval from NHS Fife to be able to conduct this research in their premises with permission to recruiting NHS patients and staff. Final confirmation from NHS Fife was **granted at the end of August 2023** (Appendix 5)**.**

The first insurance policy was received on **25th July 2022.** The second insurance extension was signed on **25 July 2023** (Appendix 6) and **received on 7 August 2023**.

The project, which was supposed to have finished at the end of **March 2023,** suffered several delays, for which a no cost extension was requested to the Project Board. This was granted for 6 months (to the end of September 2023). A second no-cost extension was granted from October 2023 to April 2024.

An end of study declaration was submitted on **19 April 2024** confirming that the end of study date was 1 February 2024, with NHS REC acknowledging receipt on **24 April 2024**. A summary of the final research report will be provided to the Committee within 12 months of the conclusion of the study. This will report on study's achieved objectives, summarise the main findings, and confirm arrangements for publication or dissemination of the research including any feedback to participants.

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3 Deliverable 1: Understanding the risks associated with Telemedicine-delivered Medication for Opioid Use Disorder (TMOUD)

3.1 Introduction

Background

The digital transformation of healthcare has the potential to deliver benefits for service providers and patients. However, technology is unlikely to produce sustainable improvements to healthcare if it is not understood as part of a complex socio-technical system which incorporates human relationships, organisational culture, human-technology interactions, existing infrastructures and social structures, procedures, processes, and related explicit and tacit knowledge. (Sittig and Singh, 2015)

Scotland has built a reputation for the strategic planning of digitally enabled care and developing consulting and co-design approaches when implementing digital health interventions. (Alami *et al*., 2022) Examples include a strategic development plan for telemedicine and telecare in Scotland since 2012 (Scottish Government, 2012), investment in an approved video consulting platform (*Near Me*) since 2016 and commissioning of a Technology Enabled Care (TEC) team since 2015 to support implementation and uptake. (Wherton *et al*., 2021)

Through the COVID-19 pandemic, the TEC team actively engaged the public to explore perspectives on the use of video consultations, worked with professional bodies such as Royal Colleges to develop guidance documents, sought national-level data protection approvals, and worked with NHS National Services Scotland to ensure network bandwidth capacity for increased data use. (Wherton *et al*., 2021)

Critically, addiction services in Scotland have not kept up with other healthcare services in the uptake of digital solutions. Compared with psychiatry, psychology, and community mental health services, addiction services made up 0.77% versus 9.5% of *Near Me* video-based telemedicine consultations from January to December 2019. (Tay Wee Teck *et al*., 2023b) With the onset of the COVID-19 pandemic, an intensive rapid rollout program for the *Near Me* platform was initiated. Nevertheless, within addiction services, there was a drop in *Near Me* video-based telemedicine consultations to 0.25%, which compares poorly with the increase to 36.4% in other mental health services. (Tay Wee Teck *et al*., 2023b)

The delivery of medication for opioid use disorder (MOUD), in Scotland and abroad, occurs within a highly regulated clinical guidance, governance, and legislative framework associated with a high level of scrutiny on compliance from both people with OUD seeking treatment and treatment providers. (Walters *et al*., 2022)

Aim

We aimed to describe key informants' perceptions and experiences of the risks associated with telemedicine-delivered medication for opioid use disorder (TMOUD) in Scotland. Along with the other deliverables in this project, the overarching aim was to support and inform ongoing developments in the delivery of TMOUD across Scotland to realise benefits for individuals, communities, health and social care funders and providers, and wider Scottish society.

Theoretical approach

We adopted Carroll's (2000) healthcare enterprise risk management framework' to structure our analysis of the qualitative data collected in this work package. This provided us with eight conceptual domains to describe and categorise risks associated with the delivery of TMOUD and other technology connected addiction treatment care and support both during and following the COVID 19 pandemic.

Table 1. Risk management domains.

Risk domain	Description
Strategic	The focus and direction of the organisation. For the purposes of this project, this domain included consideration of national (Scottish Government, NHS Scotland) and local (Alcohol and Drug Partnership, Health Board, and addiction service) strategic priorities.
Operational	This domain is concerned with the business of healthcare delivery including internal processes and systems, documentation, internal controls, and management oversight.
Clinical / patient safety	Risks associated with the delivery of care to patients and other beneficiaries of healthcare. This includes consideration of evidence-based practice, safe prescribing, and avoidance of serious adverse events.
Financial	Decisions that affect the financial sustainability of the organisation. This includes utilisation of resources such as the number of staff, funded staff time, clinic capacity, and inefficiencies resulting from appointments where the patient did not attend.
Human capital	The organisation's workforce including employee retention, job satisfaction, staffing, absenteeism, productivity, fatigue, and compensation.
Legal / regulatory	Legislation and professional regulations governing the prescribing of medications in general and, in the context of addiction services, controlled drugs as MOUD.
Technological	Includes hardware and software involved in the delivery of healthcare, plus techniques, systems and methods of organising and transmitting information. Extends to include electronic health records and monitoring / reporting systems. Includes considerations of data protection and confidentiality of health data.
Hazard	Traditionally this domain includes hazards related to natural exposure and business interruption e.g. extreme weather, natural disasters, pandemics.

3.2 Methods

We used purposive sampling to identify stakeholders who represent a range of perspectives within the digitally connected care system for people who use drugs. Key stakeholder roles were identified from earlier work in (Tay Wee Teck *et al*., 2023b; Teck *et al*., 2023). Invitations to participate were sent to potential participants by email and those who agreed to participate were invited to attend an interview via Microsoft Teams. We obtained informed consent from all participants.

The topic guide for these semi-structured interviews was adapted from one successfully used in our prior research (Tay Wee Teck *et al*., 2023a, 2023b; Teck *et al*., 2023). In each interview, we focussed on aspects of service delivery for which the specific participant was involved or had responsibility.

All interviews were recorded and transcribed before being uploaded to the qualitative analysis platform Atlas.ti for Mac (v22.1.0). Following a content analysis approach (Vaismoradi, Turuned, Bondas, 2013) we coded transcripts using pre-existing categories from Carroll's framework of eight risk domains. The coded data were analysed to identify patterns and themes.

3.3 Results

We conducted semi-structured interviews with ten key informants over four weeks. Participants were professionals involved in the design, delivery, governance, monitoring and evaluation of addiction health and social care services in Scotland. They represented roles including specialist pharmacist, consultant clinical psychologist, general practitioner, harm reduction team manager, head of nursing, clinical innovations champion, social work team manager and principal information analyst.

Domain 1: Strategic

The Scottish Government published national Medication Assisted Treatment (MAT) standards to enable the consistent delivery of safe, accessible, and high-quality drug treatment as part of their response to ongoing high levels of drug-related deaths. (Scottish Government, 2021) The MAT standards tasked the commissioners, planners, and providers of addiction services to increase the accessibility of addiction treatment and care, support patient choice of treatment, develop more holistic support for patients including awareness of trauma-informed care, embed harm reduction to minimise risks of ongoing substance use, and to retain people in care for as long as they need it. National reports benchmark Alcohol and Drug Partnerships' implementation of the MAT standards and include recommendations to address gaps.

Several key informants described their experience of developing TMOUD to implement and meet these strategic goals, reducing risk of physical harm to people who use drugs and reducing reputational risks to their organisation.

Many participants described the local development of novel pathways and services that utilised telehealth, including telephone triage, mobile outreach facilities, and remote consultation with health and social care professionals, to remove barriers to access, facilitate same-day treatment initiation, and help retain people in care. Mechanisms for strategic oversight, accountability, activity monitoring and outcome evaluation were embedded within local service planning structures (Health Board, Integrated Joint Board, Alcohol and Drug Partnership, Health and Social Care Partnership) and supported by the national MAT Standard Implementation Support Team.

There was a general view that TMOUD and associated systems for enabling remote patient care and communication between professionals were instrumental in enabling addiction services to meet national and local strategic goals and providing evidence of effectiveness to inform ongoing service developments.

Electronic prescribing (the electronic transmission of a prescription from the prescriber to the dispensing pharmacy) was highlighted as a key barrier in the ongoing usefulness and development of remotely delivered addition care. There is a critical need to ensure that the needs of people who access medications through addiction services are met by the Scottish Digital Prescribing and Dispensing Pathways programme.

Domain 2: Operational

A challenge to the design and rollout of TMOUD during the first stages of the COVID-19 pandemic was the lack of guidance specific to addiction services and prescribing MOUD (which includes controlled medications and is subject to greater legal and regulatory controls). Participants indicated that guidance from Royal Colleges would have been helpful. Specific information needs highlighted included: patients and circumstances where remote consultation is appropriate, what a remote consultation should include and differences between telephone and video consultations, best practice in the initiation and monitoring of TMOUD prescribing for remotely managed patients, and how to ensure wider patient needs (such as access to harm reduction, social care supports, and peer-led recovery services) can be met. The nimble response of other countries such as the USA, Canada, and Ireland were cited as exemplars where clinical guidance adaptations were drafted and ratified by the relevant professional bodies, before being published, reviewed and updated in light of emerging learning.

The experience of individual clinicians in managing risk and providing MOUD was described being a key factor in enabling remote addiction care by participants, some of whom indicated that this valuable experience has been lost as several senior clinicians have retired since the pandemic. Participants described two elements of this professional and institutional knowledge. First, it was perceived that more experienced prescribers and mental health professionals were more confident in designing telehealth addiction services, assessing which patients could be more safely managed remotely, and managing risks associated with MOUD prescribing and dispensing arrangements. Second, there was a recognition that clinicians who led on service changes during COVID-19 developed specific knowledge of which remote care arrangements work

best for which patients and how to provide specific supports for patients most at risk of harm or being lost to follow-up. There were some concerns that this experience remained within individual clinicians and managers, rather than being embedded within organisations – and that this could pose a challenge to future design and delivery of remote addiction care.

Another important operational issue associated with the adoption of telehealth and related systems was the duplication of administrative effort, and the associated inefficiencies and frustrations for staff. One participant described how the transfer to electronic patient records was perceived as a positive move that allows health and care providers to access relevant information in a range of settings. However, the electronic system does not allow the separation of especially sensitive information on a 'need to know' basis which can be an issue for detailed mental health records. This participant, a consultant clinical psychologist, indicated that they enter high-level summary information into the electronic patient notes, and then maintain more detailed and specific handwritten notes – e.g. details relating to childhood trauma – to support their patient-facing work. This has resulted in duplication of recording following each consultation, which is an unintended negative consequence of the implementation of electronic data systems designed to facilitate patient care across settings and teams. This also poses risks to organisational finances (from inefficiencies in use of clinician time) and to human capital (from staff burden and dissatisfaction).

Domain 3: Clinical and patient safety

This domain reflects key aspects of risk that are particular issues for addiction services. MOUD include opioids that, whilst effective at treating opioid addiction, are controlled drugs that can cause serious illness or death if taken alongside other substances including street drugs. Also, people with problem substance use are more likely to have complex physical and mental health multimorbidity and polypharmacy that increase their risk of adverse health outcomes and mortality. Addiction is a chronic and relapsing condition meaning that many patients, including those who are progressing in their recovery, are at risk of retuning to problematic substance use.

Most participants indicated that a key aspect of risk management was identifying patients for whom TMOUD might be safe and appropriate. In the absence of clear guidance, addiction services had to develop mechanisms for selecting patients who could be offered remote consultations and/or prescribing. Several key informants indicated that new patients and those returning to care after a long absence would need to be seen in person, especially if they wanted to access MOUD prescribing, as this would allow for a fuller assessment of substance use, physical and mental health, and social wellbeing to help inform a discussion on treatment options and risk management. This decision should not result in disadvantaging the patient by delaying necessary treatment. Participants identified several ways of providing rapid assessments, including through cafe clinics and transport to a clinic appointment.

Another key distinction for addiction services was classification of patients as either "chaotic" or "stable", with a fairly consistent view that remote consultations and/or TMOUD would not be appropriate for the former group.

Some participants indicated that they would consider all patients for telemedicine and that they would assess and balance risk on case-by-case basis. Such risk assessments incorporated multiple factors across clinical, contextual, strengths, motivational and personal domains, e.g. type and number of substances used, perceived level of control over substance use, treatment intentions, and assets such as partner or family support.

During the pandemic, many MOUD patients had their prescriptions changed to allow them to take more doses home with them to self-administer, rather than being required to attend the Community Pharmacy each day to be observed consuming their medication. As MOUD such as methadone and buprenorphine have a street value there was a risk that these medications could be diverted, causing harm to addiction patients missing their prescribed doses, and other people who use drugs at risk of overdose and drug-related death if they consume diverted medications with other substances.

One participant described how their service management engaged with other local groups such as the non-fatal overdose and drug-related death review groups to identify any changes in drug-related harms associated with changes to dispensing arrangements.

A common theme was the importance of high-quality interpersonal relationships between patients and addiction service staff in the frank identification, assessment and management of risk including decisions regarding consultation modality and TMOUD prescribing and dispensing arrangements. Participants noted the role of key workers who patients tend to work most closely and frequently with. These staff are often best placed to understand the patients' stage of recovery, trends over time, and current challenges – and to describe these in consultations with staff who may not see patients as regularly e.g. prescribing addiction medics, general Practitioners, or psychiatrists who may only review patients every few months.

Similarly, remote consultations also provide opportunities to include patients' partners or family members, subject to patient consent, and these individuals can provide helpful information on their perceptions of the patient's recovery, substance use, and any pressing concerns or challenges they are experiencing.

The involvement of key workers and/or partners/family members in decisions regarding treatment and care provides additional information to help assess and manage risks associated with TMOUD and recovery in general.

Domain 4: Financial

Participants consistently recognised the value of engaging and retaining increasing numbers of people who use drugs in addiction services to reduce their risk of drug-related harms including death and provide routes out of addiction with attendant benefits for individual and public health and Scottish society.

Telehealth and digitally connected outreach services removed the need for staff to travel to deliver addiction clinics in remote and rural areas of Health Boards. This reduced the financial (and environmental) costs of travel and allowed staff to deliver more patient care-related activities in time they would otherwise have been travelling. It was also noted that remote consultations reduced the financial burden on patients associated with travelling, in some cases substantial distances, to addiction clinics far from home.

Whilst funding was released to enable localities and services to implement the MAT standards, participants described how increasing numbers of addiction patients created pressures elsewhere in health and social care systems. Many people with problem drug use have complex health and social care needs, and engaging more people in addiction care through telehealth and mobile outreach in a rural area can create additional pressures on already overloaded non-addiction services in those areas.

Participants informed us that the additional MAT Standard funding comes to an end in 2025 which provides additional incentives on addiction service planners and providers to realise the financial benefits associated with TMOUD.

There are also financial risks for patients who wish to engage with TMOUD. Accessing remote healthcare requires connected devices such as smartphones, tablets or computers, and associated data packages. Whilst telephone appointments can be conducted over landlines or cheap mobile phones, video calls can require specific and more expensive hardware and more network bandwidth.

Domain 5: Human capital

Human factors emerged as a significant risk concern among participants, especially those with a supervisory or management role. Efficiencies resulting from digitally enabled remote working and the introduction of electronic health records have been described above, however these can present unintended negative consequences for staff.

More remote consultations and online meetings reduces the need to travel between sites, whether walking between floors in a building or providing home visits to patients who live far from office-based services. This reduces opportunities for staff to have informal conversations with colleagues between meetings or to

decompress from work when travelling, both of which can reduce quality of life and wellbeing. Diary management has also been affected; staff can be expected to engage in multiple consecutive online meetings, spending large periods of time at a computer with limited or no opportunities to eat, move, or relax between consultations or meetings.

The impact of remote working, the COVID-19 pandemic and increased pressures to not only be more productive but to divert increasing time to documenting productiveness were also identified as contributing to the risk of burnout.

Participants also reported that patients can find online health consultations challenging and that it can be more challenging to develop open and therapeutic interpersonal connections with health and care providers when mediated by information technology. Reduced opportunities for non-verbal cues and relationship-building communication e.g. when walking from a waiting room to a consultation room, can reduce the quality of interactions in a service where open and honest communication is especially important.

Domain 6: Legal / regulatory

The risks associated with clinical practice relating to OUD is reflected in controlled drug legislation, pharmaceutical regulation, and clinical practice guidelines (Sud *et al*., 2022). All participants who raised legal and regulatory issues framed these as clinical or patient safety risks, discussed in that section above.

Domain 7: Technology

Digital inclusion is a *super-determinant* as it unlocks access to other social determinants of health, many of which are also recognised human rights such as healthcare, housing, and social security. Since 2010, the "digital by default" policy and the introduction of Universal Credit in the UK has altered the place of digital access from being a luxury to becoming a life essential utility. Services rely heavily on the telephone to carry out regular activities. Further, healthcare services in the UK rely on the telephone to interact with patients. Anyone seeking non-emergency out-of-hours healthcare must ring the 111 number and must be contactable by phone to receive help. Many general outpatient clinics now ask patients to ring to confirm their intention to attend an offered appointment. Making mobile devices and digital connectivity accessible, therefore, was an essential part of patients being able to participate and function in everyday life, as well as access addiction services.

Challenges to engaging with digital technology were identified across all key informants. In addition to difficulties in owning, maintaining, and securing digital devices and mobile phones, the cost of accessing mobile data and broadband, and privacy was often an issue.

Where telehealth was concerned, provided there was access to a mobile phone or landline, patients overwhelmingly preferred audio consults to video consults. Specific challenges relating to video consults included needing help understanding the *Near Me* platform, using the mobile device camera or connectivity issues. One of the key informants pointed out that digital exclusion is closely tied to the precarity of the physical living environments of some patients, e.g. those experiencing homelessness or who don't have a private space to engage in remote consultations, means that they require more than simple provision of data and devices to make TMOUD accessible and acceptable.

Interoperability across sectors and services is a common challenge when developing shared data systems. Local experiences in different Alcohol and Drug Partnership areas in Scotland found that software and hardware incompatibilities made developing a single shared assessment platform problematic. As mentioned above (2. Operational), the need for duplicate data entry, using different systems for administrative tasks, appointment booking, and reporting on activity creates an administrative load which reduces clinical productivity, increases work stress, and contributes to a sense that technological solutions generate problems rather than solutions for frontline workers.

Domain 8: Hazard

Almost all key informants described their experience of TMOUD as a means of ensuring business continuity during periods of severe adverse weather ('the beast from the East') and the COVID-19 pandemic. They perceived telehealth as a response to, and means of managing risks associated with, these hazards. As a result, potential hazards that could impact on TMOUD, such as loss of digital connectivity from power outages, were not raised by participants.

3.4   Discussion

The planners, providers, and facilitators of addiction care and support we interviewed described several dimensions to the location and management of risk associated with the delivery of remote and technology enabled addiction care.

Key domains concerned how to deliver clinical assessment and treatment, especially the prescribing of MOUD, in a way that was aligned with legal and regulatory requirements, and that supported the safety of patients and the wider public. The importance of clinical expertise and evidence-based guidance supported by professional organisations such as the royal colleges, was highlighted as being especially helpful.

Whilst participants described the contribution of TMOUD to the delivery of national and organisational strategic objectives and realising efficiencies in already pressured systems of care – they noted the potential to shift risks and pressures elsewhere in the system, and to place potentially unsustainable burdens on staff.

These results suggest a substantial awareness of risks, their consequences, and how to manage them among staff working in the addiction sector. This has been gained as the result of the introduction of TMOUD to ensure business continuity during the COVID-19 pandemic, and subsequently to support delivery of national strategic priorities associated with reducing drug-related deaths.

This learning has the potential to inform ongoing developments in the delivery of addiction treatment, care and support, and is especially important in the context of ongoing interest in the utilisation of technology to support health and care delivery, efforts to further reduce barriers to treatment and enable more people to benefit from addiction recovery; all in the context of ongoing pressures on public sector finances and organisations.

These results should be considered alongside existing evidence of risk management, service design and delivery in digitally connected health services. Previous international work has described the experience of telemedicine in addictions from patient (Cole *et al*., 2021; Lockard, *et al*., 2022; Mayet, *et al*., 2021) and professional perspectives (Kruse *et al*., 2020; Hunter *et al*., 2021; Uscher-Pines, 2020). Recent projects have explored these issues with specific reference to people who use drugs, addiction treatment and harm reduction services in the Scottish context (Daneshvar, Strachan, Matheson, n.d.; Raman and Simms, 2023).

These, plus emerging guidelines, describe barriers to and facilitators of high-quality remote healthcare and should be used to inform the design of new Scottish care pathways and services and, importantly, to inform efforts to measure the impacts on patients, health and care providers, and wider connected systems. In line with recommendations from related projects, this work should include user-centric co-design approaches to ensure the meaningful involvement of those involved in the design and delivery, and the beneficiaries, of addiction services.

3.5   Key findings

- Whilst the benefits are readily identifiable, there are risks associated with the delivery of remote and digitally connected addiction treatment and care.

- Clinical and patient safety issues were frequently described, especially concerning the safe and appropriate prescribing of medications for the treatment of opioid use disorders.

- Other risks included potentially negative impacts on wider systems of health and social care resulting from increased recruitment and retention of patients receiving addiction care, and challenges to staff morale and wellbeing.

- Active engagement with treatment services staff in risk mitigation and the design of technology enabled services which embed clinical risk management is necessary to increase the use of remote and digitally connected addiction treatment.

- Engagement with services is complemented by the growing local and international peer-reviewed evidence base, and emerging practice guidelines to inform the ongoing development of accessible, safe and effective services in Scotland.

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4   Deliverable 2: Implementation of Co-Design in the Development and Improvement of Substance Use Services. A Scoping Review

4.1   Introduction

Substance use disorder (SUD) services play a crucial role in reducing the associated mortality and morbidity (Connery & Weiss, 2020; Corredor-Waldron & Currie, 2022; Madras *et al.*, 2020). However, engaging individuals with SUD presents significant challenges, often due to service limitations rather than inherent client resistance (Sexton *et al.*, 2008; Valdez *et al.*, 2018; Ja & Aoki, 1993; Farhoudian *et al.*, 2022). Traditional approaches may not adequately address the complex needs of this population, necessitating a shift towards more inclusive and collaborative methods. Co-design, involving active participation of stakeholders such as service users, providers, and other relevant parties (Sanders & Stappers, 2008), presents a promising avenue for improving service accessibility, acceptability, and relevance (Aronoff-Spencer *et al.*, 2022; Lotstein *et al.*, 2022; Nakarada-Kordic *et al.*, 2017). While co-design has been widely studied in healthcare contexts, its application in SUD services remains relatively unexplored. This scoping review seeks to address this gap by examining the potential benefits, unintended consequences, and methods used in applying co-design within the realm of SUD services.

4.2   Methods

Following PRISMA guidelines (Tricco *et al.*, 2018), a scoping review was conducted to comprehensively explore the existing literature on co-design in the context of SUD services.

Review questions

- Are co-design methods beneficial for improving SUD services?
- Are there any unintended positive or negative consequences to applying co-design methods?
- What types of co-design methods were used in improving SUD services?
- Are there any limitations in current studies about using co-design methods in improving SUD services?

Search strategy

The three main areas in our search, included: co-design, substance misuse/SUD and improvement of healthcare services for people who use drugs. Searches were conducted across multiple databases and grey literature sources, focusing on papers published between 2013 and 2023. A broad range of study designs was included to ensure a comprehensive understanding of the topic. Relevant studies were selected based on their alignment with the research questions, with data extraction and synthesis conducted by multiple reviewers to ensure accuracy and reliability.

One reviewer conducted searches, collated results and de-duplicated these using Endnote 20 (Gotschall, 2021) and manual review. Titles and abstracts were reviewed against the eligibility criteria in parallel. Discrepancies were reviewed and those papers were classified based on consensus. The full text of selected papers was retrieved, data was extracted, and recorded on a spreadsheet, to be independently assessed.

Structure of results

Characteristics of the selected studies were provided in a table, summarising the authors, year of publication, country, methodologies, the outcomes or products resulting from the co-design as well as key findings, and types of participants of the selected studies. Types of methods used in co-design sessions were listed and classified into three categories: "say", "do", and "make". Details of this classification method are provided below. Finally, limitations in current studies on the use of co-design methods for improving substance use services are discussed.

Method for classification

A typology introduced by Sanders (2002) was used in this review to propose a classification of participatory design methods and to classify the methods found in our search. This typology introduced three approaches to learn from others: listening to what they tell us (say), observing what they do (do), and understanding how people feel, which could not be expressed in words, by making with people. Papers were classified based on which design methods they used for co-design sessions to collaborate with participants. This typology describes three distinct approaches for engaging with users and customers during the design process: (1) "say", (2) "do" and (3) "make".

4.3   Results

Data extraction

From an initial 245 identified studies, 12 papers were included in our review (Anderson *et al.*, 2022; Bowen *et al.*, 2021; Brien *et al.*, 2023; Claborn *et al.*, 2022; Dobischok *et al.*, 2023; Duara *et al.*, 2022; Durl *et al.*, 2017; Mallakin *et al.*, 2023; Moore *et al.*, 2019; Sellen *et al.*, 2022; Wu *et al.*, 2020; Zhang *et al.*, 2019).

Of the 12 selected papers, 6 of them were conducted in North America [3 in United States (Claborn *et al.*, 2022; Moore *et al.*, 2019; Wu *et al.*, 2020) and 3 in Canada (Dobischok *et al.*, 2023; Mallakin *et al.*, 2023; Sellen *et al.*, 2022)]; 1 was in Europe [United Kingdom (Bowen *et al.*, 2021)]; 3 conducted in Australia (Anderson *et al.*, 2022; Brien *et al.*, 2023; Durl *et al.*, 2017); and 2 in Asia [1 in India (Duara *et al.*, 2022) and 1 in Singapore (Zhang *et al.*, 2019)].

Characteristics of the selected papers

There were mainly three types of participants: people with lived or living experience of substance use (PWLE), SUD professionals, and other professionals. PWLE included those with experience of methamphetamine use disorder, young people in treatment for opioid use disorder, and those who had engaged successfully with rehabilitation. SUD professionals included neuropsychology experts, researchers, overdose prevention and response experts, clinical service providers, health and community workers, first responders, and harm reductionists, among others.

The outcomes of the co-design process in the selected included the creation of prototypes (Brien *et al.*, 2023; Sellen *et al.*, 2022; Zhang *et al.*, 2019), collages for alcohol education programme (Durl *et al.*, 2017), the development of mobile phone applications (Bowen *et al.*, 2021; Moore *et al.*, 2019), a drug surveillance dashboard (Duara *et al.*, 2022; Wu *et al.*, 2020), and short films (Duara *et al.*, 2022). Except for the dashboard (Wu *et al.*, 2020) and a local early warning system designed for healthcare staff (Brien *et al.*, 2023), all other studies involved PWLE as co-design participants.

4.4   Discussion

Benefits of using co-design methods in the context of SUD services

The reviewed studies described how co-design allows not only for a better understanding of the individuals' preferences and unique needs, but also for the inclusion of key players in the creation of the services or products themselves.

On the topic of accessibility, co-design has been shown to help address stigma and other barriers that may hinder access to services, leading to more inclusive and equitable services. Duara *et al.* (2022) highlighted the success of the co-creation process in promoting the voices of young PWUD in Assam, India, as well as people who did not experience SUD such as local community members. Similarly, Claborn *et al.* (2022) showed that engaging in community-level research enhances implementation and can to some extent decrease the stigma associated with substance use.

Stakeholder engagement in co-design for SUD

PWLE bring unique insights into their needs and experiences; service providers and researchers provide a broader perspective on systemic factors. Including both perspectives is important because clients provide valuable first-hand preferences and experiences, while SUD professionals offer specialised knowledge and insights, allowing for a comprehensive and well-rounded understanding that enhances the development of the programmes or services. Moreover, involving individuals from both sides can also help understand and balance the goals and cognition differences of clients and other stakeholders. For example, Arissen *et al.* (2022) revealed that while therapists considered virtual reality therapy relatively uncomplicated, the majority of patients (93.1%) found it too complicated and did not support its inclusion in inpatient addiction treatment services.

Unintended effects of co-design

One aspect that should be considered when including inputs from different stakeholders is the potential power differential within a co-design group. Powell *et al.* (2019) included patient navigators (PNs) and recovery specialists (RSs) in the same focus group. They noted that power dynamics among participants, influenced by the supervision relationship between PNs and RSs, potentially hindered their willingness to express criticisms. Such imbalance might happen between clients and service providers as well.

Limitation in current studies about using co-design methods

Most of the studies reviewed only applied the "say" methods, listened to what others expressed in interviews and interpreted their thoughts and opinions, often focusing on acceptability and usability (Anderson *et al.*, 2022; Claborn *et al.*, 2022). Studies applying the "say" methods, are generally simpler to conduct but may lack crucial insights, because what participants say does not necessarily reflect what they do. A smaller number of studies, observed how individuals utilised products or services and understood their behaviours, addressing the "do" categories (Bowen *et al.*, 2021; Dobischok *et al.*, 2023; Wu *et al.*, 2020) via usability testing.

One of the few studies that clearly used a "make" approach was Zhang *et al.* (2019), where researchers conducted critique, solution, and prototype workshops with stakeholders. By asking participants to generate frame-by-frame sketches in the prototype workshops by themselves, they eliminated the possible inconsistencies between what participants say they like and what they really like by generating the desired outcome. A few others included "do" approaches, Brien *et al.* (2023), for example, conducted brainstorming workshops to find out the possible solutions and decide on the features of an alert system with participants that met the needs of stakeholders.

A framework for co-design methods and participant involvement

We proposed a diagram (Figure 2) to classify which methods should be used for "say", aligning with opinion information collection, "do", used for action observation and "make", optimal for co-creation and co-production, and aligning used methods with expected outcomes. The methods are first divided into "second hand" and "first hand", with the latter involving interaction with the sources of information. The level of collaboration ranged from low in the "say" group, typically involving one-way communication, to high in the "make" group, involving active participation and co-creation with stakeholders.

Figure 1 Enhancing co-design understanding and method selection

SECOND-HAND INFORMATION	FIRST-HAND INFORMATION		
	SAY	**DO**	**MAKE**
Desk research	Interview	Usability testing	Workshop
Literature review	Focus group	A/B testing	Design sprint
Competitive analysis	Survey	Contextual inquiry	Wireframing
	Questionnaire	Field study	Prototyping
		Eyetracking	
		Card sorting / Tree testing	
		Desirability study	

LOW   **Level of Collaboration**   HIGH

According to Sanders (2002), by examining all three perspectives - their verbal expressions (say), individuals' actions (do), and their creative output (make) - empathy can be established with the participants.

4.5   Conclusion

Co-design represents a promising approach for advancing SUD services by fostering collaboration, inclusivity, and user-centeredness. By actively involving PWLE, SUD service staff, and other stakeholders in the design and development process, we can create more effective, accessible, and person-centred interventions that better meet the needs of individuals with SUD. While further research is needed to fully realize the potential of co-design in the SUD field, the findings of this scoping review underscore its importance as a potentially transformative strategy for informing service design and delivery to improve outcomes for people who use drugs.

4.6   Key findings

- Academic research and publications about co-design are relatively scarce, but further evidence has been emerging in recent years.

- Co-design allows the meaningful involvement of key stakeholders in service (re)design.

- Most work has been limited to recording what stakeholders "say" regarding the design of services, opportunities should be created to engage them in the more collaborative "do" and "make" methods.

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5 Deliverable 3: Co-design sessions with service providers and people with lived / living experience of problem substance use

5.1 Introduction

People who use drugs (PWUD), including those in treatment and recovery, often experience multiple forms of social exclusion, including personal, social, and structural factors that negatively affect access to services. The implementation and development of digital health technologies, such as live video consultations, provides opportunities to enhance engagement, improve treatment outcomes, and reduce risk of harm among PWUD. Human-Centred Design (HCD) approaches emphasize the importance of engaging service users and staff in the creation of inclusive and effective services.

Informed by the results of our literature review, we delivered HCD sessions that enabled service providers and people with lived / living experience of problematic substance use (PWLE) to describe approaches that would integrate current models of service delivery with digital interventions in the delivery of addiction care.

5.2 Methods

The workshops all followed a similar format where participants were asked to consider the benefits and challenges of implementing *Near Me* in the delivery of addiction treatment and to describe the components of an integrated model of care that could be effective, efficient, and based on what they valued most. Sessions were audio recorded, recordings were transcribed, and transcripts underwent thematic analysis to identify key themes.

5.3 Results

We facilitated four workshops, one for addiction service staff (n=8) and three for PWLE (n=11). Each workshop lasted around 90 minutes. In the quotations provided below: 'F' designates one or both facilitators, 'PWLE' represents people with lived/living experience, and 'SP' denotes service providers involved in clinical addiction treatment service provision. Numbers (e.g., SP1, SP2) are used to identify different participants within each exchange, and do not uniquely identify the same individuals throughout the report. A bullet point indicates the start of each exchange.

Current experience of video calling, both personally and to support their healthcare / provision of healthcare

Seven of the eight service providers were already aware of *Near Me* and remembered addiction service plans to use the platform during the COVID-19 pandemic. There were varying levels of understanding of the capabilities of existing NHS information technology among service providers. For example, it is currently possible to send patients details of upcoming appointments by SMS text message, but this functionality is only implemented in the NHS IT system and is not available to social care staff.

One PWLE described their experience of remote video appointments with their GP to review an ongoing health condition and arrange for fit/sickness notes to be issued. Interestingly this was conducted via a proprietary (Apple) video calling application rather than *Near Me*; it was not known whether this was a pragmatic response during the COVID-19 pandemic or not. This patient successfully managed information across primary care and state benefit IT systems to meet their basic health, income, and housing needs.

- *[PWLE] … my doctor that was giving me my sick line [Fitness to Work certificates] and stuff ken he was only taking me intae the doctors [surgery] if there was something new wrong with me, ken so, we were, he was on the phone ken and we done the FaceTime thing ken and like he was "Are you, are you, Is there anything changed? Is it worse, is it better?" because it was the same basically, he telt me the dates on ma sick note er the phone ken so the only thing I had to do was go to my tablet and put it in my journal on the Universal Credit [website] so aye, it's definitely better.*

Potential concerns with using *Near Me* to support their access to / provision of healthcare

PWLE had mixed views regarding access to adequate digital technology and connectivity among their peers. Some thought that most people who use drugs and those in addiction treatment had access to a smart phone. There was awareness of potential barriers resulting from IT systems / applications that have specific minimum hardware and software requirements that might exclude people with older devices.

- *[PWLE2] My smartphone, I cannae get FaceTime, WhatsApp and things like that cos it's an old model … See when I was doing the thing with the guy with the job Centre, says it wouldnae work with … Chrome 46 and under, it wouldn't work with that.*

Service providers identified barriers to digital inclusion affecting their current / potential patients:

- *[SP1] So some of our patients don't have Internet to start with some of them don't even have electricity. Some of them don't have so they might not have any data on their phone. They might not even have a phone. I wouldn't say all of them. I'd say them more chaotic, the more chaotic.*

  [SP2] Or in the alcohol service they're older adults as well or they're older adults, yeah … and they don't do, they just don't do that, they have a phone that's kind of like a Nokia, the old Nokias.

  [SP1] They're the ones that probably that don't have mobile phones they lose it every single week. They've not got any Internet.

  [SP2] A lot of our patients change their numbers more times than they've had hot dinners so it's really hard to keep up.

Service providers also noted areas of the Health Board with no or poor mobile phone signal, often an issue in areas of high socio-economic deprivation and a higher proportion of problematic substance use.

- *[SP1] I would say in the area of Northeast Fife […] the signal, trying to get anyone on the phone, it's just like, you know, I don't know how they do it, but. Everyone else is like it just goes to "they're not available". It's terrible.*
  [SP2] … It's a blackspot In Helensborough, Colinport, Elie is absolutely dreadful I mean to the point where I actually switch off my mobile signal anyway.

Data protection concerns were a key issue for service providers, especially for social care staff who did not have experience of, or access to, electronic NHS systems such as TrakCare.

- *[SP1] I know, I've had a couple that erm [patient name] for example, who loses multiple mobile phones and asked if I could e-mail reminders, but I was told that I couldn't we weren't allowed to do that … I just know that I was told at the time that I like. I was told we're not allowed to do that …*
  [SP2] Because you're not guaranteed the security aspects on that … but the problem is, is that if we're emailing a patient then you know, could be going to Hotmail, which is in a data centre somewhere in America, so therefore, you're technically sharing private information.

Service providers recognised that some people who use drugs have poor memory and difficulties with self-management, and that friends, partners, or family members could help remind them of upcoming appointments and support communication and (re)engagement in care.

- *[F] Would it be OK say if we ask them to give us not just their own mobile number, but somebody else's mobile number that we could use if we can't get hold of them on this? Would that work?*
  [SP1] It depends whose name you've got in on the confidential mandate. A lot of them won't have anybody on it.
- *[SP2] If a patient gives consent. You know I need the consent and if the consent captures exactly. What it's for, and when you put that?*

Concerns regarding patient confidentiality were raised in discussions on potential settings for the provision of connected digital technologies to enable access to *Near Me* for patients without devices or data.

- *[F] What about privacy?*
  [SP1] That's definitely a challenge … you want privacy in order to do a Near Me, you know to speak to a nurse or a doctor or whatever. That could be a big challenge for some.
  [SP2] So you couldn't be in a library.
  [SP3] Or in the street, for example.

Service providers noted that they rely on a range of sensory information – smell (alcohol, body odour) and sight (observation of walking gait, visible markers of injection drug use or self-harm) – during consultations; information that is not readily available when healthcare is delivered remotely:

- *[SP] You haven't got your nose. You can't smell the alcohol. A very nice lady patient was … talking about kind of coming down on methadone and I was getting these waves of alcohol from her.*
  [SP] … you could have a quick look at their arms to see if there's any harm and self-harm or anything like that with it.
  [SP] Assessing the gait … watching them walking, 'yeah, well, you've been injecting in your groin again' kind of gait.
  [SP] Or go into the houses we were able to kind of do an environmental risk assessment see if there's [a] stockpile of pills or all sorts of things and you know.

Clinicians also stressed the need to confirm substance use and adherence to treatment, especially in the context of prescribing medications such as opiate replacement therapies.

- *[SP1] I think the problem is that in terms of the initial assessment, you can't prescribe without a urine [test] so that's that just in or some sort of screening test to demonstrate that and you, you know, be kind of so I think just that it wouldn't be for the first or it might be the for the first if we weren't prescribing for them initially, but I think for kind of if I was going to prescribe somebody, then it would be extremely rare.*

They also described the importance of reducing opportunities for patients to meet each other, citing the risk of triggering relapse among those who are less secure in their recovery:

- *[SP1] And we'd have to be careful about not … not being in a situation where we again, we've got chaotic patients and stable patients to cohabit the same areas, same space. Because that's there's already a lot of hostage-taking going on at the pharmacies … what we need to have is an appointment system where the chaotic person is not necessarily meeting the less chaotic person.*

Likely benefits of using Near Me across the treatment and recovery journey?

Both participants groups recognised the potential for remote consultations to support efficiencies and reduce burdens on services and patients.

- *[SP] And extra support appointments like you just know that in duty clinic space you know and if someone's wanting seen fortnightly it's quite difficult because clinics are all full. So … but it would be good if you could fit in a Near Me … like in between your appointments to offer that further support.*
  [PWLE] Instead of just going in and kind of like wasting your whole day just on an appointment just waiting until you go the doctors to say "Aye, I'm alright … I'll see you in a couple of weeks"

The use of *Near Me* and other digital technologies could be adapted for different stages of the patient's care pathway. Suggestions included developing an 'ice breaking' video to raise awareness of routes into the service, health and social care staff members and their roles, and treatment options.

- *[SP] I think we're lacking … we should have something for patients to attend before even their first assessment. So they're aware of this is what you're gonna get from us and this is what we Are going to do for you.*

Near Me could provide low threshold access to addiction care for people who are struggling with withdrawals including those earlier on in their recovery journey and those experiencing anxiety, low mood, or other emotional and mental health difficulties.

- *[PWLE] I think people get so much anxiety, so the even the appointment for some people … That's the thing that if you're in a bad place coming, that's no so easy, it's a lot easier to switch on and be in the comfort of your own house and get to somebody, reach out or something.*

For patients further along their recovery journey, *Near Me* could be alternated with in-person appointments to maintain contact between the patient and the services – with a recognition that digital engagement should not always replace face-to-face contact.

- *[PWLE] Keeping in contact it takes really one face-to-face visit every now and again … Once every three months. Keep the relationship going.*

One current patient responded positively to the suggestion that video consultations could be used to support drug screening.

- *[F] Remember when they used to send us the COVID tests? Yes, by post. And then you do it yourself. Let's say I had to send somebody urine drug screening test OK or other as well. So you could film them and then, yeah, film them doing it and then they show the results.*
[PWLE] [A clinician could say] 'Could you put that in the envelope and then post it to me?' or something lie that. So like they've only got one of these tests. They don't have loads of them, so they can't give a test to a friend to it's clean they found themselves. Whether it turns blue or whatever, drop it in the sealed bag, and once that bag sealed it maybe can never be opened again until you get a tamper proof, yeah. And then they send it to you. That would work as well.

What else could increase confidence in using Near Me?

Both participant groups thought there would be utility in developing the system to provide several appointment reminders by SMS text or email as an additional support to completement the current system of sending appointment letters. This would also align with approaches used by other state services e.g. Jobcentre Plus.

- *[F] So we could do automatic appointment reminders. Would that help do you think?*
[SP2] A lot of mine, like a lot of like a paper letter. They like to get a paper letter because it's a reminder and they'll say that they'll stick up on the fridge or they'll put it somewhere that they can, that they see it and they may still ask you, you know, they'll still phone up the main office and say you know, it doesn't matter whether you've texted them or if you, you know, whatever you've done, they'll still phone up the main office and ask just for a reminder of their appointment . But a lot of them do like a paper copy.
[F] So we're gonna offer you an appointment through the Near Me platform, right? Would it be irritating for you if … how is best to remind you of the appointment? Cause you're gonna be forgetting, right?
[PWLE] Text
[F] how many texts, one
[PWLE] er, two
[F] two texts
[PWLE] One on the week…
[F] One on the week and one on the day
[PWLE] [inaudible]
[F] OK, OK. Or the day before. OK. Yeah. Three texts. Alright. So one at the beginning of the week, one the day before and one on the day.
[PWLE] Same as the ones you get from the job centre, yeah.

Other digital approaches that could add value to the utilisation or provision of healthcare

PWLE and service providers identified several areas beyond video consultations appointments where digital healthcare could offer benefits to patients and services.

One PWLE responded positively to the suggestion that they could complete screening and assessment tools, e.g. questionnaires about their substance use, health, and social care needs, online between appointments.

- *[F] So let's say I'm seeing you for the first time. Would it work if I had to send you something beforehand that you could fill in so that then when I see you, the hour I spend with you I'm getting to know you a bit more rather than having to ask you question after question, would that be offensive or…*
  [PWLE] Nah, I think that would be good cos then you wouldn't have to ask all them time-wasting questions … See if there is just tick boxes and like, you could put an optional answer - it would be a lot easier than sitting and obviously doing that again…

But a service provider rejected the same suggestion.

- *[F] Would it help if we give them homework to do?*
  [SP] No…
  [F] OK.
  [SP] … that would get binned, "I'm not doing that. I'm not doing nothing."

Service providers engaged with the proposal to provide connected technologies in community venues where patients could access remote addiction consultations. They thought that this might be an option for patients who are relatively well established in their recovery, but lack the devices and/or online data packages required to use *Near Me*.

- *[F] … say you live in St Andrews? Yeah. And you know, there's the Community Hospital near Morrisons.*

  [SP] Yeah. Yeah, yeah. Yes, yeah. Of course.

  [F} So say that there was a place [at the Community Hospital] … where somebody could go to so that they're not using their data.

  [SP] Yeah. Or I think if they had data, they probably be much more inclined to just use the data in their house, it's whether or not it could have the data there. But I mean in this day and age most people do have data with their phone sometimes of some kind [...]

  [F] Then it's gonna be going to be, so, it's not for everyone

  [SP] Yeah, that's what I'm thinking. It may maybe not be for everybody. I think it's maybe for the people […] that are maybe 50% through recovery halfway or something. Yeah, doing a little bit better. Yeah, a bit more structured to their life as well and can make appointments on time and things like that.

Service providers also expressed concerns about the potential for devices in such settings to be stolen and sold.

- *[SP1] You'd need to make it not valuable so it wouldn't be an iPad, it would be a Raspberry Pi with a cheap screen. So something that costs under you know sort of 70, 80 quid or something because you can do these things now these tiny little computers that cost kind of 40 pounds so you don't have to have something that would mean that somebody would have to go to the bother of actually having a crowbar with them.*
  [SP2] Give it them in the morning it's on Gumtree [online marketplace] by afternoon.

PWLE identified other digital developments that could support their health and wellbeing. This included delivery of online training that would allow their peers, friends, family and partners to learn how to respond to suspected overdose including how and when to administer Naloxone and the option to engage with emergency healthcare providers.

- *[F] […] what if somebody is on the verge of overdosing, for example. Or there's some emergency. Could we reach out to a person through this?*

  [PWLE] how could that work? The only thing I'm thinking is if was if there was an app type thing on it […] ken, a lot of addicts don't have partners, it's probably 50:50 […] but if the ones that were single even had friends that popped in and checked with them, and this thing became bigger than what it is [i.e. if Near Me was developed so they could say] 'there's an app on my phone. If you ever come in and I'm…

  [F] You can press that, yeah.

  [PWLE] And you could push that and there's a bit on it and it's SOS or whatever, it's a red button and boom and it takes you straight to a [inaudible] thing or whatever. Maybe even put a distress call with an ambulance.

5.4 Discussion

Service providers and PWLE critically engaged with concepts of how digital technologies could support the delivery of addiction treatment and care. In line with the human centred design approach, participants considered how technologies could be adopted and developed to realise improvements for people who use drugs and those who provide them with health and social care services. Potential benefits included the reduced burden on patients and staff associated with travelling to and from appointments in a large Health Board area with remote populations poorly served by public transport. Digital platforms, especially when integrated with existing health and social care systems, provide opportunities to remind patients of upcoming appointments and, where consent is given, to engage with partners and family members to support engagement with care, reducing the risk of people becoming lost to follow-up.

Beyond *Near Me*, there was consideration of wider use of digital technology to facilitate entry into and participation in addiction care. An introductory video could provide accessible information to people who use drugs who are considering (re)engaging in care, letting them know routes into the service and what to expect. Use of online surveys could facilitate the collection of routinely collected assessment information between appointments and free up time in consultations for substantive recovery work rather than form filling.

Several barriers to the integration of digital services in addiction care were described. Issues of digital exclusion, where potential beneficiaries lack reliable access to the required hardware, software, and connectivity were identified as key challenges. These could be overcome by providing PWLE with devices and data packages and/or making connected devices available in community settings.

The limitations of digital healthcare engagement were also discussed. Service providers indicated that, whilst it is possible for patients and providers to hold conversations over *Near Me*, remote consultations do not convey the rich sensory information that is available in person. Telehealth also poses challenges for the delivery of drug testing that is used to assess substance use before and during treatment, and this has significant implications for the safety of patients and prescribers. Potential solutions – including observed collection and secure postal delivery of samples for drug testing, and/or point of care drug screening – should be explored in subsequent work.

The output from these workshops has identified several opportunities for the development of greater integration of digital healthcare delivery with current models of addiction treatment and care. This should be further explored, tested, and evaluated with the involvement of PWLE and service providers. Subsequent work should seek to engage with and minimise the risks identified here. It will also be important to describe and quantify the additional supports required to translate learning into accessible and equitable clinical practice.

5.5   Key findings

- People who use drugs and service providers have experience of using voice and video calling to deliver and/or access services and this was accelerated by the move to online service delivery during the COVID-19 pandemic.

- Both groups recognise the current and potential contribution of digitally connected services to deliver addiction treatment and care and further reduce barriers to patient access and engagement.

- However significant challenges were identified, particularly by clinicians and especially in relation to the safe and appropriate prescribing of medication for the treatment for opioid use disorder.

6   Recommendations

Informed by the results of the TMAT-OLE project and the key findings from the deliverables reported here, we recommend the following actions to support the ongoing development of accessible, safe, and effective digitally connected services providing addiction treatment and care in Scotland:

1. **Education, training, and workforce development**

   Work should be undertaken to collate international evidence and learning; understand the needs of addiction service staff and managers; and engage with healthcare training and education specialists to design and deliver **workforce development opportunities** relating to provision of remote and digitally connected addiction care that is safe and effective.

2. **Evidence collection, synthesis, and production**

   Explore potential for development of a Scottish Intercollegiate Guideline Network (SIGN) **clinical guideline and/or a consensus statement** on the delivery of remote and digitally connected addiction treatment and care. Located within Healthcare Improvement Scotland, SIGN exist to make sense of evidence by creating evidence-based guidance to support decision making in health and care services.

3. **Co-designing components of a digitally connected addiction service**

   Design and deliver a programme of independently facilitated **co-design sessions** with addiction service providers and people with lived / living experience of problem drugs use (including those not currently in contact with addiction treatment and care services). These sessions should include interactive activities to actively involve stakeholders in service design based on their needs and preferences.

4. **Risk management framework**

   Develop a **risk management framework**, with the meaningful involvement of addiction service planners and providers and current / potential patients. This framework will describe a process for identifying, managing, and responding to risks associated with the delivery of remote and digitally connected addiction care.

5. **Quality improvement exercise**

   Using the outputs from this report and the above activities, update the design of a current remote / digitally connected addiction service and **conduct and evaluate a pilot project as a quality improvement exercise**. This should include a robust evaluation to assess the extent to which the exercise's aims and objectives were delivered, describe the experiences of patients and staff, and consider the wider impacts on the health and social care sector.

7   Acknowledgements

8   Appendices (available upon request)

Appendix 1. Contractual arrangements with NHS Fife for the distribution of funds

Appendix 2.

- Confirmation of insurance
- Funding approval
- Sponsor approval letter

Appendix 3. Ethics and IRAS approval from NHS Research Ethics Committee on 15 March 2023

Appendix 4. University of St Andrews School of Medicine Ethics Committee approval on 18 May 2023

Appendix 5. Final confirmation from NHS Fife was granted at the end of August 2023

Appendix 6. Insurance policy received on 25 July 2022 and the extension received on 7 August 2023