Telemedicine in Addiction RCT Protocol

Feasibility study of Telemedicine in Addiction Randomised Controlled Trial

Version: 1

Date: 13th June 2019

Funding	Academic Health Science Network East Riding CCG
Sponsor	Humber Teaching NHS FT
Clinical Trials Registration	Awaiting registration in ClinicalTrials.gov

1. Table of Contents

2. General Information

2.1 Sponsor

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The sponsor has overall responsibility for proportionate, effective arrangements being in place to set up, run and report the research project. The sponsor has overall responsibility for the research as set out in UK Policy Framework of Health and Social Care 2017 (para 9.10).

2.2 Principal Investigator

Dr Soraya Mayet (PI)	Consultant Psychiatrist - Humber Teaching NHS Foundation Trust Honorary Senior Clinical Lecturer - Hull and York Medical School Lead researcher and has responsibility for its overall conduct

2.3 Co-Investigators

Dr Iain McCaw	Higher Trainee Psychiatry - Humber Teaching NHS Foundation Trust Research coordinator
Prof Thomas Phillips	Professor of Nursing (Addictions) - University of Hull
Dr Chao Huang	Senior Lecturer in Statistics - University of Hull

2.4 Funder

Academic Health Science Network for Yorkshire and Humber and the East Riding Clinical Commissioning Group (CCG) Small Grant have jointly funded this study.

Views expressed are those of investigators and not necessarily those of funders. The funder will be receiving monitoring reports and the final research output.

2.5 Protocol contributors

The following individuals have contributed to the development of the protocol or providing advice on the study design, statistics, or information systems:

Dr Soraya Mayet - Consultant Psychiatrist/Honorary Senior Clinical Lecturer, Humber Teaching NHS FT
Dr Iain McCaw - Higher Trainee Psychiatry, Humber Teaching NHS FT
Prof Thomas Phillips - Professor of Nursing (Addictions), University of Hull
Dr Chao Huang - Senior Lecturer in Statistics, University of Hull
Dr Maureen Twiddy - Senior Lecturer in Mixed Methods Research, University of Hull
Mr John Turgoose - Information Systems Manager, Hull Health Trials Unit, University of Hull

3. List of abbreviations

OST	Opioid Substitution Treatment
TOP	Treatment Outcome Profile
TAU	Treatment as Usual
ICD-10	International classification of diseases – 10
WHO	World Health Organisation
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
PSQ	Patient Satisfaction Questionnaire
TSQ	Telemedicine Satisfaction Questionnaire
NHS	National Health Service
FT	Foundation Trust
CRF	Case report Forms
GCP	Good Clinical Practice
HHTU	Hull Health Trials Unit (University of Hull)
GDPR	General Data Protection Regulation

4. Abstract

Background to the research	Opioid dependence is a chronic relapsing condition that has a high risk of death through accidental overdose. Opioid substitution treatment (OST) with methadone or buprenorphine is an effective intervention for reducing deaths and reducing heroin use. UK guidelines recommended that service users prescribed OST have an addictions prescriber consultation every 12 weeks for improved outcomes and medication safety reasons. Nonattendance at addiction prescriber consultation appointments is high and worsens outcomes. Additionally this increases the cost to the service and reduces the number of available appointments for other service users. Missed appointments increase the overall burden on the NHS costing billions of pounds a year. It has been found that the further the distance to travel for an appointment, the higher chance of a missed appointment. Due to East Riding of Yorkshire County spanning a large geographical area (almost 2,500 square kilometres), this presents a challenge for providing a comprehensive county wide addictions service. The addictions service uses a modified hub-and-spoke model to enhance access to the addictions service, particularly psychosocial interventions and drug testing. However as there are few addiction prescribers, service users prescribed OST generally have their addiction prescriber consultation appointments at larger Hubs. Therefore service users may travel up to 50 km round trip for appointments, alternatively addiction prescribers travel to outreach sites and spend more time travelling. Telemedicine has been shown to improve attendance for some medical specialities and may be an intervention that could improve attendance rates in addictions. Telemedicine has been advocated by the World Health Organisation as potentially increasing access to healthcare. Telemedicine is the use of medical information exchanged from one site to another through electronic communication to improve health. This has been found to be cost effective, reduce travel time, improve access to healthcare and improve service user satisfaction in a variety of medical conditions and healthcare settings. Whilst there is some evidence to support telemedicine for addictions provision internationally, there are no controlled trials. Therefore there is an urgent need to assess telemedicine with addiction service users. We plan to test the feasibility of conducting a future larger trial evaluating the clinical and cost effectiveness of using telemedicine consultations to improve attendance at addiction

	prescriber appointments for service users with opioid dependent prescribed opioid substitution treatment.
Aims	Feasibility study for a larger trial To asses if telemedicine consultations as compared to standard face-to-face consultations improve attendance rates at addiction prescriber consultation appointments for opioid dependent service users prescribed opioid substitution treatment.
Plan of investigation	Undertake feasibility randomised controlled trial to determine the feasibility of conducting a future large trial to evaluate the clinical and cost effectiveness of telemedicine. In this study we will assess the feasibility of collecting data needed to answer our primary research question (randomisation, recruitment, attendance rates and follow up). The aim of the larger trial will be to assess the effectiveness of telemedicine in addictions with a primary outcome of improving attendance at addiction prescriber consultation appointments. Secondary outcomes would be service user and staff satisfaction with telemedicine consultations, travel distances and transport costs.
Summary	
Design	Feasibility study Two arm Randomised Controlled Trial of Telemedicine versus Face-to-face (treatment as usual) consultations
Setting	Specialist community addictions treatment service.
Population	Opioid dependent adults, on opioid substitution treatment, attending an outreach service, willing and able to provide informed consent.
Inclusion Criteria	Aged 18-65 years, ICD-10 opioid dependence, currently prescribed opioid substitution treatment and attending an outreach service.
Exclusion Criteria	Exclusion criteria: Not attending an outreach service, unable to adequately understand verbal English.
Health Technologies	Recruited participants will be randomly allocated to either i). Telemedicine consultation - research intervention or ii). Face-to-face consultation - control group. Telemedicine consultation via Skype Business video-calling,

	through an NHS laptop, to NHS laptop via a secure internet connection. Service users will attend a local outreach (spoke) clinic for telemedicine consultations. Face-to-face consultations will be treatment as usual at a Hub centre.
Outcome measures	Feasibility outcome measures: Recruitment, retention and acceptability of study. Secondary outcome measures: Attendance rates at appointments, Service user and Staff satisfaction, Travel distance. Treatment Outcome Profile (TOP) and urine drug tests. Estimated public transport costs
Sample Size	60 participants.
Allocation	Participants will be allocated following informed consent. This will be not be blinded due to study intervention

5. Background

Opioid dependence

Opioid dependence is a chronic relapsing condition that has a high risk of death through accidental overdose (WHO, 2009). Opioids are known to be a factor in 79% of drug related deaths in Europe (EMCDDA, 2017). The United Kingdom (UK) has one of the highest rates of drug related death rates in Europe (EMCDDA, 2017) and this is a significant public health concern.

Opioid Substitution Treatment (OST)

Opioid substitution treatment (OST) with methadone or buprenorphine is an effective intervention for reducing heroin use, reducing deaths and reducing spread of blood bourne virus's (NICE, 2007a). OST is enhanced by psychosocial interventions (NICE, 2007b) and has been found to be a cost effective intervention (Godfrey, Stewart and Gossop, 2004). In 2016, in the UK, there were an estimated 330,445 high risk opioid user s, of which 138,422 were prescribed OST (EMCDDA 2018).

Addiction prescriber consultation

UK Guidelines recommend that service users prescribed OST have an addictions prescriber consultation at least every 3 months. In the United Kingdom (UK), an addiction prescriber may be Consultant Psychiatrist on the GMC specialist register with an endorsement in addiction psychiatry, GP with Special Interest (GPSI) in addictions or a non-medical prescriber specialising in addictions.

An addiction prescriber consultation is normally a face-to-face consultation between the addictions prescriber and the patient. This consultation is for improved service user outcomes, medication enhancement and safety, in addition to a holistic assessment of substance use, physical health, mental health, wellbeing, social situation and the service user's personal recovery goals (Clinical Guidelines on Drug Misuse and Dependence Update, 2017). However rates of nonattendance at addictions services are high and people who do not attend addictions appointments often have worse outcomes (Milward, Lynskey and Strang, 2014).

Nonattendance at appointments

Nonattendance at appointments is a major financial burden for healthcare services internationally. In the UK, in 2016/17, NHS data show that there were almost 8 million missed hospital appointments, which has been estimated as costing almost £1 billion (Secondary Care Analysis Team, NHS Digital, 2019). Nonattendance at addiction prescriber appointments increases costs as more appointments are required. This also means there are fewer appointments available for service users who need an appointment. Nonattendance may be due to a variety of factors including distance travelled; longer travel distances have worse outcomes and higher rates of nonattendance (Kelly et al., 2016). Distance and time for travel is a particular problem with healthcare provided in rural and semi-rural locations with large geographical areas such as East Riding of Yorkshire. However this also affects cities where travel times can be extensive.

Hub-and-Spoke Model

The hub-and-spoke model attempts to address the difficulty in providing healthcare services across a large geographical location. This model of healthcare delivery has a main anchor (hub) which offers the full range of service, complemented by

secondary sites (spokes) which offer limited services, with pathways to access the Hub (Elrod and Fortenberry, 2017).

There is an adapted hub-and-spoke model to provide a comprehensive community addictions service across the East Riding of Yorkshire, which spans approximately 2,500 square kilometres with around 350,000 population. The addictions service operates from three main hubs with approximately 10 spoke sites. Service users will attend the Hubs for both psychosocial and pharmacological interventions (and see an addictions prescriber) or attend the spoke sites for psychosocial interventions, collection of prescriptions and testing. However this does mean that service users might travel up to 50 km round trip for an addictions prescriber consultation. Alternatively the specialist addiction prescriber will travel to outreach services, reducing effective time to see service users due to travel.

Telemedicine

As distance travelled can be a significant impediment for service users attending appointments, the use of telemedicine has been proposed as a possible solution. This has been shown to be effective for improving attendance rates in other medical conditions (Bagayoko et al., 2014). Telemedicine has been advocated by the World Health Organisation as technology that has a 'great potential to address some of the challenges faced by both developed and developing countries in providing accessible, cost effective, high-quality health care services'. Telemedicine has potential to 'overcome geographical barriers, and increase access to health care services' (WHO, 2010).

Telemedicine, which is sometimes called telehealth, refers to providing healthcare from one site to another through information communication technologies such as the internet with the aim to improve health (The American Telemedicine Association, 2018). Telemedicine or telehealth has been used for healthcare assessments, making diagnoses, providing treatment, prevention of diseases, research for the continuing education of healthcare providers, with an aim at advancing the health of individuals and their communities (WHO, 2010).

A systematic review of ninety three trials of telemedicine, found that telemedicine can be a cost effective intervention, improve healthcare access, give greater service user satisfaction and reduce travel time as compared to routine face-to-face healthcare appointments (Flodgren et al., 2015). This evidence combined with other reviews has shown that telemedicine can be beneficial (Goodwin and Royer, 2012) and provides an opportunity to enhance healthcare (Tuckson, Edmunds and Hodgkins, 2017). However despite promising results, more research has been recommended (Goodwin and Royer, 2012).

Telemedicine in Addictions

Telemedicine has been used in Ontario, Canada where there are particular challenges providing healthcare services to an area of over 800,000 square kilometres. Evaluation of the telemedicine service found, approximately 62% of telemedicine consultations were for mental health and addictions between 2008 and 2014 (O'Gorman, Hogenbirk and Warry, 2016). Furthermore, evidence suggests that telemedicine may increase access to Substance Misuse information and support for service users (Molfenter et al., 2018).

Telemedicine in addiction studies in the USA has shown beneficial outcomes. Telemedicine has been used for buprenorphine treatment clinically and Weintraub et

al (2018) conducted a retrospective chart review of service users and found that this was effective at keeping service users within treatment at 3 months of treatment with 86.1% having opiate negative tests suggesting very good outcomes. Zheng et al (2017) conducted a similar retrospective chart review, comparing outcome measures between telemedicine and face-to-face reviews for buprenorphine treatment. They found that there was no statistically significant difference between additional substance misuse, time to reach 30 to 90 days of consecutive days of abstinence and service user retention rates between 90 and 365 days of treatment between the two groups.

Telemedicine has also shown favourable rates of engagement in providing Motivational Enhancement therapy to rural offenders with alcohol misuse (Staton-Tindall et al., 2012). Another question of whether service users find telemedicine satisfactory in addictions is important and this appears to be at least as beneficial to service users as compared to face-to-face consultations (Frueh, Henderson and Myrick, 2005).

Whilst there is increasing evidence suggesting the efficacy of delivering addictions treatments by telemedicine, these are with non-controlled trials. There are no published randomised controlled trials of telemedicine in addictions settings, specifically assessing opioid dependence and assessing attendance at with addiction prescribers, internationally or the UK. For this reason, we are planning a randomised controlled feasibility trial to assess whether telemedicine improves attendance rates, is satisfactory for service users and reduces travel, in the addictions setting for opioid dependent service users with a view to a larger study.

6. Study design

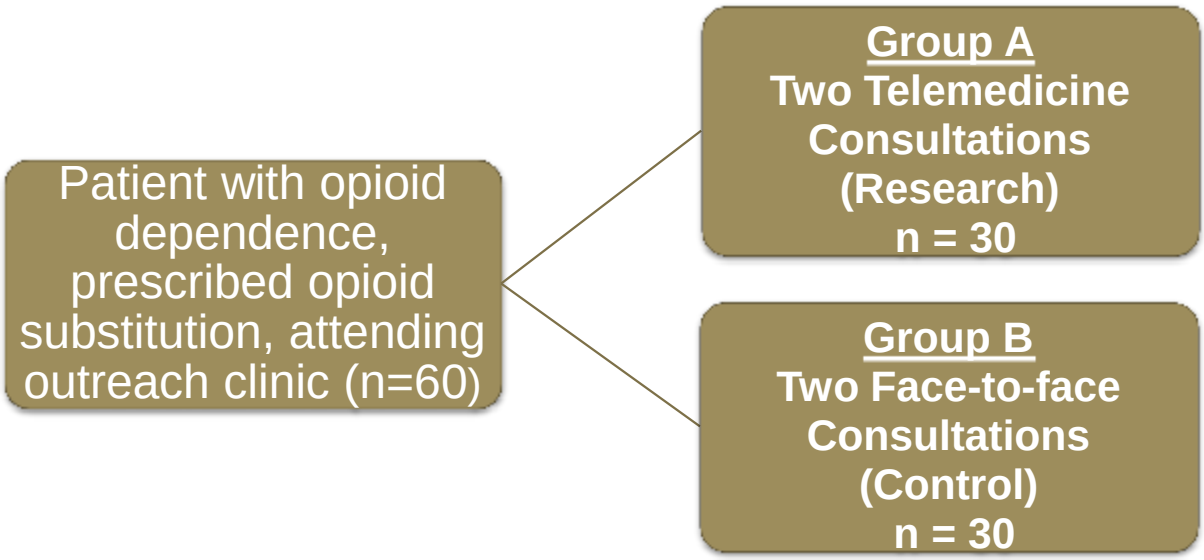
This is a randomised controlled feasibility trial. A total of 60 participants from one community addictions service will be recruited and randomly allocated to receive either:

i. Telemedicine consultation (research) Group A
ii. Face to face consultation (treatment as usual (TAU) control) Group B

See Figure 1

Feasibility outcomes are recruitment, retention and follow up. Attendance rates, service user and staff satisfaction, distance travelled will be assessed as potential measures for the larger study.

Figure 1: Randomised Controlled Trial assigning participants to each arm of the trial



7. Aims and objectives

The aim is to assess the feasibility of conducting a future RCT of the clinical and cost effectiveness of telemedicine in addictions, with the following objectives:

1. Assess numbers of eligible service users, rates of recruitment and suitability of recruitment procedures (feasibility measure)
2. Assess the acceptability of the study to service users (feasibility measure)
3. Characterise aspects of the primary outcome measure needed for a power (sample size) calculation for a larger confirmatory trial (feasibility measure)
4. Assess the attendance rates at appointments which will be primary outcome for larger study, service user satisfaction, treatment outcomes including urine tests, travel distance, estimated public transport costs and ability to collect this data for the trial (secondary outcome)

8. Trial design

This is a prospective, single centre, randomised feasibility study to assess the feasibility and acceptability of performing a definitive phase III trial comparing telemedicine with traditional face-to-face consultation for service users who are being prescribed opioid substitution treatment (oral methadone or oral buprenorphine) for opioid dependence. Participants will be followed up at 4 months.

8.1 Eligibility criteria

Inclusion criteria for individual participants

- Diagnosis of opioid dependence
- Prescribed opioid substitution treatment (OST)
- Aged 18 years to 65 years
- Willing and able to provide informed consent
- Attending an outreach (spoke) clinic for keyworker appointments

Exclusion criteria for individual participants

- Service users who cannot read English AND would require the service of an interpreter to understand a brief oral description of the study
- Service users who have already entered the trial.

8.2 Intervention details

The participants will be randomised to receive one of the following arms:

Group A. Telemedicine Consultation (Research).

This will be delivered using Skype business video-calling software through NHS approved laptops via a secure NHS Internet connection. The service user would attend at the outreach (spoke) service near to their home where they would see a keyworker (face-to-face) for the baseline assessment and drug tests. The keyworker would stay with the service user and the service user would see the addictions prescriber through Skype video-calling on the keyworkers laptop. The prescriber would be located remotely at the community Hub.

Group B. Face-to-Face Consultation (Control).

Service users randomised to receive usual treatment will continue with face-to-face consultations as per standard of care. This will be delivered using the traditional system whereby the service user would travel to the community hub, see a keyworker (face-to-face) for the baseline assessment and drug tests and would see the addictions prescriber face- to-face in the clinic.

Content of the consultation

The content of the consultation would remain the same for both groups as per standard clinical practice. This would assess reason for consultation, prescribed medication, substance use, medical and mental health, social situation, recovery goals, examination and drug tests, diagnosis, and management plan.

Number of Interventions

Both groups will receive two consecutive appointments within the same group e.g. either telemedicine or both face-to-face consultations. All other aspects of addictions treatment will remain the same. Therefore the only difference in treatment will be whether the participant receives a Telemedicine (research) consultation or a Face-to-Face consultation (Control arm).

Timing

The first consultation would be offered within 4 weeks of consent, the second consultation would be within 12 weeks of the first consultation, follow up interviews within 4 week of second consultation.

Non attendance

Participants will be given adequate notice of their next appointment as per standard clinical care. All cancellations on the day would be considered non-attendance.

Communication with GP and keyworker

A standard letter will be sent to the keyworker/GP to add to the patient electronic care records to inform them that they are in the trial (See GP letter).

The trial design has been created to reflect the future confirmatory trial in which “Telemedicine consultations” (Group A) will be compared to a Control condition (Treatment As Usual; TAU) (Group B).

8.3 Sites

We will recruit from one NHS community addictions service (East Riding Partnership under Humber Teaching NHS FT) serving the population of East Riding, which spans approximately 2500 square km. For easier access, this has a modified Hub-and-spoke model, with three Hubs located in Bridlington, Goole and Hull and associated spoke (outreach) clinics located at a variety of locations across East Riding. We will recruit from up to seven of the spoke (outreach) clinics based in Driffield, Beverley, Withernsea, Pocklington, Hedon, Hessle and Hornsea.

8.4 Screening

Addictions clinic outreach keyworkers and addictions prescribers will identify service users who may be eligible – as per inclusion criteria.

8.5 Recruitment of participants

Giving Information:

Service users identified through screening procedures will be approached by their Addictions clinic keyworkers/prescriber who will give information about the study and give a participant information sheet (see attached). Service users who are interested in the study will be asked if they would be willing to speak with a member of the research team about the research trial. If a service user doesn't want to take part in the study for any reason, this will not affect their treatment.

Service users will be given at least 24 hours to make a decision after which a member of the research team will subsequently contact the service user to provide details of the nature and purpose of the research.

Obtaining consent:

If the service user expresses that they wish to continue with the research process, an initial assessment appointment will be arranged with the researcher.

Informed consent will be collected electronically by the researcher at this initial assessment; the voluntary nature of the research will be highlighted including the right to withdraw at any time.

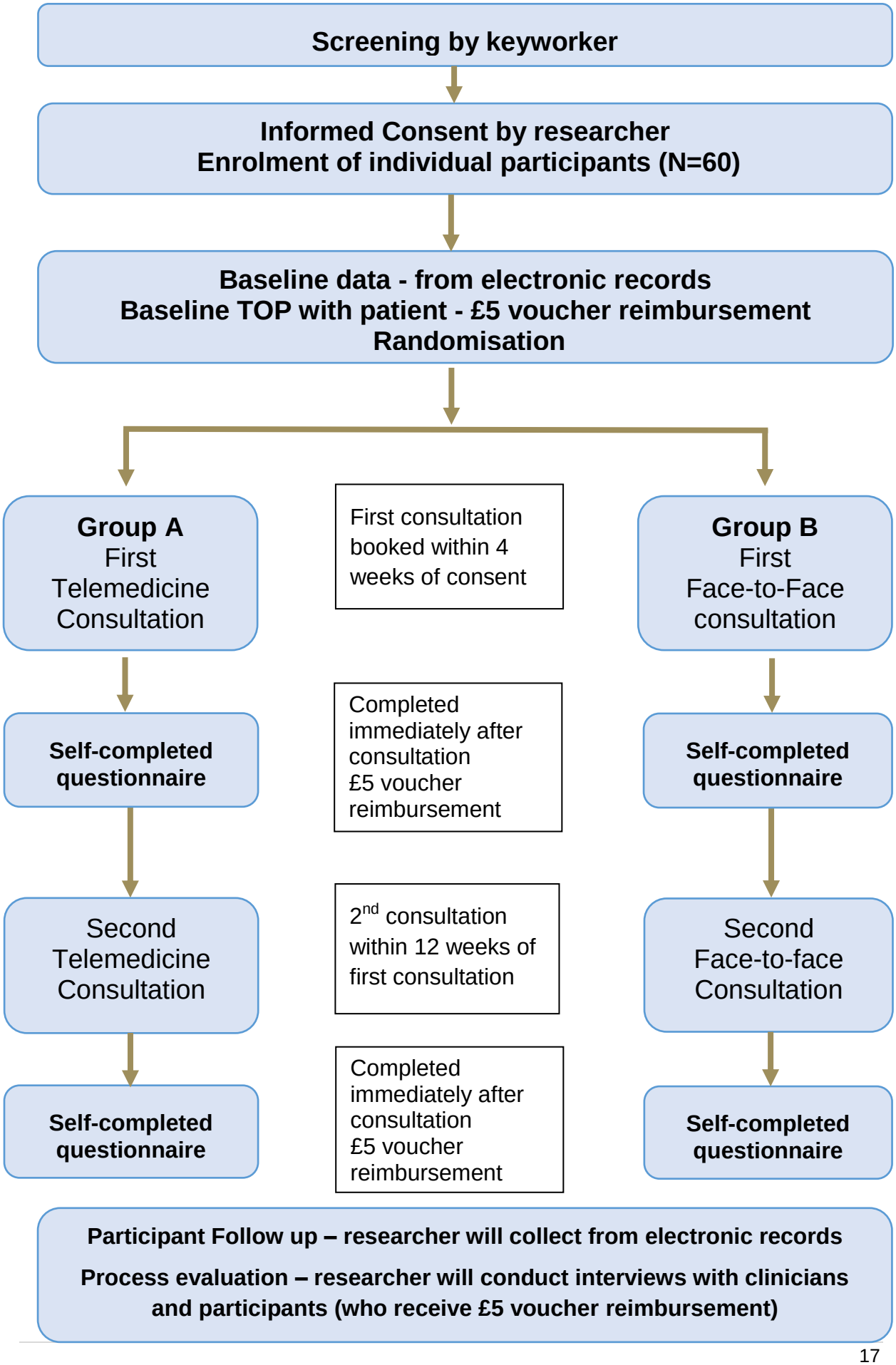
8.6 Training

All staff involved with informed consent will complete Good Clinical Practice (GCP) training. All addictions clinic keyworkers, prescribers and researchers will be trained on trial inclusion criteria and screening of service users by SM and IM.

8.7 Withdrawal of Participants

All potential participants will be informed that that the clinical care that they receive will not be affected by their decision whether or not to take part in the research and they are free to withdraw at any time without providing a reason for them doing so. Data collected up to the time of withdrawal will be used as appropriate unless the participant wishes for their data not to be used and will therefore be destroyed. Withdrawn subjects will be replaced as far as possible within the constraints of the duration of recruitment. If the decision not to continue prescribing/taking opioid substitution treatment is made at any stage of the trial, participants will not be withdrawn from the trial and outcomes will still be collected.

8.8 Participant Timeline



8.9 Randomisation

Randomisation will be carried out after consent has been gained and the initial baseline assessment has been conducted. This will be conducted via Red Cap Cloud to randomize 60 participants into two treatment groups with 1:1 ratio, using random permuted blocks. A remote randomisation procedure will be used through Red Cap data management to generate the treatment allocation, which will be initiated by a trained researcher. It is not possible for participants and the study team to be blind to treatment allocation due to the treatment intervention.

9. Schedule of Events

	Pre-recruitment	Baseline	Post First Consultation	Post Second Consultation	Post-Trial	ongoing
Anonymous Screening	X					
Participant information sheet	X					
Consent		X				
Baseline data		X				
Treatment Outcome Profile (TOP)		X			X	
Telemedicine Satisfaction Questionnaire (TSQ)			X (Group A only)	X (Group A only)		
Patient Satisfaction Questionnaire (PSQ)			X	X		
Follow Up					X	
Process evaluation interview					X	
Serious Adverse Events						X

10. Data Collection

All recruited participants will complete a baseline research interview. Baseline data will also be collected from the electronic care records (See Treatment Outcome Profile CRF and Baseline CRF). The participant will be will be reimbursed £5 for their time. For both groups participants will be asked to self-complete a questionnaire after each consultation (See PSQ and TSQ (Group A only). They will be given £5 as reimbursement for their time. Participants, Prescribers and Keyworkers will be invited to take part in a process evaluation research interview. Participants will be given £5 reimbursement.

	Outcome	Measure	Source
Feasibility outcomes	Recruitment rate	1. Number of service users recruited	Consent forms
	Retention Rate	2. Number of participants followed up	Self-completed questionnaire
	Process Evaluation	3. Acceptability of the study - Views and experiences of service users and staff.	Research interview
Outcomes for larger study	Attendance rates	4. Percentage of service users who attend consultations	Electronic care records
	Service user Satisfaction	5. Validated Telemedicine Satisfaction Questionnaire (Arm A only) 6. Validated Service user Satisfaction Questionnaire	Participant Self-completed questionnaire post consultation
	Addictions Prescriber Satisfaction	7. Non Validated Prescriber satisfaction	Prescriber Self-completed questionnaire post consultation
	Addictions Outcome	8. Validated Treatment Outcome Profile 9. Urine Drug Tests	Interview and Electronic patient care record
	Distance Travelled in Km	10. Postcode of home address to postcode of address where participant attended – distance in Km via google maps	Electronic care records and website

11. Process evaluation

A research interview will be conducted with participants to assess acceptability of the intervention. This research interviews post-trial will help refine the clinical intervention. We will assess; acceptability of the intervention to participants and

clinicians. We will assess whether this can be implemented in routine practice and delivered by staff that have the necessary capacity and competencies.

Data will support refinement of the confirmatory trial intervention, trial design and the scope and focus of the process evaluation.

12. Sample size

No formal power calculations were conducted as this is a feasibility study. We aim to enrol 60 participants in total. Based on the confidence interval approach, the target sample size will provide reliable data on key feasibility parameters (consent rate of 50% with a 95% confidence interval width of +/- 13%; retention rate of 70% with a 95% confidence interval width of +/- 12% etc.).

13. Blinding

There will be no blinding due to the type of trial intervention.

14. Data collection

Baseline data collection will be conducted via accessing data through electronic care records, face-to-face and telephone research interviews (where not possible face to face.

Follow up data collection will be collected through electronic care records, self-completed questionnaires completed immediately after the consultation by participants. If there is missing data, a telephone research interview will be conducted.

Process evaluation data collection will be collected through research interviews with participants face-to-face or by telephone.

These data will be collected on all participants including those who discontinue treatment as long as they do not withdraw consent for participation in the overall study/continued collection of their data.

15. Data forms, storage and management

15.1 Electronic Data collection and storage

This will be provided by the Hull Health Trials Unit, University of Hull, using two cloud based systems – REDCap Cloud and Box. Data will be first collected on paper case report forms (CRFs), which will be inputted electronically to the HHTU REDCap Cloud database by the study researcher.

15.2 Paper forms

These will be retained at Humber NHS FT, at the Central Hub, 7 Baker Street, Hull, HU2 8HP, in a locked cabinet complying with NHD regulations.

15.3 Hull Health Trials Unit (HHTU) REDCap Cloud

The Hull Health Trials Unit (HHTU) manage an instance of the REDCap Cloud Electronic clinical database management system which is a cloud based service provided by nPhase. Data is stored in secure EU data centres which comply with international data security and governance standards against which they are audited annually. This includes ISO 27001. Contractually nPhase act as a Data Processor under GDPR. Access to personal data related to the Telemedicine in Addictions study will be limited to named individuals who will accept terms of use ahead of being granted access. Data will be downloaded for analysis by University of Hull statisticians. All identifiers will be removed before download. Analysis datasets will be stored on the HHTU Box.com instance.

15.4 HHTU Box.com Instance

The Hull Health Trials Unit manage an instance of Box collaborative storage. This data is stored and processed in secure EU data centres which comply with international data security and governance standards against which they are audited annually. This includes ISO 27001 and 27018. Contractually Box.com act as a Data Processor under GDPR. Access to personal data related to the Telemedicine in Addictions study will be limited to named individuals who will accept terms of use ahead of being granted access. Review of personal data will occur within Box i.e. any download to a local device will be prevented.

15.5 Data management

This will be undertaken by the principal investigator and study researcher within REDCap Cloud.

As both REDCap and Box store data on secure cloud servers no data will be stored locally on researcher's computers. All users are granted personal logins requiring passwords. All activity on both systems is audited and the minimum access required to perform the tasks is granted for example only the statistician performing the analysis will have the ability to download the database. Data exported for analysis and reporting will supress all identifiers.

16. General Data Protection Regulation (GDPR) compliance

Data stored in the trial database will include participant's unique serial number, initials and date of birth. Whilst the data may not directly identify a participant, in

combination it is felt to be possible to identify an individual from these and the wider dataset. As such the data is personal and in scope of GDPR.

Only the minimum identifiable information is collected to allow the study to be managed.

Participants will provide informed consent prior to participation in the study. This will include a patient information sheet and privacy notice which will explain what data is being collected and where it will be stored. It will also give contact information for the study team, the data protection officer and the ICO as required under GDPR.

Access to the trial database will be minimised to the Principal Investigator (SM), specified researcher. The trial statistician will have access when the database is locked. Additionally HHTU administrative staff will have access to the system to provide access. All access is audited.

Data will be stored within the EU. All data processors will do so under contract with specific GDPR clauses.

As the study contains special category personal data a legal basis for collecting data in the study is required both for article 6 and 9 of GDPR. These are:

Article 6.1(e) of the GDPR, i.e. our processing is necessary for the performance of a task carried out in the public interest. Research is a task that the data controller performs in the public interest. The data controller is employed by Humber Teaching NHS FT (Lisa Davies, Mary Seacole Building, Willerby Hill, Beverley Road, Willerby, HU10 6ED).

Article 9.2(j) of the GDPR, i.e. our processing is necessary for research purposes or statistical purposes. This condition applies as long as we are applying appropriate protections to keep your data secure and safeguard your interests.

17. Data analysis

All data will be analysed using SPSS. The feasibility outcomes will be summarised with appropriate summary statistics (generally frequencies and proportions). Differences between arms, where appropriate, will be assessed by examining differences in proportions. Estimates will be provided with 95% confidence intervals to provide an estimate of precision.

The primary and secondary outcomes of a future confirmatory trial will also be summarised using appropriate statistics. Differences between arms will be estimated as mean differences and difference in proportions. Associated confidence intervals will be estimated where appropriate.

The primary purpose of these estimates is to inform sample size calculations of a future confirmatory trial. This analysis is not powered to detect differences between arms in the primary and secondary outcomes of a future confirmatory trial. Therefore, these estimates will be treated as exploratory and not used as the basis for inferential statements.

All efforts will be made to avoid missing baseline data (i.e. requiring completion of baseline data before randomisation), but if this occurs, missing values will be imputed according to current recommendations (White and Thompson, 2005). Missing scale item data will be handled as per questionnaire specific recommendations, or if none exist prorating will be used (if less than 20% of items are missing the missing items will be replaced by the mean of the complete items).

18. Data monitoring

A monthly monitoring meeting will assess recruitment and targets.

19. Adverse events

19.1 Definitions

Adverse Event (AE): Any untoward medical (either physical or mental) occurrence in a participant to whom the trial intervention (telemedicine) has been administered including occurrences which are not necessarily caused by or related to this intervention.

Adverse Reaction (AR): Any untoward and unintended response in a participant to the trial intervention (telemedicine) that is related to any duration of trial intervention administered to that patient. An Adverse Reaction in this study can be that which is related to receiving telemedicine consultations.

Unexpected Adverse Reaction (UAR): An adverse reaction the nature and severity of which is not consistent with the information known about the trial intervention in question.

Serious adverse Event (SAE), Serious Adverse Reaction (SAR) or Unexpected Serious Adverse Reaction (USAR): Any adverse event, adverse reaction or unexpected adverse reaction, respectively, that

- Results in death;
- Is life-threatening (with an immediate not hypothetical risk of death at the time of the event);
- Required hospitalisation or prolongation of existing hospitalisation (but not including elective hospitalisation for pre-existing condition);
- Results in a new persistent or new significant disability or incapacity defined as:

i. Severe: a significant deterioration in the participant's ability to carry out their important activities of daily living (e.g. employed person no longer able to work, caregiver no longer able to give care, ambulant participant becoming bed bound);
ii. Persistent: 4 weeks continuous duration;

- Any other important medical condition which, though not included in the above, may jeopardise the participant and may require medical, psychological or surgical intervention to prevent one of the outcomes listed;
- Any new episode of deliberate self-harm.

19.2 Adverse event reporting

We will monitor non-serious adverse events, serious adverse events, and serious adverse reactions to trial interventions, serious deterioration, and active withdrawals from treatment. Keyworkers and prescribers will be asked to record (on CRF) and notify us if they are aware of any adverse events or active withdrawals from treatment. We will contact prescribers and keyworkers once a week to monitor possible adverse reactions.

19.3 Reporting responsibilities for AE/SAEs

Keyworkers, prescribers and researchers will be asked to record any adverse events. Any Serious Adverse Events should be reported to the PI within 24 hours.

Any SAE related or Unexpected SAE will be reported to the REC within 15 days

All SARs (and SUSARs) will be reported immediately (within 24 hours) by the PI to the Sponsor.

20. Ethical approval

Ethical approval will be obtained from the NHS Health Research Authority.

21. Dissemination

Results will be published in scientific papers and made available to participants (through poster with summary results put up in participating site waiting areas).

A summary of the results will be presented at the Humber teaching NHS FT clinical network and Research and Development annual Conference. The Protocol and findings will be published in an academic journal.

22. Trial management

IM and SM will manage the day to day running of the study.

23. Proceeding from the feasibility study to future definitive trial

To proceed to a future confirmatory trial the following outcomes should be achieved. However, not achieving these criteria does not necessarily indicate unfeasibility of a future trial but underlines changes that need to be made to recruitment procedures, attendance record keeping and resources for follow-up. These include:

- Recruitment of 42 participants (>70%);
- Accurate of recording/logging in of attendance
- Rates of post intervention follow-up (>50%).

24. Timetable for feasibility trial

This feasibility trial will be conducted over 12 months.

	1	2	3	4	5	6	7	8	9	10	11	12
	2019									2020		
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Submit HRA	X											
Test technology	X											
Preparation work	X	X										
Ethics Approval			X									
Recruitment (n=60)				X	X	X	X					
Deliver trial intervention				X	X	X	X	X	X	X		
Process Evaluation interviews							X	X	X	X		
Data inputting				X	X	X	X	X	X	X		
Data analysis										X	X	
Report writing							X	X	X	X	X	X

Case Report Forms (CRF)

24.1 Participant information sheet V1 190619

24.2 Consent V1 190619

24.3 Baseline V1 130619

24.4 GP letter V1 190619

24.5 Treatment Outcomes Profile (TOP) V1 170619

24.6 Telemedicine Satisfaction Questionnaire (TSQ) V1 130619

24.7 Patient Satisfaction Questionnaire (PSQ) V1 130619

24.8 Follow Up V1 130619

24.9 Process Evaluation Participant V1 130619

24.10 Process Evaluation Prescriber V1 130619

24.11 Process Evaluation Keyworker V1 130619

25. References

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