



<sup>9</sup>Health Protection Research Unit in Emergency  
Preparedness and Response. Public Health England,  
Salsbury, SP4 0JG

**Corresponding author**

Niall C. Anderson

[NiallCAnderson@outlook.com](mailto:NiallCAnderson@outlook.com)

Centre for Behaviour Change, University College London,  
London, UK, WC1E 7HB

## **Abstract**

### **Background**

People who inject drugs may experience difficulty accessing or maintaining involvement with traditional healthcare services. This is associated with increased health inequalities and biopsychosocial difficulties. Embedding physical healthcare services within community-based drug services may provide a practical and feasible approach to increase access and delivery of healthcare. This study explored the acceptability of, and barriers and facilitators to, embedding a pilot physical healthcare service within a community-based drug service in the United Kingdom (Bristol, England).

### **Methods**

Semi-structured interviews were conducted with service users (people who inject drugs) (n=13), and a focus group was conducted with service providers (n = 11: nine harm reduction workers, two nurses, one service manager). Topic guides included questions to explore barriers and facilitators to using and delivering the service (based on the COM-B Model), and acceptability of the service (using the Theoretical Framework of Acceptability). Transcripts were analysed using a combined deductive framework and inductive thematic analysis approach.

### **Results**

The service was viewed as highly acceptable. Service users and providers were confident they could access and provide the service respectively, and perceived it to be effective. Barriers included competing priorities of service users (e.g. drug use) and the wider service (e.g. equipment), and the potential impact of the service being removed in future was viewed as a barrier to overall healthcare access. Both service users and providers viewed embedding the physical health service within an existing community-based drug service as facilitating accessible and holistic care which reduced stigma and discrimination.

### **Conclusions**

The current study demonstrated embedding a physical health service within an existing community-drug based and alcohol service was acceptable and beneficial. Future studies are required to

demonstrate cost-effectiveness and ensure long-term sustainability, and to determine transferability of findings to other settings, organisations and countries.

**Keywords**

People who inject drugs; acceptability; barriers and facilitators; healthcare; drug services; implementation

## Introduction

Each year 500,000 deaths are attributed to drug use, with opioids accounting for over 70% (World Health Organisation, 2020). Opioid-related health difficulties are an increasing problem globally. For example, in the United States of America opioid-related overdose deaths increased by 120% between 2010 and 2018 (Rana *et al.*, 2020). In England and Wales (United Kingdom, UK), the number of opioid-related deaths doubled between 2012 and 2015 alone (Office for National Statistics, 2017), and the average age of both the opioid-dependent population and deaths have increased significantly (Hickman *et al.*, 2018; Public Health England, 2017). This poses an increasing public health and physical healthcare challenge due to opioid dependence being associated with increased likelihood of (accidental) overdose, suicide and premature mortality (Degenhardt *et al.*, 2011; Murray *et al.*, 2013).

Opioid-dependent people who inject drugs (PWID) have complex health needs due to increased risk of blood borne viruses (BBV), sexually transmitted infections (STIs), or experiencing respiratory, cardiac, dental or dietary conditions (Cornford & Close, 2016; Degenhardt *et al.*, 2019). This makes accessing healthcare vitally important. However, PWID often encounter significant barriers to accessing healthcare, including increased likelihood of experiencing stigma and negative healthcare service provider interactions, anxiety or procrastination about accessing services, severity of dependence, and burden, challenges or competing needs for accessing services or resources (Ahern *et al.*, 2007; Ayon *et al.*, 2018; Bazzi *et al.*, 2019; Harris & Rhodes, 2013; Lan *et al.*, 2018; McCoy *et al.*, 2001; Von Hippel *et al.*, 2018). Additionally, drug injecting and mental health difficulties are strongly associated with PWID having increased prevalence of depressive and co-morbid psychiatric conditions (Genberg *et al.*, 2019; Williams *et al.*, 2017). Such mental health conditions may further exacerbate aforementioned barriers to accessing and engaging in healthcare services and treatments (Adams *et al.*, 2020; Buckingham *et al.*, 2013).

PWID are more likely to delay access to healthcare by five or more days after symptoms first appear compared to the general population (Heath *et al.*, 2016; Hope *et al.*, 2015), or to not access it at all (Nambiar *et al.*, 2017). Once admitted to hospital PWID are also more likely to leave against medical advice (Lewer *et al.*, 2020; Ti & Ti, 2015). This is problematic from PWIDs' perspectives in terms of unmet needs and worse health outcomes (Ahern *et al.*, 2007). It is also challenging from a healthcare perspective due to increased inequity, pressure on healthcare services from frequent and/or

avoidable admissions, and increased financial challenges for health (and particularly drug) services (Harris *et al.*, 2018; Hope *et al.*, 2015; Islam *et al.*, 2012; Nambiar *et al.*, 2017).

Healthcare programmes may be tailored specifically to the needs of service users in order to overcome challenges with provision and use. This may include integrating programmes within existing services such as incorporating Hepatitis C care within community-based needle and syringe programmes and drug and alcohol (rather than traditional health) services (Morris *et al.*, 2017; Muncan *et al.*, 2021), or the development of new targeted initiatives such as peer outreach point-of-care testing for Hepatitis C (Broad *et al.*, 2020). Healthcare programmes tailored specifically to PWIDs have demonstrated promise for increasing usage and improving health outcomes, but require systemic changes to policy and healthcare delivery (Harris & Rhodes, 2013). For example, a 2019 systematic review (Socías *et al.*, 2019) of integrated models of care for PWID with Hepatitis C indicated integrated approaches show promise for enhancing engagement; however the co-authors concluded that this was caveated by evidence currently being limited in quality. A further systematic review also demonstrated integrating Hepatitis C care within harm-reduction services or primary care demonstrate promise for enhancing engagement with testing, treatment and cure rates (Oru *et al.*, 2021). Such PWID-specific programmes may facilitate access to healthcare by reducing stigma and discrimination, and increasing service users' involvement in their care (Ti & Kerr, 2013). However, to effectively engage and retain PWID, services must account for logistical factors, promote positive social interactions between service users and providers, include support strategies to retain users, and account for service users overall treatment and recovery processes (Morris *et al.*, 2017; Rich *et al.*, 2016). Despite aforementioned systematic reviews demonstrating promise for integrated physical health services within PWID-specific services (Oru *et al.*, 2019; Socías *et al.*, 2019), the lack of high quality evidence highlighted the need for robustly designed community-level programmes which seek to understand and address key barriers to PWID service provision and usage (Fernandes *et al.*, 2017).

In recognition of rising drug-related deaths, Public Health England (PHE) (England, UK) called for joint working between local government authorities and healthcare services. In particular, the need for specialist drug services to support service users to access healthcare by either developing partnerships with specialist drug services (e.g. sign-posting, referrals, support), or embedding

healthcare services within the existing specialist drug and alcohol services themselves (Public Health England, 2017). Embedding healthcare within existing services has the potential to overcome some of the aforementioned challenges for PWID by providing a feasible and trusted approach (Islam *et al.*, 2012).

Implementing new healthcare interventions that are acceptable to both service users and providers, and deliver effective outcomes, is challenging (Eccles *et al.*, 2009; Michie *et al.*, 2009). Consequently, the Medical Research Council (MRC) complex intervention guidance (Medical Research Council, 2019) outlines the importance of planning for the upstream implementation of interventions through piloting services and assessing their acceptability and feasibility prior to wider-scale rollout. Despite this, intervention acceptability is often poorly defined and/or seen as a uni-dimensional construct with interventions either deemed acceptable or unacceptable rather than exploring the factors influencing this (Sekhon *et al.*, 2017). Additionally, the wide range of influences on behaviours may be discounted with interventions neglecting comprehensive understanding of behaviours and behaviour change (Michie *et al.*, 2011).

Behavioural and implementation frameworks may integrate what is known about the influences on behaviour to enhance understanding of interventions. Behavioural science frameworks allow those involved in intervention research, design and facilitation to further understand effectiveness and engagement. However, due to the complex nature of behaviour and behaviour change there is no universal model, and as such tailored selection and application of specific models is required and in some instances the use of more than one model may be useful to explore multiple constructs (Hastings *et al.*, 2020).

The acceptability of healthcare interventions may be deemed as dichotomous, with interventions being deemed as either acceptable or unacceptable by those involved. However, healthcare interventions are complex and many factors may influence the degree to which those involved perceive an intervention to be acceptable, with interventions that are more acceptable being more likely to have improved outcomes (Sekhon *et al.*, 2017). The Theoretical Framework of Acceptability (TFA) (Sekhon *et al.*, 2017) is a behavioural science framework that may be used to assess the acceptability through seven different dimensions which are proposed to influence whether and how

acceptable healthcare interventions are perceived to be (i.e. 'Affective Attitude', 'Burden', 'Ethicality', 'Intervention Coherence', 'Opportunity Costs', 'Perceived Effectiveness', and 'Self-Efficacy').

The factors influencing behaviour change within interventions is often poorly understood and reported (Michie *et al.*, 2009). In order to not only understand whether or not interventions are effective, but also to improve and replicate them, it is critical to investigate the barriers and facilitators to interventions for those actually involved in providing or using the programmes. The COM-B Model (Michie *et al.*, 2011) proposes that in order to engage in a specific behaviour an individual must have the 'Capability', 'Opportunity', and 'Motivation' to do so. Capability relates to one's physical and psychological ability to engage in the behaviour, motivation relates to ones' reflective and automatic processes regarding engaging in the behaviour, and opportunity relates to the social as well as physical factors external to the individual that are required to be able to conduct the behaviour.

The TFA has been applied to understand the acceptability of interventions, and COM-B the factors influencing the likelihood of engaging in specific behaviours, across a range of healthcare settings and interventions (Hamilton *et al.*, 2020; Herbec *et al.*, 2020). This includes PWID programmes such as community-based point-of-care Hepatitis C testing (Latham *et al.*, 2019), HIV self-sampling (Brown *et al.*, 2018) and HIV point-of-care testing (Corker *et al.*, In-Press;). In order to not only determine the factors influencing the acceptability of a healthcare intervention from service users' and service providers' perspective, but also the barriers and facilitators that influence engagement with the intervention, the application of both TFA (Sekhon *et al.*, 2017) and COM-B (Michie *et al.*, 2011) may provide a practical, feasible and beneficial approach (Corker *et al.*, In-Press).

## **Methods**

### **Aim**

This pilot study aimed to apply two behavioural science frameworks to explore the acceptability of (TFA (Sekhon *et al.*, 2017)), and barriers and facilitators to (COM-B (Michie *et al.*, 2011)), using and delivering a physical health service within an existing drug service from the perspective of service users and providers.

### **Design**

Semi-structured qualitative interviews with service users and a focus group with service providers.

## **Ethical Considerations**

The study received ethical approval from the University College London Research Ethics Committee (2019; Ref: 15851/001).

## **Setting and Intervention**

The study was conducted in Bristol, a city of 463,400 people located in South West England (UK) (Bristol City Council, 2020). Bristol is among the five English regions with the highest PWID prevalence (15.66 per 1,000 people), with approximately twice as many PWID as the national average (Hay *et al.*, 2019). Between 2014 and 2017 the proportion of PWID using walk-in clinics increased from 20% to 33%, emergency department usage remained above 40%, and 21% of PWID secondary care (hospital) admissions related to injecting injuries or related infections (Public Health England, 2018).

Bristol Drugs Project (BDP) (<https://www.bdp.org.uk/>) is an independent charity agency that provides advice, information and services tailored to people with drug and alcohol difficulties. BDP is based at a single-site (Bristol, UK) and conduct outreach initiatives across Bristol. BDP Harm Reduction Workers facilitate a range of initiatives specific to the needs of different PWID groups. These include support initiatives for women (e.g. Women's Morning), children & young people (e.g. Youth Groups, Cannabis Support), older adults (e.g. The 50+ Crowd), students, LGBT+ (e.g. We are Prism), veterans, and people experiencing bereavement through addiction (<https://www.bdp.org.uk/get-support/>). Additionally, BDP Harm Reduction Workers facilitate health and harm reduction, needle and syringe programmes, mobile harm reduction, and shared-care opioid substitution treatment.

Traditionally in Bristol, PWID healthcare has been provided through the National Health Service (NHS). In 2018, BDP contacted the local NHS primary healthcare authority (<https://brisdco.co.uk/>) with a view to trialling embedding a pilot physical health service within BDP aimed at meeting service users' physical needs, improving health, and reducing unnecessary and/or preventable NHS usage. A non-prescribing nurse-led walk-in service (Monday-Friday and every second Saturday 10:00-12:00) was embedded within BDP. This involved implementing the nurse-led walk-in service alongside existing BDP Harm Reduction Workers to identify service users requiring healthcare support, facilitating PWID to be seen by a nurse immediately or with minimal wait, providing specific healthcare treatments, and sign-posting or referring on for healthcare concerns beyond the scope of the service

(e.g. prescriptions). At the time of data collection (October–November 2019), services provided by the BDP non-prescribing nurse walk-in service included:

- Safer injecting advice.
- Overdose prevention and naloxone supply.
- BBV screening, vaccinations (particularly Hepatitis B), treatments and referrals.
- Liver health including Fibroscan and onward referrals.
- Wound management including self-management teaching, dressings, antibiotics, identification of systemic infections, and onward referrals.
- Methicillin-resistant Staphylococcus Aureus advice and screening.
- Respiratory health assessments including flu vaccinations, tobacco cessation, and Tuberculosis identification.
- Deep Vein Thrombosis assessments including Clexane injections and onwards referrals.
- Identification and brief advice for alcohol.
- Thiamine prescriptions.
- Sexual health advice and STI testing including emergency contraception, pregnancy testing and onward referrals.
- Healthy eating and dental advice and onward referrals.
- Sign-posting and referrals (e.g. GPs).

### **Participants and Recruitment**

Inclusion criteria for service user participants were: i) known BDP service users; (ii) accepted or refused the physical health service; (iii) 18 years-of-age or older (legal age of consent in England); (iv) deemed by BDP staff to have capacity to consent (in accordance with the Mental Capacity Act (Department of Health, 2005); and (v) not known by BDP to act in an aggressive, threatening or abusive way to themselves or others.

Inclusion criteria for service provider participants were: (i) involved in the development and/or provision of the physical health service; and (ii) 18 years-of-age or older.

Participation was voluntary and all participants provided informed, written consent. Studies involving PWID may experience challenges with recruitment and engagement. Providing vouchers is ineffective

as they are often traded for lesser monetary value, thus devaluing participants' contributions.

Therefore, service user received a £10 'thank you' for participation in cash, deemed an appropriate approach and amount in this setting (Kesten *et al.*, 2017; Ritter *et al.*, 2003).

Service users were recruited by BDP nurses who identified, screened for inclusion/exclusion, and provided potentially eligible participants with a study information sheet and invitation to participate in one-to-one interviews. Service providers were recruited by a BDP staff member (RA) who provided potentially eligible providers with a study information sheet and an invitation to participate in a focus group.

The initial target sample size for individual interviews with service users was 13, based on recommendations for sample size in qualitative research and the principles of thematic saturation (Francis *et al.* 2010). The sample size for the service provider focus groups was limited by the number of BDP staff involved with the physical health service and practical service requirements (n= 11).

## **Materials**

Semi-structured, two-part interview guides were developed for the individual interviews with service users and focus group with service providers. Both guides included questions related to each domain of the TFA and COM-B frameworks (*Table 1*). In both topic guides, part 1 focused on exploring participants' views on the acceptability of the BDP physical health service structured around the domains of the TFA (Sekhon *et al.*, 2017). Part 2 explored barriers and facilitators to accessing the physical health service (service users) or delivering the service (providers) structured around the COM-B model (Michie *et al.*, 2011) domains to ensure the full range of potential individual, socio-cultural and environmental factors were explored. Both topic guides were piloted with service providers and a Patient and Public Involvement representative group prior to data collection to ensure questions were clear and comprehensive. The final versions of the topic guides are available in Supplementary file 1.

**Table 1: Domains, definitions and example questions and prompts for the Theoretical Framework of Acceptability (TFA) and COM-B Model**

| Theory | Construct/ Domain       | Sub-Domain    | Definition  | Example question from Service User topic guide  | Example prompt from Service Provider topic guide                            |
|--------|-------------------------|---------------|---|---|---|
| TFA    | Affective Attitude      | N/A           | How an individual feels about the intervention  | How did being offered the service make you feel?  | How did you feel about adding the Physical Health Service to BDP?           |
|        | Burden                  |               | The perceived amount of effort that is required to participate in the intervention  | How convenient was being offered healthcare as part of BDP?                                     | How easy or difficult was offering the Physical Healthcare Service?         |
|        | Ethicality              |               | The extent to which the intervention has a good fit with individual's value system  | Did you think being offered the Physical Health Service by BDP was appropriate?                 | Do you think the service should also be offered to other people             |
|        | Intervention Coherence  |               | The extent to which the participant understands the intervention and how it works   | What did you understand about the Physical Health Service and what it involved?                 | Could you summarize what offering the Physical Healthcare Service involved? |
|        | Opportunity Costs       |               | The extent to which benefits, profits or values must be given up to engage in the intervention  | How much of a priority is your health in your day-to-day life?                                  | Are there other priorities that made the service difficult?                 |
|        | Perceived Effectiveness |               | The extent to which the intervention is perceived as likely to achieve its purpose  | How good was the service at meeting your needs?   | How effective do you think the service is?                                  |
|        | Self-Efficacy           |               | The participant's confidence that they can perform the behaviour(s) required to participate in the intervention                       | Did you feel able to do what you needed to access the service?                                  | How easy or difficult was providing the service?                            |
| COM-B  | Capability              | Psychological | Any mental process or skill that is required for the person to perform the behaviour  | Was there anything that you did on the day of using the service that made you decide to use it? | How do you decide whether to offer the service?                             |
|        |                         | Physical      | Any set of physical actions that require an ability or proficiency learned through practice   | What did you do to sort out any previous health issues?   | Is there any training that you think would have been helpful?               |
|        | Opportunity             | Social        | Influences that come from friends, family, colleagues and other influential people that support the doing or not doing of a behaviour | Do you know other people who have used the service?   | How did the service fit within the BDP team culture and ways of working?    |
|        |                         | Physical      | Anything in the physical environments that discourages or encourages the performance of the behaviour                                 | How convenient was being offered healthcare as part of BDP?                                     | Does BDP have the resources it needs?                                       |
|        | Motivation              | Automatic     | Emotional responses, desires and habits resulting from associative learning and physiological states                                  | What encouraged you to use the service?   | To what extent has offering the service become a habit?                     |
|        |                         | Reflective    | Beliefs about what is good and bad, conscious intentions, decisions and plans.  | Can you think of any ways people who inject drugs might need healthcare?                        | To what extent will the service improve service users' health?              |

## Procedure

Both the interviews and focus group were conducted by a trained researcher (NA) face-to-face with participants in the BDP Health & Harm Reduction Centre (Bristol, UK) between October and November 2019. Interviews and the focus group were audio-recorded, transcribed verbatim, and fully anonymised so that no individual could be identified from the data.

## Data Analysis

Interview and focus group transcripts were analysed separately, using QSR NVivo version 12™. Data was analysed using a four-stage, combined inductive thematic and deductive framework analysis approach in line with published guidance (Atkins *et al.*, 2017):

1. Familiarisation: a trained researcher (NA) read and re-read transcripts in depth and developed an initial code book, which included examples of potential participant responses that could correspond to different domains of the TFA and COM-B. This codebook was regularly reviewed by the research team and updated throughout the analysis process in Steps 2 and 3.
2. Deductive framework analysis: participant responses were initially sorted and sifted by coding the response to the domain(s) from each framework they were judged to best represent. For instance, “I’ve just been seeing her ever since. This was about six, seven months ago, so any injuries or anything I get, I always straight here to see her first” fell under the domain ‘Motivation-Automatic’.
3. Inductive thematic analysis: similar responses coded to each domain within each framework were then grouped together and a theme label inductively generated to summarise the shared meaning between the participant responses. For example, “I’ve just been seeing her ever since. This was about six, seven months ago, so any injuries or anything I get, I always straight here to see her first” and “Yeah, now it’s a routine for me, coming in here” were grouped together under the theme label ‘Habit or routine.’ At this stage, a second researcher (FL) independently reviewed all themes generated to assess whether there was agreement that: 1) the theme label represented the shared meaning of the responses contributing to that theme; 2) the theme corresponded to the domain of the TFA or COM-B it was allocated to. Any disagreements were discussed and theme labels refined or reallocated to a different

domain until consensus was reached. Themes identified as relating to acceptability (TFA) were classified as indicating the service was acceptable, unacceptable or mixed. Themes identified as relating to using or delivering the physical health service (COM-B) were classified as either a barrier, facilitator, or mixed/both.

4. Identifying key domains in each framework using established criteria (Atkins et al. 2017): frequency (number of participants contributing to that domain) and elaboration (number of themes within each domain).



## **Results**

### **Participants**

Fourteen service users who accepted the physical health service were identified by the BDP nurse as potentially satisfying the inclusion criteria and invited to participate. One participant (unknown to BDP staff supporting recruitment) took substances immediately prior to the interview and their responses were inaudible. As a consequence, informed consent could not be assumed and their interview was not included in the analysis. Thirteen service user interviews were conducted with a mean duration of 26m36s (range: 12m10s-44m55s). No service user who declined the physical health service satisfied the inclusion criteria and/or accepted the invitation to participate. As demonstrated by *Supplementary File 2*, no new themes were emerging and data saturation was reached by service user 13.

Eleven service providers identified as satisfying the inclusion criteria were invited, with all providing consent to participate in the focus group (duration: 1h49m29s). Participants' professions included eight Harm Reduction Workers, two Nurses and one Service Manager.

### **Themes across both frameworks**

Tables 2 and 3 demonstrate the themes within each domain of COM-B and TFA for service users and providers respectively, including example quotes. While COM-B and TFA models were developed independently there are similarities between the constructs within each model. Therefore, certain themes (e.g. 'Knowledge of service or treatment available') were classified as representing both COM-B (e.g. 'Capability-Psychological) and TFA ('Intervention Coherence').

Of the 24 themes identified within service user interviews, two were barriers to accessing the physical health service and indicated lower acceptability of the physical health service. Seventeen themes were facilitators, and a further five were 'mixed' (i.e. barriers and facilitators). Of the 22 themes identified within the service provider focus group, seven were barriers to accessing, using and/or the acceptability of the physical health service, seven were facilitators, and a further nine 'mixed'.

### **Barriers**

#### ***Service Users***

Two barriers were identified from service user interviews. Balancing attending the physical health service with competing priorities was a key barrier for service users (COM-B-Motivation-Reflective; TFA-Opportunity Costs). For some, prioritising drug use over health needs meant accessing the physical health service was less likely if it would disrupt this. For others, balancing attendance with other needs associated with drug use (e.g. getting money) was a barrier for access, with a service user stating “I just have to survive out there”.

“Having engaged with the physical healthcare service, most service users highlighted concerns about the implications on healthcare seeking should the service be removed in future, for example due to funding being removed. Most service users viewed the embedded approach as being highly effective (COM-B-Motivation-Reflective; TFA-Perceived Effectiveness), but viewed the potential of returning to accessing traditional healthcare would have a strong detrimental effect on help-seeking and health outcomes. For example, some service users reflected upon engaging with the physical health service as potentially being a barrier for subsequent healthcare access in future. This was reflected in some through concerns about the implications of potentially engaging with the physical health service on reflective motivation to return to using traditional services in future due to perceiving that having used a tailored service they would then “struggle”, “suffer” and that “No one would go to the doctors”. However, as only service users who accepted (rather than declined) the physical health service agreed to participate it is unclear whether and the degree to which this influenced decision making in those who declined.

**Table 2: Interviews with Service Users – Themes across both the Theoretical Framework of Acceptability (TFA) and COM-B Model**

| COM-B       |               | TFA                    | Theme   | No. of service users | Facilitator, barrier or mixed | Example quote from interviews   |
|-------------|---------------|------------------------|---|----------------------|-------------------------------|---|
| Construct   | Domain        |                        |   |                      |                               |   |
| Capability  | Physical      | N/A                    | Nursing treatment or skills   | 5/13                 | Facilitator                   | "She's really good at taking blood. She doesn't need to mess around with the vein or whatever. I mean I've got good veins and you can see my track marks there where I keep putting Subutex in myself. Not proud of that. But, eh, yeah, some nurses it takes them ages to get my blood."   |
|             | Psychological | Intervention Coherence | Knowledge of service or treatment available                         | 13/13                | Mixed                         | "Um, I'm not really sure. I mean I'm just, I mean I was obviously aware of the liver function test. I wasn't really sure what else they did" (A13)"   |
|             |               | N/A                    | Decisional balance  | 12/13                | Mixed                         | "I mean obviously if you come in with your leg hanging off that' something you maybe need to go to the hospital like sort of thing"   |
| Opportunity | Physical      | Burden                 | Ease of access  | 12/13                | Facilitator                   | "Yeah, I come in and say is the nurse about, and they said I think so, and I said can you ask her if I can see her please and then when they found her she said yes straight away and I went in."   |
|             |               |                        | Physical health service compared to traditional health service      | 12/13                | Facilitator                   | "So, you get all anxious you know, whereas sort of seeing or whether you're at the hospital and you can be waiting for hours and hours, like you know. I know there's like people with worse priority needs, kinda basic but here you can literally walk in."   |
|             |               |                        | Integration of physical health within drug services                 | 8/13                 | Facilitator                   | "Well because it's all in one, isn't it? You haven't got to go nowhere else. You can come here and you can come here and go there, and it's all in one place. Having your cake and eat it isn't? What else can you ask for?"  |
|             |               | Opportunity Costs      | Free or incentivised healthcare                                     | 7/13                 | Facilitator                   | "They got me the help, the medication and that. It's a lot of money by all accounts, about £28,000 for the medication for me."  |
|             |               | N/A                    | Impact of homelessness or drug use                                  | 5/13                 | Mixed                         | "It's, it's, it's so accessible, it's just, people don't have to wait. If they're ill and on drugs the last thing they're going to do is sit down in a waiting room, you know, that's why this place is so good, you get seen within five minutes."   |
|             |               |                        | Safe environment  | 4/13                 | Mixed                         | "Yeah. Obviously you're vulnerable, ain't you? So yeah, it's difficult sometimes when - especially if they're my mates. Not my - acquaintances. Using mates. Not really mates, but using mates. So yeah, sometimes it can be difficult. Especially if they've got drugs in their pocket or whatever and they're like giving me the wink or whatever. Do you know what I mean? That can be difficult. To say no. So that's difficult sometimes." |
|             | Social        | Affective Attitude     | Dignity or respect  | 3/13                 | Facilitator                   | "She didn't talk to me funny. She didn't look at me like, and go like 'Oh you're a homeless...' you know what I mean? Just talked to me like I'm a genuine normal person like. It went a long way and made me feel good as well you know."  |
|             |               | Ethicality             | Holistic approach which reduces perceived stigma and discrimination | 12/13                | Facilitator                   | "What they do as well, really go out of their way a lot of them, the nurse in there goes out of her way for a lot of things, you know what I mean. She helps everybody coming in through the door - 'Do you want a flu jab' - you know, makes people happy"   |
|             |               |                        | Trust   | 7/13                 | Facilitator                   | "Well I wouldn't talk to people if I didn't feel I could trust them, even a tiny bit. I just wouldn't come here, so I think it's massive."  |
|             |               |                        | Privacy or confidentiality  | 5/13                 | Facilitator                   | "I love that, you know, that's a great feeling to have, I can walk away knowing that I've let everything off my chest and it's not going to go anywhere, they're not going to sit down and make jokes about it"   |
|             |               | N/A                    | Influence of service providers                                      | 10/13                | Facilitator                   | "Well because it's all in one, isn't it? You haven't got to go nowhere else. You can come here and you can come here and go there, and it's all in one place. Having your cake and eat it isn't? What else can you ask for?"  |

|                   |                   |  |   |             |   |   |
|-------------------|-------------------|--|---|-------------|---|---|
|                   |                   |  | Influence of family or friends                                | 2/13        | Facilitator   | "It's nicer for you, an everyday person like, you know, it's a breath of fresh air to have someone you can talk to. I'm not saying everybody has to, but they're there if you need them you know? To talk you through it or, you know, go for a coffee or whatever you know, that sort of thing."   |
| <b>Motivation</b> | <b>Automatic</b>  | <b>N/A</b>                             | Habit or routine  | 10/13       | Facilitator   | I've just been seeing her ever since. This was about six, seven months ago, so any injuries or anything I get, I always straight here to see her first."  |
|                   | <b>Reflective</b> | <b>Affective Attitude</b>              | Reassurance   | 12/13       | Facilitator   | "I come in here and I have a chat to one of the workers. I, personally it makes me feel better anyway, and that's how it makes me, yeah, I'll chat to one of them when I'm feeling down or something. Definitely."  |
|                   |                   | <b>Perceived Effectiveness</b>         | Negative consequences of not having a physical health service | 10/13       | Barrier   | "If it was gone, you would see a big spike in certain illnesses, probably people losing limbs, do you know what I mean, like you'd see that anyway. People you know, with a leg missing and you know what it's done, or arm missing or whatever and um, yeah, I think it would, it would alienate drug users. Active drug users should I say."  |
|                   |                   | <b>Opportunity Costs</b>               | Competing priorities  | 8/13        | Barrier   | "Just getting through the day mate. I've got to survive every day, on the street. I won't go too deep into it but I just have to survive out there."  |
|                   |                   | <b>N/A</b>                             | Importance of health or healthcare                            | 13/13       | Mixed   | "I used to think health was two, now I think it's about seven, eight. Because I've got DVT's in my leg, I've been told I'll lose it if I carry on injecting. I've had abscesses and that in there, I'm really lucky I've got needles stuck in there somewhere as well, I think my health massively, that's why I come here straight away. Because before I would have just thought ah, my legs will get better in a couple of days, I'd be limping on it" |
|                   |                   | Intention to use the service in future | 12/13   | Facilitator | "They've been a big help to me and I'll continue to, I will continue to come here all the time if my health, I've got anything, these are the first ones to go to." |   |
| <b>N/A</b>        | <b>N/A</b>        | <b>Ethicality</b>                      | Perceived appropriateness of the physical healthcare service  | 8/13        | Facilitator   | "If someone was to moan about it and say inappropriate, I wouldn't really get that. That's what I'm saying to you, it's appropriate and it's really good."  |
|                   |                   | <b>Perceived Effectiveness</b>         | Physical health service meeting service user needs            | 12/13       | Facilitator   | "they've been exceptional, always looking after my needs and if I needed anything they've always been available there."   |
|                   |                   | <b>Self-Efficacy</b>                   | Confidence accessing the service                              | 3/13        | Facilitator   | "Well I can just come here and get all the things sorted under one roof and then I can take responsibility for myself because it's right on my doorstep, there's no excuses really."  |

**Please note:** Totals refer to the number of service users who made utterances which were coded under the respective theme. Where 'Mixed' is listed, the total refers to the number of service users who made utterances which were coded as either facilitators, barriers, or both facilitators and barriers."

**Table 3: Focus group with Service Providers – Themes across both the Theoretical Framework of Acceptability (TFA) and COM-B Model**

| COM-B       |               | TFA                    | Themes   | No. of service providers* | Facilitator, barrier or mixed | Example quote from the focus group  |
|-------------|---------------|------------------------|--|---------------------------|-------------------------------|---|
| Construct   | Domain        |                        |  |                           |                               |   |
| Capability  | Physical      | N/A                    | Specialist nursing skills required for working with drug service users                       | 4/11                      | Mixed                         | "There's something about the work you guys offer, you become a specialist in working with this particular client and their particular needs, whereas if you were a generic sort of nurse in a private care setting, you know, in [GP practice], then actually the amount of time that you would need to do leg compressions wouldn't be, you know, would be very few and far between, but you get the expertise because of the numbers that are coming through here or in the [Homeless Healthcare Centre]".  |
|             | Psychological | Intervention Coherence | Knowledge of service and treatments offered by BDP   | 8/11                      | Mixed                         | "There is a lot of sort of governance stuff that I just assumed that, you know, if we had a nurse they'd be able to do, you know, because they're a nurse, and I didn't really understand the sort of nuances of how the governance and those sorts of things, and how expensive some of the equipment is.  |
|             |               | Self-Efficacy          | Knowledge of what services can be provided that may not be given in general nursing settings | 2/11                      | Barrier                       | "No. The first time someone asked me that I was like I don't know, can I?"  |
|             |               | N/A                    | Decisional balance   | 2/11                      | Facilitator                   | "We get to know them on a professional level, and we can maybe sometimes maybe gauge if someone's not quite right, or maybe walking differently, or express something."   |
| Opportunity | Physical      | Affective Attitude     | Safe environment for service providers   | 6/11                      | Barrier                       | "Yeah there's been, there was a time that stood out from a couple of weeks ago I think where you were in the room with someone and I asked [P11] to leave the door open, ajar, just because I was concerned about who was in the room with you"   |
|             |               | Burden                 | Integration of physical health within the wider drug service                                 | 9/11                      | Mixed                         | "It's not like we're making a referral to someone, it's actually, it's someone else in-house, it's a colleague, and there's a relationship with us, with our team, for them to move from seeing us to seeing a nurse, it's is a baby step, whereas sometimes referring to the [referral hospital] from here, there's a chasm for people to fall into.   |
|             |               |                        | Ease of accessing the physical health service for service users                              | 6/11                      | Facilitator                   | "I think the most beneficial thing really is that instant access, not having to make an appointment, and it's actually available there and then, because I think the clients we work with, like they've all said, if they go out the front door, the health issue has gone out the window and they've gone, but actually because it's here and they can access it instantly without an appointment,""   |
|             |               |                        | Physical health service compared to traditional health services                              | 7/11                      | Mixed                         | "you see a lot of people with leg ulcers, and for people to get those dressed in the community is a bit of a process; you've got to phone the doctors, they've got to make an appointment with the nurse, they see a different nurse who doesn't know what the other nurse is doing sometimes, whereas they come here and see the same nurse, the nurse can see what is going on, they can see that it's healing or not healing, the dressings are done correctly, there's isn't that big barrier that the person needs to jump through in order to get to that service." |

|                      |   |                                |   |  |             |  |
|----------------------|---|--------------------------------|---|--|-------------|--|
|                      |   |                                | Flexible healthcare provision   | 4/11   | Mixed       | "We've also got the mobile van as well, and that's got a nursing room  |
|                      |   | <b>Opportunity Costs</b>       | Competing priorities for investment in BDP services   | 4/11   | Barrier     | really to do chronic disease management you need people to keep coming back and to be compliant with their medications, and this group tend to be more nomadic, so you might invest a lot of time in a sort of speciality that's not going to give you much comeback."   |
|                      |   | <b>N/A</b>                     | BDP provision for service user physical health needs out of physical health service hours                   | 6/11   | Mixed       | The last overdose was ten days ago in the drop-in. In the evening when there was no nurse in   |
|                      | <b>Social</b>                               | <b>Burden</b>                  | Service user reluctance to engage with the service  | 7/11   | Barrier     | "It's a problem with getting your healthcare needs met, but it's usually more resistant from the client, excuse me [coughing]. Yeah, it's usually more resistance from the client than it is from anything else, so."  |
|                      |   | <b>Ethicality</b>              | Holistic approach which reduces perceived stigma and discrimination   | 6/11   | Facilitator | sometimes our role is just listening, it's just listening and just non-judgemental sitting and listening, and maybe that's the first time they've had that undivided attention, and it seems to be good enough in the moment, and then they'll come back." "   |
|                      |   |                                | Team working and dynamics   | 6/11   | Facilitator | "There's already an element of trust and the fact that the nurse is someone who is based here, and is a friendly face"   |
| <b>N/A</b>           | Healthcare needs of recreational drug users | 6/11                           | Barrier   | "They don't almost feel that they justify coming in somewhere like here, do they? There's an apologetic way about them. But it's very, very needed." |             |  |
| <b>Motivation</b>    | <b>Automatic</b>                            | <b>Affective Attitude</b>      | BDP harm reduction workers' anxiety at extending their physical health remit                                | 4/11   | Barrier     | "One of the advantages of having a nursing team here is we don't need to extend past the limits of our knowledge. When you're here, we can say "Why don't you just go and see the nurse" rather than maybe sometimes having to step outside of our skills and take a risk with advice that could not be correct."  |
|                      |   |                                | Reduced anxiety of BDP harm reduction workers due to nurses providing health service safety net             | 3/11   | Facilitator | "I get inclined to actually ask whether they've been tested for Hep C. It used to be a no-no   |
|                      | <b>Reflective</b>                           | <b>Ethicality</b>              | Degree of alignment of service provision with personal and professional values of providers                 | 5/11   | Mixed       | "The physically more well someone is the more likely they are to make positive changes. So, yeah I think it's a huge part of what we do."  |
|                      |   | <b>Perceived Effectiveness</b> | Negative consequences of not having the physical health service   | 5/11   | Barrier     | We're really lucky we've got this, but I'm assuming it's not a regular thing in the UK, and it has made all the difference in terms of sort of like you said, keeping people out of hospital, but also getting people to go to hospital if they really need to. It's kept people alive, and it's meant that they've kept their legs, and all drug services should have – " |
|                      |   | <b>Affective Attitude</b>      | Service providers' beliefs about other types of service providers ability to conduct their respective roles | 4/11   | Facilitator | it is a great learning, and the quizzes that you do and everything, so it's a great learning environment for nurses as well.   |
|                      | <b>N/A</b>                                  | <b>N/A</b>                     | <b>Perceived Effectiveness</b>  | Physical health service meeting service user needs   | 9/11        | Mixed  |
| <b>Self-efficacy</b> |   |                                | Confidence providing the service  | 4/11   | Mixed       | "Yeah, it's very common for IV drug users to have leg ulcers, so we see more of them, and we see more severe ones than the mainstream  |

**\*Please note:** Totals refer to the number of service providers who made utterances which were coded under the respective theme. Where 'Mixed' is listed, the total refers to the number of service providers who made utterances which were coded as either facilitators, barriers, or both facilitators and barriers.

### ***Service Providers***

Seven barriers were identified within the focus group. Some service providers recognised that service users, including those already engaged with BDP, may initially be reluctant to engage with the physical health service (COM-B-Opportunity-Social; TFA-Burden). Some service providers also described the symptoms experienced by service users as a barrier due to perceiving that they may not feel symptoms (e.g. foot ulcers) are severe enough to require treatment (COM-B-Opportunity-Social). As also mentioned by service users, a few service providers voiced concerns about the negative consequences should the service be removed in future (COM-B-Motivation-Reflective; TFA-Perceived Effectiveness). Additionally, certain service providers felt that other areas of work conducted by BDP may require investments which may make service provision more challenging (COM-B-Opportunity-Physical; TFA-Opportunity Costs).

Service providers mentioned a number of factors associated with facilitating the nursing sessions themselves that may act as barriers. The safety of nurses was raised as a concern by some service providers due to the consultation room being isolated from other parts of BDP (COM-B-Opportunity-Physical; TFA-Affective Attitude). The potential need for harm reduction workers to contribute to the physical health service also raised anxiety at extending beyond current remit and competency in certain service providers (COM-B-Motivation-Automatic; TFA-Affective Attitude). Furthermore, certain service providers were unsure about what could and could not be provided by the service (COM-B-Capability-Psychological; TFA-Self-Efficacy).

### **Facilitators**

#### ***Service Users***

Seventeen facilitator themes were identified within service user interviews. Overall, integrating the physical health service within the community-based drug service was deemed to be appropriate (TFA-Ethicality), effective and “exceptional” at meeting service users’ healthcare needs (TFA-Perceived Effectiveness) by most service users. It was also viewed as enhancing confidence in using healthcare by certain service users as it enabled PWID to “take responsibility” (TFA-Self-Efficacy). Almost all service users indicated a strong intention to continue to use the service in future (COM-B-Motivation-Reflective), and for the majority attending was a habitual part of their routine (COM-B-Motivation-Automatic).

For many, service providers or important others (e.g. family, friends) were crucial in facilitating initial engagement with the physical health service through promoting the potential benefits and facilitating support and access (e.g. instant service provision with no appointments, low waiting times). Certain service users mentioned that since engaging they have also shared information about and promoted the service to peers (COM-B-Opportunity-Social). For almost all service users accessing the service was viewed as straightforward and convenient. Critically, most service users felt that incorporating it within BDP overcame barriers to accessing traditional health services, in particular not being required to book an appointment, having quick access and being located in central Bristol (COM-B-Opportunity-Physical; TFA-Burden). Additionally, the physical health service was viewed favourably by most service users who perceived it to provide access to free healthcare that may not have been either provided or accessed elsewhere (COM-B-Opportunity-Physical; TFA-Opportunity Costs).

Service users valued the treatment and approach of the service. Nurses were viewed by some service users as being highly competent at conducting healthcare procedures with PWID, such as taking blood samples with veins damaged due to drug use (COM-B-Capability-Physical). Crucially, in addition to the medical skills, almost all service users placed high-levels of importance on the person-centred approach adopted by the service in addressing psychological needs such as reassurance for drug-related or general life concerns (COM-B-Motivation-Reflective; TFA-Affective Attitude). In particular, the majority of service users emphasised the importance of a holistic and trusting approach (COM-B-Opportunity-Social; TFA-Ethicality) which treats them with dignity and respect "...like I'm a genuine normal person..." (COM-B-Opportunity-Social; TFA-Affective Attitude). A few service users valued appointments being conducted in a separate area of BDP in order to promote privacy and confidentiality to "...let everything off my chest..." (COM-B-Opportunity-Social; TFA-Ethicality).

### ***Service Providers***

Six facilitators were identified within the service provider focus group. For many service providers a close working relationship between BDP harm reduction workers and nurses through being co-located supported a seamless transition of service users into the service "...instantly without an appointment" where opportunities may normally be missed (COM-B-Opportunity-Physical; TFA-Burden), and enhanced the sense of working as a coherent team with aligned values rather than being an individual add-on service (COM-B-Opportunity-Physical; TFA-Ethicality). Some service providers felt their pre-

existing relationship with BDP service users meant they were well placed to determine if/when PWID may be experiencing difficulties and signpost access if required (COM-B-Capability-Psychological).

Services providers felt the integrated approach was positive from both a service user and service provider perspective. For the former, some service providers felt that nurses special interest in caring for wounds helped reduce embarrassment among service users and normalised having dressings changed regularly, while pre-existing relationships with BDP enhanced perceptions care was “non-judgemental” (COM-B-Opportunity-Social; TFA-Ethicality). From the latter, some service providers reported that embedding healthcare into community-drug services built confidence in service provision, and learning about others roles and interests in supporting service users (COM-B-Motivation-Reflective; TFA-Affective Attitude). Additionally, some harm reduction workers reported that having the knowledge and expertise of nurses within the service reduced their concerns about how to respond to health-related questions and difficulties (COM-B-Motivation-Automatic; TFA-Affective Attitude).

### **Mixed (i.e. barriers and facilitators)**

#### **Service Users**

Five themes were identified from service user interviews as being potentially both barriers and facilitators. Drug dependence, avoidance of withdrawal symptoms and everyday busy-ness often resulted in delayed healthcare seeking. However, most service users valued encouragement from service providers to aid decision making regarding when/whether to use the service (COM-B-Capability-Psychological), and pain was commonly described as indicating a health problem and a catalyst for eventual help seeking (COM-B-Capability-Psychological; TFA-Physical). Attending the service demonstrated the value many placed on health and some service users viewed health as their top priority. However, others placed less importance on prioritising their health needs (COM-B-Motivation-Reflective). Additionally, the majority of service users were aware of the services opening times and a small number were aware of the range of nursing services available. However, some service users experienced difficulty differentiating between the services offered by the physical health service compared to BDP more generally (COM-B-Capability-Psychological; TFA-Intervention Coherence). Compared to other healthcare settings, some service users felt more comfortable, safe, and perceived there to be less stigma (as everyone is in the “same boat”) due to the service having

an understanding of the lives of PWID. However, a small number of service users raised concerns about others who access BDP (COM-B-Opportunity-Physical).

### ***Service Providers***

Nine themes were identified within service provider interviews that may reflect potential barriers and facilitators. Most service providers had a good understanding of the skills and treatments that the nurses could offer (e.g. wound care). However, due to BDP not having provided a physical health service before, at an organisational-level knowledge of healthcare governance and supervision before implementation was limited (COM-B-Capability-Psychological; TFA-Intervention Coherence). Nurses had the specialist interests, skills and experiences required to satisfy the majority of service users' healthcare needs and sought advice from doctors where necessary (e.g. antibiotic prescriptions), but felt additional specialist training and qualifications (e.g. prescribing) may be beneficial for up-skilling (COM-B-Capability-Physical) and increasing service provider confidence (TFA-Self-Efficacy). For most the service was seen as overcoming barriers to accessing healthcare (e.g. no appointments, central location) in order to meet the needs of service users when they are able to access the service (TFA-Perceived Effectiveness), but some felt that the service was limited by nursing working hours and availability, and the need to share the clinical room with other services e.g. Hepatitis C clinics (COM-B-Opportunity-Physical). Finally, while most service providers felt that providing healthcare fit with their values and role, some voiced concerns at extending beyond prior service provision (COM-B-Motivation-Reflective; TFA-Ethicality).

### **Suggestions for improvements**

Some service providers felt further developments were required to “engage and persuade” some service users with the greatest barriers to healthcare to access the service, including targeting the groups experiencing the greatest barriers to healthcare (e.g. women, ethnic minority groups). Some service users and providers felt the physical health service would benefit from more nurses including prescribing clinicians and longer service hours. Many service providers wanted to develop more outreach work and some service users and providers suggested greater support for service users to attend secondary care. Certain service users and providers proposed extending the service to cover a wider range of health issues (e.g. prescriptions and mental health support) and new diagnostic

equipment (e.g. spirometer). In contrast, some service users were satisfied with the service and made no suggestions for improvements.

## **Discussion**

This qualitative study identified that incorporating a physical health service within an existing community-based drug service was deemed acceptable by most service providers and service users. The findings indicate that this may be a feasible approach for enhancing PWID healthcare access and consequently health outcomes through overcoming a number of key barriers to traditional healthcare.

Previous research indicated that PWID may experience difficulties accessing traditional healthcare due to perceived stigma and negative healthcare interactions (Ahern *et al.*, 2007; Lan *et al.*, 2018; Von Hippel *et al.*, 2018). Previous systematic reviews found that incorporating physical health services within existing community-based drug services may be associated with improvements to engagement and health outcomes (Oru *et al.*, 2019; Socías *et al.*, 2019), but that the current evidence-base lacked high quality evidence. This meant that the existing evidence-base supported the use of incorporated physical health services, but little was known about what may influence acceptability and engagement, which is critical for understanding the mechanisms behind effectiveness that is required for replication. The current study used highly cited behavioural science frameworks (Michie *et al.*, 2011; Sekhon *et al.*, 2017) and a replicable methodology (Atkins *et al.*, 2017) to demonstrate that most service users accessing the service, and service providers delivering it, viewed incorporating the physical health service within an existing community-based drug service as easily accessible and holistic, thus reducing perceived stigma and discrimination and enhancing acceptability. Consistent with previous research (Ti & Kerr, 2013) this highlighted the need for, and benefit of, tailored healthcare programmes for PWID. This may have important implications for healthcare and public health policy as, if those involved in an intervention perceived it to be acceptable it is more likely to have positive outcomes (Sekhon *et al.*, 2017), and as such the incorporated service may provide a practical, feasible and replicable approach for policy makers to consider.

The embedded physical healthcare service approach was viewed by many as facilitating healthcare access and provision by overcoming a number of barriers to traditional healthcare. While PWID have been shown to delay access to healthcare by up to five days more than the general population (Heath

*et al.*, 2016; Hope *et al.*, 2015), almost all service users perceived the service to be appropriate and effective. This was associated with some service users feeling confident they could access the service, almost all service users voicing an intention to do so again should they deem it necessary and/or beneficial, and most believing this was now a habit. Additionally, the relationships between service providers and service users was highlighted by many. Most service users emphasised the importance of both service users and providers in influencing their decision to engage, while for many developing confidential, trusting, reassuring relationships with the nurses was key (Islam *et al.*, 2012). This was echoed by many service providers, who also emphasised the importance of incorporating the service for their own and other professionals' roles, and particularly how for the majority this reduced anxiety at extending beyond their current remit.

Despite overall being deemed an acceptable and beneficial approach, a number of barriers were identified. Many service users and some providers perceived competing priorities as a concern. From a service user perspective, PWID lifestyles may often be unpredictable which can make attending scheduled appointments challenging. Certain service users reflected upon how prioritising healthcare may mean they are unable to satisfy other needs (e.g. obtaining money). Additionally, while service providers were supportive of the physical health service, concerns were raised by certain service providers about the difficulty of balancing the needs of the healthcare service with those of wider BDP (such as equipment or staffing).

The perceived negative consequences of implementing the service and it being removed in future (such as funding changes) were highlighted by most both service users and some service providers as a barrier to overall engagement with healthcare. From a service user perspective, the prospect of engaging with a physical health service tailored to PWID needs to facilitate access and overcome a number of barriers, re-engaging with traditional healthcare was viewed as challenging due to the need to overcome aforementioned barriers (Ayon *et al.*, 2018; Von Hippel *et al.*, 2018). From a service provider perspective, concerns were raised at the implications not only for service users' healthcare outcomes but also for wider engagement with BDP if the physical health service was removed. This highlighted the need for pilot projects specifically for PWID to be developed with long-term implementation, sustainability, and cost-effectiveness in mind (Medical Research Council, 2019; Public Health England, 2017). Therefore, future studies would benefit from combining the evaluation of programmes based on key behavioural determinants to identify the factors influencing the

acceptability and effectiveness of interventions for those using and providing them, with quantitative assessments of service outcomes and cost-effectiveness to determine service- and commissioning-level outcomes, in order to enhance the likelihood of developing, enhancing and maintaining effective interventions.

### **Strengths & Limitations**

Thirteen service users and eleven BDP staff members were interviewed in 2019 during the early stages of implementing the physical health service. As the study was limited to one setting, further research is required regarding the transferability of findings to other settings, organisations and countries. Additionally, as the service has developed over time, the service provided and consequently participants' views in 2018 may not necessarily reflect those at the time of publication.

Engaging, recruiting and involving PWID in research can be challenging (Ritter *et al.*, 2003). No service user who declined the physical health service agreed to participate. It is possible that this may have occurred due to a number of different factors. For example, a recruitment bias, those highly engaged with the physical health service or wider BDP having increased opportunity to be offered an interview, or the methodology and setting in which the interviews were conducted not being optimal to promote recruitment in those who had not engaged with the service. Additionally, the demographic details of participants were not presented due to a significant proportion of service users and providers declining to do so. This may potentially relate to conducting the study within the single-site physical health service. Despite it being emphasised that all responses were anonymous, it is possible that both service user and service provider participants may have experienced concerns that responses would impact their relationships, role and/or engagement with the physical health service.

The study benefitted from the application of two behavioural science frameworks. This enabled drawing on cumulative knowledge of what is already known about the challenges PWID face with healthcare and what specific programmes have done to target this, in order to contribute towards the literature and evidence base. For example, COM-B and/or TFA were previously used to examine HIV self-sampling (Brown *et al.*, 2018) and point-of-care testing (Corker *et al.*, In-Press) in PWID and/or homeless settings. However, to the authors' knowledge there is currently no consensus on how the COM-B model and TFA framework may be implemented together. While the study sought to outline the reasons and uses for applying both frameworks concurrently (Birken *et al.*, 2017), 50% (12/24) of

themes in service user interviews, and 73% (16/22) in the service provider focus group, were categorised as both TFA and COM-B domains. This demonstrates significant overlap between models and raises the possibility that generating a combined framework for examining the acceptability of, and barriers and facilitators to, pilot interventions may provide both a streamlined method for developing topic guides and analysing data as well as identifying themes that may potentially not be examined using solely COM-B or TFA.

## **Conclusion**

The current study demonstrated that almost all service users and service providers of a pilot physical health service, embedded within an existing community-drug based service, overall deemed it to be both acceptable and beneficial. The study indicated this approach provides promise for overcoming barriers and increasing engagement with healthcare tailored to PWID needs, and may provide a practical, feasible and replicable approach for healthcare and public health policy to consider. However, it is critical that PWID interventions are embedded with long-term implementation, sustainability, and cost-effectiveness in mind in order to address the perceived barrier of what would happen if embedded services are subsequently removed.



### **Declarations of interest**

None.

### **CRedit author statement**

Niall contributed to all parts of the authorship process. Jo and Fabiana were involved in conceptualisation, methodology, writing (original draft) and writing (review & editing). Fabiana also contribute to validation, formal analysis and resources. Rachel contributed to investigation, resources, project administration and writing (review & editing). Matthew was involved in conceptualisation, and Matthew and Richard contributed to writing (review & editing), project administration and funding acquisition. Susan contributed to methodology, resources, writing (review & editing), supervision, project administration and funding acquisition.

### **Acknowledgements**

The authors would like to thank the service users and service providers at BDP for their time, effort, enthusiasm and support with the research project.

### **Funding**

This study was funded by the NIHR Health Protection Research Unit in Behavioural Science and Evaluation at University of Bristol, in partnership with Public Health England (PHE). The views expressed are those of the author(s) and not necessarily those of the NIHR, the Department of Health and Social Care, or PHE.

## References

- Adams, M., Sionean, C., Broz, D., Lewis, R., & Wejnert, C. (2020). Serious Mental Illness Among Young People Who Inject Drugs: An Assessment of Injection Risks and Healthcare Use. *The Journal of Infectious Diseases*, 222(Supplement\_5), S401-S409.
- Ahern, J., Stuber, J., & Galea, S. (2007). Stigma, discrimination and the health of illicit drug users. *Drug and Alcohol Dependence*, 88(2), 188-196.
- Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., ... & Lawton, R. (2017). A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Science*, 12(1), 77.
- Ayon, S., Ndimbii, J., Jeneby, F., Abdulrahman, T., Mlewa, O., Wang, B., . . . Mburu, G. (2018). Barriers and facilitators of access to HIV, harm reduction and sexual and reproductive health services by women who inject drugs: role of community-based outreach and drop-in centers. *AIDS Care*, 30(4), 480-487. doi:10.1080/09540121.2017.1394965.
- Bazzi, A. R., Drainoni, M. L., Biancarelli, D. L., Hartman, J. J., Mimiaga, M. J., Mayer, K. H., & Biello, K. B. (2019). Systematic review of HIV treatment adherence research among people who inject drugs in the United States and Canada: evidence to inform pre-exposure prophylaxis (PrEP) adherence interventions. *BMC public health*, 19(1), 31.
- Birken, S. A., Powell, B. J., Shea, C. M., Haines, E. R., Kirk, M. A., Leeman, J., ... & Presseau, J. (2017). Criteria for selecting implementation science theories and frameworks: results from an international survey. *Implementation Science*, 12(1), 124.
- Buckingham, E., Schrage, E., & Cournos, F. (2013). Why the treatment of mental disorders is an important component of HIV prevention among people who inject drugs. *Advances in preventive medicine*, 2013, 690386.
- Bristol City Council. (2020). The population of Bristol, September 2020. Retrieved 4<sup>th</sup> December 2020 from <https://www.bristol.gov.uk/documents/20182/33904/Population+of+Bristol+September+2020.pdf/69aa0aa1-290a-ccf2-ec4f-13a7376b41a8>.

- Broad, J., Mason, K., Guyton, M., Lettner, B., Matelski, J., & Powis, J. (2020). Peer outreach point-of-care testing as a bridge to hepatitis C care for people who inject drugs in Toronto, Canada. *International Journal of Drug Policy*, 80, 102755.
- Brown, L. J., Tan, K. S., Guerra, L. E., Naidoo, C. J., & Nardone, A. (2018). Using behavioural insights to increase HIV self-sampling kit returns: a randomized controlled text message trial to improve England's HIV self-sampling service. *HIV medicine*, 19(9), 585-596.
- Corker, E., Lorencatto, F., Anderson, N., Gobin, M., Scott, S., Michie, S., & Angel, G. (2020). *Acceptability, facilitators and barriers to point of care HIV testing in a homeless-focused service in Gloucestershire: A qualitative evaluation*. Manuscript submitted for publication.
- Cornford, C., & Close, H. (2016). The physical health of people who inject drugs: complexities, challenges, and continuity. *The British journal of general practice: the journal of the Royal College of General Practitioners*, 66(647), 286-287.
- Degenhardt, L., Bucello, C., Mathers, B., Briegleb, C., Ali, H., Hickman, M., & McLaren, J. (2011). Mortality among regular or dependent users of heroin and other opioids: a systematic review and meta-analysis of cohort studies. *Addiction*, 106(1), 32-51.
- Degenhardt, L., Grebely, J., Stone, J., Hickman, M., Vickerman, P., Marshall, B. D., ... Larney, S. (2019). Global patterns of speed use and dependence: harms to populations, interventions, and future use. *The Lancet*, 394(10208), 1560-1579.
- Department of Health. (2005). *Mental Capacity Act*. London: HMSO.
- Eccles, M., P., Armstrong, D., Baker, R., Cleary, K., Davies, H., Davies, S., ... Sibbald, B. (2009). An implementation research agenda. *Implementation science*, 4(18), 1-7.
- Fernandes, R. M., Cary, M., Duarte, G., Jesus, G., Alarcão, J., Torre, C., ... & Carneiro, A. V. (2017). Effectiveness of needle and syringe Programmes in people who inject drugs—An overview of systematic reviews. *BMC public health*, 17(1), 1-15.

- Francis, J. J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M. P., & Grimshaw, J. M. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology and Health, 25*(10), 1229-1245.
- Genberg, B. L., Astemborski, J., Treisman, G., Anagnostopoulos, A., Mehta, S. H., Kirk, G. D., & Abraham, A. (2019). Engagement in treatment for depression among people who inject drugs in Baltimore, Maryland. *Journal of substance abuse treatment, 106*, 107-112.
- Hamilton, K., Stanton-Fay, S. H., Chadwick, P. M., Lorencatto, F., de Zoysa, N., Gianfrancesco, C., ... & Heller, S. R. (2020). Sustained type 1 diabetes self-management: Specifying the behaviours involved and their influences. *Diabetic Medicine, e14430*.
- Harris, M., Brathwaite, R., McGowan, C. R., Ciccarone, D., Gilchrist, G., McCusker, M., . . . Hope, V. (2018). 'Care and Prevent': rationale for investigating skin and soft tissue infections and AA amyloidosis among people who inject drugs in London. *Harm Reduct J, 15*(1), 23.
- Harris, M., & Rhodes, T. (2013). Hepatitis C treatment access and uptake for people who inject drugs: a review mapping the role of social factors. *Harm Reduct J, 10*, 7.
- Hastings, J., Michie, S., & Johnston, M. (2020). Theory and ontology in behavioural science. *Nature human behaviour, 4*(3), 226-226.
- Hay, G., Rael dos Santos, A., Reed, H., & Hope, V. (2019). Estimates of the prevalence of opiate use and/or crack cocaine use (2016-2017). Microsoft Excel Data, v1.  
<https://www.gov.uk/government/publications/opiate-and-crack-cocaine-use-prevalence-estimates-for-local-populations>.
- Heath, A. J., Kerr, T., Ti, L., Kaplan, K., Suwannawong, P., Wood, E., & Hayashi, K. (2016). Healthcare avoidance by people who inject drugs in Bangkok, Thailand. *Journal of Public Health, 38*(3), e301-e308.
- Herbeć, A., Chimhini, G., Rosenberg-Pacareu, J., Sithole, K., Rickli, F., Chimhuya, S., ... & Fitzgerald, F. C. (2020). Barriers and facilitators to infection prevention and control in a neonatal unit in Zimbabwe—a theory-driven qualitative study to inform design of a behaviour change intervention. *Journal of Hospital Infection, 106*(4), 804-811.

- Hickman, M., Steer, C., Tilling, K., Lim, A. G., Marsden, J., Millar, T., ... Macleod, J. (2018). The impact of buprenorphine and methadone on mortality: a primary care cohort study in the United Kingdom. *Addiction*, *113*(8), 1461-1476.
- Hope, V. D., Ncube, F., Parry, J. V., & Hickman, M. (2015). Healthcare seeking and hospital admissions by people who inject drugs in response to symptoms of injection site infections or injuries in three urban areas of England. *Epidemiol Infect*, *143*(1), 120-131.
- Islam, M. M., Topp, L., Day, C. A., Dawson, A., & Conigrave, K. M. (2012). The accessibility, acceptability, health impact and cost implications of primary healthcare outlets that target injecting drug users: A narrative synthesis of literature. *International Journal of Drug Policy*, *23*(2), 94-102.
- Kesten, J. M., Ayres, R., Neale, J., Clark, J., Vickerman, P., Hickman, M., & Redwood, S. (2017). Acceptability of low dead space syringes and implications for their introduction: A qualitative study in the West of England. *Int J Drug Policy*, *39*, 99-108. doi:10.1016/j.drugpo.2016.09.005.
- Lan, C. W., Lin, C., Thanh, D. C., & Li, L. (2018). Drug-related stigma and access to care among people who inject drugs in Vietnam. *Drug and alcohol review*, *37*(3), 333-339.
- Latham, N. H., Pedrana, A., Doyle, J. S., Howell, J., Williams, B., Higgs, P., ... & Hellard, M. E. (2019). Community-based, point-of-care hepatitis C testing: perspectives and preferences of people who inject drugs. *Journal of viral hepatitis*, *26*(7), 919-922.
- Lewer, D., Jones, N. R., Hickman, M., Larney, S., Ezard, N., Nielsen, S., & Degenhardt, L. (2020). Risk of discharge against medical advice among hospital inpatients with a history of opioid agonist therapy in New South Wales, Australia: A cohort study and nested crossover-cohort analysis. *Drug and alcohol dependence*, *217*, 108343.
- McCoy, C. B., Metsch, L. R., Chitwood, D. D., & Miles, C. (2001). Drug use and barriers to use of health care services. *Substance use & misuse*, *36*(6-7), 789-804.
- Medical Research Council. (2019). Developing and evaluating complex interventions: Following considerable development in the field since 2006, MRC and NIHR have jointly commissioned an update of this guidance to be published in 2019. Retrieved 16<sup>th</sup> October 2019 from <https://mrc.ukri.org/documents/pdf/complex-interventions-guidance/>.

- Michie, S., Fixsen, D., Grimshaw, J. M., & Eccles, M. P. (2009). Specifying and reporting complex behaviour change interventions: the need for a scientific method. *Implementation science*, 4(40), 1-6.
- Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*, 6(1), 42.
- Morris, L., Smirnov, A., Kvassay, A., Leslie, E., Kavanagh, R., Alexander, N., ... & Najman, J. (2017). Initial outcomes of integrated community-based hepatitis C treatment for people who inject drugs: findings from the Queensland Injectors' Health Network. *International Journal of Drug Policy*, 47, 216-220.
- Muncan, B., Jordan, A. E., Perlman, D. C., Frank, D., Ompad, D. C., & Walters, S. M. (2021). Acceptability and effectiveness of hepatitis C care at syringe service programs for people who inject drugs in New York city. *Substance Use & Misuse*, 56(5), 728-737.
- Murray, C. J. L., Richards, M. A., Newton, J. N., Fenton, K. A., Anderson, H. R., Atkinson, C., ... Davis, A. (2013). UK health performance: findings of the Global Burden of Disease Study 2010. *The Lancet*, 381(9871), 997-1020.
- Nambiar, D., Stoove, M., & Dietze, P. (2017). Frequent emergency department presentations among people who inject drugs: A record linkage study. *Int J Drug Policy*, 44, 115-120.
- Neale, J., Tompkins, C., & Sheard, L. (2008). Barriers to accessing generic health and social care services: a qualitative study of injecting drug users. *Health & social care in the community*, 16(2), 147-154.
- Office for National Statistics. (2017). ONS Statistical bulletin: Deaths related to drug poisoning in England and Wales: 2016 registrations. Retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletin/s/deathsrelatedtodrugpoisoninginenglandandwales/2016registrations#main-points>.
- Oru, E., Trickey, A., Shirali, R., Kanters, S., & Easterbrook, P. (2021). Decentralisation, integration, and task-shifting in hepatitis C virus infection testing and treatment: a global systematic review and meta-analysis. *The Lancet Global Health*.

- Public Health England. (2017). Health matters: preventing drug misuse deaths. Retrieved from <https://www.gov.uk/government/publications/health-matters-preventing-drug-misuse-deaths/health-matters-preventing-drug-misuse-deaths>.
- Public Health England. (2018). Unlinked anonymous HIV and viral hepatitis monitoring among PWID: 2018 report. *Health protection report*, 12(27), 1-15.
- Rana, J. S., Khan, S. S., Lloyd-Jones, D. M., & Sidney, S. (2020). Changes in Mortality in Top 10 Causes of Death from 2011 to 2018. *Journal of general internal medicine*, (1), 1-2.
- Rich, Z. C., Chu, C., Mao, J., Zhou, K., Cai, W., Ma, Q., ... & Tucker, J. D. (2016). Facilitators of HCV treatment adherence among people who inject drugs: a systematic qualitative review and implications for scale up of direct acting antivirals. *BMC Public Health*, 16(1), 994.
- Ritter, A. J., Fry, C. L., & Swan, A. (2003). The ethics of reimbursing injecting drug users for public health research interviews: what price are we prepared to pay? *International Journal of Drug Policy*, 14(1), 1-3. doi:10.1016/S0955-3959(02)00094-4.
- Sekhon, M., Cartwright, M., & Francis, J. J. (2017). Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC health services research*, 17(1), 88.
- Socias, M. E., Karamouzian, M., Parent, S., Barletta, J., Bird, K., & Ti, L. (2019). Integrated models of care for people who inject drugs and live with hepatitis C virus: A systematic review. *International Journal of Drug Policy*, 72, 146-159.
- Ti, L., & Kerr, T. (2013). Task shifting redefined: removing social and structural barriers to improve delivery of HIV services for people who inject drugs. *Harm reduction journal*, 10(1), 20.
- Ti, L., & Ti, L. (2015). Leaving the hospital amongst medical advice among people who use illicit drugs: a systematic review. *American journal of public health*, 105(12), e53-e59.
- Von Hippel, C., Brener, L., & Horwitz, R. (2018). Implicit and explicit internalized stigma: Relationship with risky behaviors, psychosocial functioning and healthcare access among people who inject drugs. *Addictive behaviors*, 76, 305-311.

Williams, S. C., Davey-Rothwell, M. A., Tobin, K. E., & Latkin, C. (2017). People who inject drugs and have mood disorders—a brief assessment of health risk behaviors. *Substance use & misuse*, 52(9), 1175-1184.

World Health Organization. (2020). Opioid overdose. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/opioid-overdose>.