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# A mixed methods study of attendance and treatment rates among patients with Hepatitis C

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## Abstract

*Aim*

Non-attendance at hospital out-patient department appointments results in considerable loss of capacity in health services. Among patients with chronic hepatitis C (HCV) attendance is particularly challenging, limiting the capacity to support patients. To address this, an integrated model of care was developed. This involved education of health professionals, peer support and an outreach nurse specialist. The primary aim of this study is to assess how this intervention impacted on specialist clinic attendance and treatment rates. A secondary aim is to explore barriers and facilitators to attendance.

*Methods*

Patients referred to the Infectious Diseases and Hepatology Clinics at the Mater Misericordiae University Hospital, Dublin, through the HepCare programme were identified. Data on clinic attendance and engagement with treatment were collected by reviewing electronic records. Semi-structured interviews were conducted to explore barriers and facilitators to attending specialist HCV care. Data are presented as n (%).

*Results*

Five hundred clinic appointments pertaining to 96 patients were reviewed, 43 (8.6%) of which were first appointments. Of these 500, 318 (64%) of appointments were attended with 68 (71%) of patients attending at least once. Thirty patients (31%) commenced treatment during the study period. Facilitators of treatment included positive interpersonal relationships, motivation and accessibility to treatment. Barriers included competing priorities, fear of treatment, misinformation and denial.

*Discussion*

As well as impacting positively on the number of patients who commenced treatment, the HepCare intervention appears to be an acceptable intervention which may prove to reduce non-attendance at hospital appointments, with further comparative studies required.

## Introduction

Hepatitis C virus (HCV) infection is associated with considerable morbidity and public health burden globally[1]. The prevalence of HCV infection in the EU/EEA is estimated at 5.6 million cases[2]. In Ireland it is estimated that 20,000-30,000 people are chronically infected with HCV[3]. With successful treatment, recent data have demonstrated decreases in all-cause mortality, mortality due to cirrhosis and reduction in hepatocellular carcinoma[4-6]. However, while direct-acting antivirals (DAAs) have revolutionized HCV treatment, adherence to existing care pathways and treatment remains low among vulnerable populations[7].

The World Health Organization has set a goal of eliminating viral hepatitis as a major public health threat by 2030, reducing new chronic infections by 90% and reducing mortality by 65%[8]. However, multiple deficiencies in the HCV care cascade pose barriers to this goal[9]. While barriers to treatment are well documented for vulnerable populations and healthcare providers[10-12], recent research has indicated high levels of non-attendance for initial outpatient appointments at specialist HCV clinics[13-15], with patients who missed 50% or more of scheduled visits being 67%-83% less likely to start treatment[16]. Previous research conducted in Ireland among HCV positive people who inject drugs (PWID) attending general practice, highlights the issue of non-attendance. Of 31 patients who were referred to hepatology clinic 24 attended, equating to a "did not attend" rate of 22.6%. Only 3 (9.7%) patients received antiviral treatment[17]. In more recent research conducted in Dublin which studied rapid testing and referral, of those who tested positive, only 1% followed up with commencement of treatment and cure of HCV[18]. Missed appointments are a challenge for successful treatment, placing those infected at risk of morbidity and mortality and increasing transmission.

While non-attendance in secondary care is common, this is not unique to patients with HCV. According to the Ireland East Hospital Group, the expected rate of "did not attend" in outpatient clinics in 2018 was 12%[19]. In the UK, it is estimated that non-attendance at outpatient clinics costs the National Health Service £790 million per year[20].

To enhance engagement and adherence to HCV shared care pathway interventions such as an outreach team and peer support are favoured[21-23]. Barocas et al. describe excellent responses to community-based HCV treatment within a primary care programme in a cohort of homeless and marginally housed adults, demonstrating that despite barriers, improved outcomes are possible[24]. In Ireland HepCare Europe is examining the feasibility of community-based interventions to improve HCV care for vulnerable patients[22].

The aim of this study is to examine how the HepCare model of integrated care impacted on the hospital based process of care by conducting a review of patients' engagement in care. A secondary aim is to explore the barriers and facilitators to attendance through semi-structured interviews.

## Methodology

This study was conducted in the Mater Misericordiae University Hospital (MMUH) infectious diseases and hepatitis clinics as part of HepCare Europe, an EU-supported service innovation project and feasibility study at four European sites (Dublin, London, Seville and Bucharest) to develop, implement and evaluate interventions to enhance identification and treatment of HCV among vulnerable populations, through strengthening links between primary and secondary care [22]. Participants in this study were exposed to HepCare interventions including nurse outreach (HepLink), patient and healthcare professional education (HepEd) and peer support (HepFriend).

The outreach nurse involvement of the HepLink component permitted community based work-up of patients identified by collaborating GP practices as having known or likely untreated HCV infection, via on-site Fibrescan and HCV viral load and antigen testing. HepFriend offered support to community-based patients, with trained peers with a lived history of HCV, providing education of HCV treatment and testing, encouraging presentation to outpatient services, peer referrals to specialist care, and support during appointments to encourage attendance at follow-up appointments[25].

Through combination of the enhanced referral and triage process offered by outreach nursing staff via HepLink, and the peer referral system enabled by HepFriend, a sample of HCV-positive patients (n=96) attending the MMUH Infectious Diseases and Hepatology Clinics between 1st January 2017 and 31st July 2018 was identified through the HepCare Europe project[22]. Patients had been referred from GP practices and community HCV services. In collecting quantitative data clinical records were reviewed, assessing two care measures, attendance at one specialist HCV assessment and commencement of DAA treatment.

Attendance or non-attendance at each appointment was recorded. The date of commencement of treatment was documented and used as an endpoint for successful intervention. This data was gathered through review of electronic records, including referral letters, patient appointment letters, communications with GPs, records of clinic attendance and nurse specialists notes. Appointments where relevant investigations including liver FibroScan and HCV serology tests were carried out were also recorded.

Qualitative data was collected by conducting semi structured interviews with patients (n=4) purposively sampled from recruited patients. A phenomenological method was used. Informed consent was obtained. The aim of the interviews was to explore barriers and facilitators to attending specialist HCV care. Patients typically had good attendance at clinic and had commenced or completed treatment. This allowed for discussion on facilitators to treatment. Attempts made to engage in interview with patients who had poor attendance rates were unsuccessful. Three interviews were conducted in person and one was conducted by telephone. Audio recordings of the interviews were transcribed verbatim. Data were anonymised with each patient given a code. Thematic analysis was assisted by the software package NVivo 12 (Thomson Reuters Inc.).

Ethical approval was granted from the Mater Misericordiae University Hospital Research Ethics Committee. Anonymised datasets were stored on the secured Novell Drive of the host institution.

## Results

Of 96 patients, 500 appointments were scheduled, 43 (8.6%) of which were first appointments. Three-hundred and eighteen appointments were attended, reflecting a 63.6% overall attendance rate. Attendance rates for first and repeat appointments were 51.2% and 65.2%, respectively Of the cohort, 68 (70.8%) attended at least one appointment while 28 (29.2%) never attended. Ninety patients were eligible for commencing treatment and 30 patients (31.3%) started treatment. Fifty-four (56.3%) of the cohort of patients were referred via the HepFriend wrok package, 28 (29.2%) were recruited via HepLink, and 14 (14.6%) were GP direct referrals.

**Table 1: Attendance at out-patient department appointments among the study sample**

| | n | % |
|---|---|---|
| **Total appointments** | 500 | - |
| **Appointments attended** | 318 | 63.6 |
| **First appointments** | 43 | 8.6 |
| **First appointments attended** | 22 | 52.2 |
| **Repeat appointments** | 457 | 91.4 |
| **Repeat appointments attended** | 298 | 65.2 |
| **Patients who attended at least one appointment** | 68 | 70.8 |
| **Patients who never attended** | 28 | 29.2 |
| **Patients who commenced treatment** | 30 | 31.3 |

### *Qualitative Research*

Participants included 4 men ranging in age from 32-45 years. Two were referred through HepLink and two through HepFriend. Patients reported an average of 20.75 years between HCV diagnosis and current care. All had a past history of injecting drug use but were no longer using drugs. Interviews were conducted between August and September 2018 and had an average duration of 25 minutes. Participants were asked to describe their experience of living with HCV.

Recurring themes pertaining to facilitators of treatment were identified. These included positive relationships, motivation from self and others, flexibility and ease of access to treatment.

### *Positive Relationships*

All participants identified interpersonal relationships as having a positive impact on their engagement with HCV treatment. This included family and peer support and interactions with health care professionals. For one patient, family encouragement was key: “my sister just kept at me like to see the doctor, get yourself checked”.

Participants expressed fear of transmitting HCV to loved ones and this was a reason to undergo treatment: “The only time I became bothered about it is when I was around my kids, you know. I have to watch if they cut themselves or if I cut myself and all, you know, so and my missus as well.”

The stigma that surrounds HCV was described and the negative effect which living with HCV can have on personal relationships was a motivator: “Well I think one thing was that I went on the dating scene, and the fact that I had [HCV]…was affecting things”.

Relationships with health care professionals were important. Encouragement from GPs and interactions with the community outreach nurse played important roles in facilitating treatment. When considering secondary care participants spoke of the approachability of administrative and healthcare staff: “I can’t give him enough credit. He was brilliant so I could ring him at any time if there was a problem with my medication…he was great.”

*Peer support*

Peer support was identified as a powerful motivation for treatment. It was often through conversations with contemporaries with a lived history of HCV that participants gathered knowledge on HCV. One patient who participated in HepFriend, cited it as the reason for his referral: “We were talking about it and I was saying I’d love to get it done, and he said, ‘Well I’m one of them referral buddies, if you want I can refer you.’”

*Motivation from self and others*

Participants described self-motivation as a key contributor. A sense of readiness was expressed and some participants sought treatment themselves: “It’s like I’m doing this, it’s serious…I’m like that in my own life, if I make a day to do something I’ll work everything around it.”

Motivation also arose from public campaigns: “A couple of years ago, I was at a convention thing and there was a speaker over from Scotland talking about the treatment they were doing over there. So, I became interested in it then.”

### *Flexibility and ease of access to treatment*

By maintaining flexibility and a focus on the individual, the journey from HCV diagnosis to treatment can be improved. One patient's progress was helped by delivering care in a personalised manner and by maintaining an adaptive approach: "one time I told him, I said 'Look, I have to work on the Friday, the day I get my medication.' He said, 'Come down and I'll get you in and out quick.' … being a little bit flexible is helpful."

Ease of access to treatment including living in close proximity to treatment centres was also helpful: "It was done really fast here, which I liked…'We're going to treat you', and that's it." "it's just a handy stroll down."

Barriers to treatment were also discussed.

### *Competing priorities*

All patients discussed how they had previously lacked interest in treatment. During times of addiction or incarceration, coming to hospital appointments was not important: "When you're an addict the only thing that matters is your next fix, you know. Getting better isn't necessarily what you want…"

Poor mental health also has the potential to prevent patients from seeking care: "I didn't want to see people, you know what I mean."

### *Fears of treatment*

For many participants their peers' past experiences of treatment negatively affected their impression. Stories of adverse events were commonplace and while the majority of these impressions related to interferon derived treatments, apprehension persisted: "a friend of mine reckons his dad died from the interferon."

Fear of coming to hospital was also described by one participant. For him hospital was a place where people were given bad news: "I was scared. I thought I had cirrhosis and all." "[There is] a fear of going into hospital and just finding out your liver 's this and your liver 's that."

### *Misinformation and Denial*

Participants spoke of the misinformation which surrounds HCV transmission and treatment: "I just thought it was some flu borne thing that people who used needles got." "people in circles of addiction say 'I know loads of blokes that went back using' [drugs during treatment for HCV]"

Participants also discussed the indolent nature of HCV and how, with few or no symptoms, patients often see no need for treatment: "if you have hepatitis and …it feels like it's not affecting you, it's like 'there's no…way I'm going in there to get that done'"

### *Positive Impact of Treatment*

All participants expressed happiness having started treatment for HCV. Overall their experiences with treatment were encouraging and positively shaped their lives: “I’m delighted I’ve started [treatment].” “it’s a new lease of life and it’s a happy one.”

## Discussion

Our participant cohort showed a higher proportion of those commencing treatment compared to similar studies conducted in 2003 among PWID in primary care in Ireland (31% versus 10% and 4%)[17, 18]. The percentage of participants currently attending clinic is also higher (71% versus 42% and 48%). This improved engagements rate with HCV care may relate in part to the HepCare community outreach model, although advanced in the tolerability and acceptability of HCV treatment are another likely explanation.

**Table 2: Comparison of Findings from Existing Literature**

| | 2003[17]<br>(n = 196)<br>n (%) | 2016[18]<br>(n = 538)<br>n (%) | 2018<br>(n = 96)<br>n (%) |
|---|---|---|---|
| **Tested for anti HCV (lifetime)** | 151 (77) | 538 (90) | 96 (100) |
| **HCV positive** | 104 (69) | 199 (37) | 93 (97) |
| **Referred to secondary care (Of those HCV positive)** | 31 (30) | 46 (23) | 96 (100) |
| **Attended a clinic appointment (Of those referred)** | 13 (42) | 22 (48)[a] | 68 (71) |
| **Number who started treatment (Of eligible patients referred to secondary care)** | 3 (10) | 2 (4)[b] | 30 (31) |

[a] Attended at least two appointments
[b] Completed treatment

Considering the qualitative data, similar themes were identified when comparing findings with a comparable Irish population in 2007 and 2008. In contrast to our study, this provides insight into the attitudes toward HCV treatment before DAA therapy had become available[12]. Barriers to treatment identified by Swan et al. included limited knowledge of testing sites, delays in the referral process, stigma, fear and addiction. Facilitators included relationships with health care providers, family and peers, continuity of care, being informed of health implications and becoming symptomatic. Interestingly, while our research indicates that concerns about interferon-based regimens have persisted beyond their withdrawal from routine HCV care, concerns about liver biopsy- a major source of apprehension among prospective patients in Swan et al.’s piece and largely made obsolete in HCV care due to non-invasive investigations such as Fibrescan- did not feature.

Limitations of this study include potential bias in sample selection. This study examined clinic attendance for patients who received appointments. Missing data is also a limitation of manual electronic chart review. Nonetheless the vast amount of data collated offer a valuable data set. When comparing treatment rates for HCV it must be considered that treatments have improved in accessibility, efficacy, acceptability and tolerability since the introduction of DAAs in 2014. It is difficult to draw direct comparison between current data and that predating the advent of widely-available DAAs as a result. Recall bias in interviews was reduced by selecting participants who were either undergoing or had recently completed treatment. Efforts were made to recruit a larger number of patients to the qualitative arm, however this was challenging due to the hard to reach nature of the population, and the study's small sample size is an acknowledged limitation.

Favourable attendance rates, treatment rates and indicators of acceptability are seen in those undergoing the HepCare intervention in this study, supporting further development and broader implementation of the model. The HepCare intervention has the potential to impact on patient outcomes, improving access to care to marginalised populations who might otherwise remain untreated. The data collected enhances the scientific understanding of interventions that contribute to health and social gain and can inform national policy and service development. The authors are actively engaged with key stakeholders and policy-makers to ensure that the HepCare project contributes to policy and practice. Comparative studies examining rates of retention in care in centres offering HCV treatment contemporaneously without these interventions are required to discern the individual effect of HepCare, given the likely confounding effect of the introduction of DAA therapy on service utilisation. While this is outside the scope of this piece, the positive attitudes toward the service disclosed during the patient interviews indicate that such interventions may likely impact positively on the number of patients who commencing treatment and reduces non-attendance at hospital appointments.

**Conflicts of Interest:**

W Cullen has been a principal investigator on research projects funded by the Health Research Board of Ireland, the European Commission Third Health Program, Ireland's Health Service Executive and Gilead. W Cullen has also been co-investigator on projects funded by AbbVie and received consultancy fee honorarium from Gilead in respect of participation in advisory board on Hepatitis C.

JS Lambert has received non-restricted grants from Gilead Science, AbbVie and MSD for hepatitis C related educational and research activities. JS Lambert has received honorariums for advisory board meetings on HIV and Hepatitis C, organised by Gilead, AbbVie, Glaxo Smith Kline, Viiv, and Merck.

D Swan is a salaried researcher on the 'HepCare Europe' project which is co-funded by the European Commission Third Health Programme and Ireland's Health Service Executive.

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