

# 'It's been a long haul, a big haul, but we've made it': hepatitis C virus treatment in post-transplant patients with virus recurrence: An interpretative phenomenological analysis

Anna Krzeczowska<sup>1</sup>, Paul Flowers<sup>2</sup>, Zoe Chouliara<sup>3</sup>, Peter Hayes<sup>4</sup> and Adele Dickson<sup>2</sup>

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## Abstract

The lived experience of both interferon-based and new interferon-free treatments in patients with hepatitis C virus remains understudied. To explore their journey through hepatitis C virus treatment, we interviewed seven post-transplant patients with recurrent hepatitis C virus. Three themes were identified using interpretative phenomenological analysis. Participants reported an ongoing sense of ontological uncertainty characterized by lack of control over their condition and treatment. Furthermore, an apposition of scepticism and hope accompanying each stage of hepatitis C virus treatment was described. A staged approach to psychological intervention tailored to the needs of the patient and their associated 'stage' of hepatitis C virus treatment was recommended.

## Keywords

direct-acting antivirals, hepatitis C virus, interpretative phenomenological analysis, liver transplant, virus recurrence

## Introduction

The combination therapy with interferon (INF) and ribavirin became the standard treatment for hepatitis C virus (HCV) and was/is considered to be effective in eradicating the infection even in more complex cases (e.g. patients with HIV or those with advanced cirrhosis; Keating and Curran, 2003). However, the INF-based treatments were also found to be associated with significant toxicities and a wide array of physical and psychiatric side effects negatively affecting patients' quality of life (Cornberg et al., 2002; Fontana, 2000). Fatigue, headaches, nausea, anger outbursts, depression, irritability and insomnia were the most frequently indicated side effects in patients receiving INF-based therapy (Fried, 2002; Monji et al., 1998). Those adverse effects made the adherence to therapies extremely difficult and for many patients were often main reasons for discontinuing the treatment (e.g. Bernstein et al., 2002).

More recently, HCV treatment has chartered new territory with the introduction of direct-acting antivirals

(DAAs). Such INF-free treatment regimens constitute a new improved opportunity for treatment in patients with HCV, particularly in those for whom previous therapies were intolerable or ineffective. These new therapies not only shorten treatment duration to 12 weeks but also show significant and sustained improvements in patient-reported outcomes (even within the first 4 weeks of the therapy commencing; Younossi et al., 2016). Perhaps, most importantly, DAAs have achieved sustained virological response (SVR) rates exceeding 90 per cent, leading to fewer side effects and simplified drug administration (AASLD/IDSA HCV

<sup>1</sup>University of Strathclyde, UK

<sup>2</sup>Glasgow Caledonian University, UK

<sup>3</sup>Edinburgh Napier University, UK

<sup>4</sup>The University of Edinburgh, UK

## Corresponding author:

Anna Krzeczowska, University of Strathclyde, 40 George Street, Glasgow G1 1QE, UK.

Email: [anna.krzeczowska@strath.ac.uk](mailto:anna.krzeczowska@strath.ac.uk)



Guidance Panel, 2015; Afdhal et al., 2014). However, despite the availability and effectiveness of DAAs, HCV remains a leading cause of cirrhosis and hepatocellular carcinoma, which results in graft failure or second transplant in post-transplant patients with HCV recurrence (Goossens and Hoshida, 2015).

This population of transplant recipients is at increased risk of developing hepatocellular carcinoma, graft loss and premature death. Several trials with DAAs have shown promising results and their safety and efficacy in a real-world cohort of post-transplant patients has been verified (e.g. Brown et al., 2016; Kwo et al., 2014). Indeed, recent studies on DAAs regimens have focused particularly on post-transplant patients with genotype 1; historically considered as the most difficult type to treat. The results have shown SVR rates of 81–100 per cent (Pungpapong et al., 2015).

Despite the promising results, the cost and limited access to the DAAs regimens remain main global barriers of eradicating infection and disease progression (Fung, 2015; Hutchinson et al., 2015; Marshall et al., 2018). These barriers evoke debate regarding cost-effectiveness of post-transplant DAAs regimens, revealing clear monetary benefits, but only in terms of patients with advanced cirrhosis (Carrion et al., 2016; Samur et al., 2018). A delay in providing patients with effective treatment at this severe stage of the disease might impose additional costs on the health care budget, related to the decision about retransplantation (Bentley and Phillips, 2017; National Services Division, NHS, 2016). This invasive medical procedure is not only cost-intensive but it also imposes on patients' continuous experience of stress and anxiety (Annema et al., 2015). The uncertainty associated with the transplant process, graft rejection and potential death are key concerns in the lives of patients with recurrent HCV following liver transplant.

Furthermore, patients' decision-making about treatment can be influenced by psychological and social factors such as risk-benefit trade-offs, protected values and the recommendations of the health providers (Fraenkel et al., 2005). An important role plays also patients' perception of the severity of HCV that can motivate them to take protective actions, as defined in many theories of health behaviour (Rimal and Real, 2003; Rogers, 1975; Rosenstock, 1974). However, according to the Health Belief Model (Rosenstock, 1974), the perceived seriousness of their condition might be based not only on medical information and knowledge but also on their past experiences of treatment and the illness. In this sense, their beliefs are susceptible to biases and sometimes might appear unjustified (Merz and Fischhoff, 1990). Therefore, physicians by helping patients with HCV reach informed decisions and offering explanation of treatment alternatives and their possible outcomes may enhance their efficacy beliefs in regard to the new treatment regimens.

Given that not all HCV patients are currently offered to receive the DAAs regimens, gaining insight into how the range of HCV treatments per se is perceived and

experienced by patients can be extremely important in planning and managing professional care and information provision within inpatient and outpatient clinics. The aim of this study was, therefore, to explore the lived experience of a prolonged journey through HCV treatment in this distinct population, including pre-transplant pegylated INF and/or ribavirin trials, liver transplantation and recently introduced INF-free therapies.

Previous qualitative studies tended to describe the lived experience in patients with HCV by concentrating on one stage of treatment at a time (e.g. Dudley et al., 2007; Hopwood et al., 2006). This study sought to illuminate the patients' perspective in light of a chronological journey through their HCV treatment. To date, only one qualitative study has addressed the lived experience of INF-free HCV treatments (Whiteley et al., 2016), but the authors did not explore how the availability of DAAs could shape experiences of particular patient groups such as patients with recurrent HCV following liver transplant. This study attempts to extend extant HCV literature by highlighting the lived idiographic experiences of perceptions, anticipations and hopes around new antiviral therapy, both in post-transplant patients who have received such therapy and in those who have not yet been offered the new treatment. This will be achieved by employing interpretative phenomenological analysis (IPA; Smith et al., 2009).

## Method

### Participants

Seven post-liver transplant patients with recurrent HCV were recruited via a hospital-based outpatient clinic in Scotland. All participants were male aged between 53 and 68 years ( $M=57.3$  years). Homogeneity of the sample in terms of gender was not purposive, and no female patients responded to research invitations. Participants received liver transplant between 9 and 18 months ( $M=12.6$ ) before the commencement of this study. Two of the participants completed INF-free treatment and cleared the virus; the remaining five participants had not yet been listed for this particular therapy at the time of the interview. All participants had received INF-based treatment for HCV pre-transplant. Participants were not able to recall either a number or specific name of antiviral, INF-based treatments they underwent prior to liver transplant. Participants were recruited from various geographical locations in Scotland.

### Procedure and interview

Ethical approval for the study was sought and obtained from Edinburgh Napier University Research Ethics Committee (where the first author was based at that time) and the West of Scotland National Health Service (NHS) Ethics Committee. The interviews took place between January and May 2015.

Recruitment packs were either sent directly to patients via post ( $n=18$ ) or were distributed by the transplant co-ordinators during routine appointments at the outpatient clinics ( $n=10$ ). The first and last authors' details were provided in order for potential participants to contact the research team and indicate their willingness to partake.

Inclusion criteria were that participants should be adults over 18 years of age who (a) had received a liver transplant primarily due to HCV at least 6 months prior their interview, (b) were no more than 36 months post transplant and (c) were fluent in the English language. Patients excluded from this study were individuals who (a) had not been seen routinely at a hospital, (b) had been currently receiving methadone treatment, (c) had received more than one transplant, (d) had been imprisoned and (e) had been deemed by the lead hepatologist as being too emotionally fragile or possessing a current psychosis or other mental health condition. All patients with HCV underwent a psychiatric assessment prior to transplant and then regularly attended follow-up appointments with their hepatologist. This provided the transplant co-ordinators with sufficient information about the patient's current mental condition and how, if at all, it had changed after the liver transplantation.

The interviews were conducted by the first author and took place either at the hospital ( $n=6$ ) or in the participants' own homes ( $n=1$ ). The interviews lasted for between 32 and 68 minutes ( $M=50.6$ ) and were recorded on a digital voice recorder. Written consent was obtained from the participants prior to the commencement of their interviews. The interviewer was trained in collecting qualitative data by the last and third authors who are experts in using IPA methodology.

A semi-structured interview schedule was prepared prior to the interview and included open-ended questions such as 'Tell me about your experience of recurrent HCV' and 'What impact (if at all) has the diagnosis had on your life?' The interview schedule was not followed in a rigid way, and instead, a process of reflecting (e.g. 'you said there that...') and probing (e.g. 'tell me more about that') was adopted. This allowed the participants to direct the content of the interview and prioritize issues which they felt were central to the topic under investigation. Interviews were then transcribed verbatim and were analysed using IPA.

## Analysis

IPA was adopted for this study as it is not concerned with generating an objective account of the phenomenon under investigation, but foregrounds participants' subjective records of their world. Participants explore and interpret their own experiences, whereas the researcher applies the analytic approach to make sense of their biographic stories. IPA provides a 'voice' for the lived experiences of a given clinical population and allows the analyst interpretative engagement with the individual's rich narrative account (Smith, 1996). This study was carried out in accordance

with principles for validity of qualitative research defined by Yardley (2000). Sensitivity to context was demonstrated by taking into account existing theoretical and empirical literature and by using IPA as most appropriate methodology to capture the meaning of the phenomenon under investigation. Rigour and commitment were demonstrated by the author's personal engagement in the process of recruitment, data collection and engaging in the text analysis. Authors were also focused on idiographic engagement in data analysis, illustrating particularities of individual cases by using appropriate quotes, but they did also emphasize the importance of shared experiences in formulating the major themes.

The first author conducted the analysis with the last author also independently analysing a sample of transcripts. The last and third authors carried out credibility checks on both coding and interpretation. The process of analysis involved several key stages as suggested by Smith et al. (2009). These included: (a) reading and re-reading the transcript, (b) making initial descriptive notes, (c) transforming initial comments into emergent themes, (d) looking for connections between the identified themes and defining master themes, (e) moving to the next interview and repeating all the steps of the analysis and (f) looking for connections between the cases and developing master themes for the whole sample. The extracts presented herein have been selected as they represent the most powerful or insightful quotes and capture the very essence of the theme.

This study presents three inter-related master themes: (a) 'It was a way of moving forward to the next stage of trials': pre-transplant treatment; (b) 'I started to go downhill': experiencing liver transplant and (c) 'I am going to go through it all again, and it's that that gets you': virus recurrence post-transplant. It is noteworthy that in the extracts which follow, [...] represents missing text. Pseudonyms have been incorporated throughout to preserve participant anonymity.

## Results

The HCV treatment journey was reported in three key stages by participants. We present this journey in chronological order, beginning with an exploration of a variety of pre-transplant treatment, mostly containing INF. Detrimental side effects affecting physical and social functioning are highlighted. We then progress to the tentative period of waiting on the transplant list for a suitable organ to become available. Finally, we focus on the experience of virus recurrence post-transplant.

### *'It was a way of moving forward to the next stage of trials': pre-transplant treatment*

All patients in this study were diagnosed with HCV when INF-based therapy was the only available treatment option. Following diagnosis, participants engaged in a series of

medical interventions, often within drug trials, in a bid to prolong their lives and potentially cure their condition. Given the limited options available at that time, participants suggested that any treatment was ‘better than nothing’ and that engagement with drug trials might enable them to live long enough for further drug development:

One of them, one of the trials was very bad, but I was quite happy to go into these trials, because well sort of thing that was there was a chance, and also, it was a way of moving forward to the next stage of trials etc. (Gus)

Although continually facing treatment-related adversities, participants were prepared to endure ‘almost-anything’. Trials offered hope and a sense of control over their future. Engaging in this ‘trial’ process provided participants with an automatic eligibility for future drug trials, drugs which they hoped would perhaps be more efficient and eventually successful. Engaging in these treatment trials, however, offered false and short-lived hope as the ongoing, resilient nature of the infection became apparent:

The doctor said there was a new treatment coming out, if you wanted to try it. [...] it took away – it took the Hep C away. But it took it away for about two to four weeks. Then it came back with a vengeance. (Ted)

Ted’s account highlights his apparently futile battle to clear his virus. There is a sense of Ted’s resigned disappointment and helplessness within this extract. Equally, the array of side effects which accompanied these early treatments was often accompanied by feelings of loss of control. Participants reported being both physically and psychologically ill:

The treatment itself was horrendous. You were sick, you were in depression, you were angry, and you didn’t want to talk to anybody. I stayed in my bed. The smallest little thing just set you off. You were shouting at the kids, you were shouting at the wife, but you were up – sometimes you were up but the majority of the time you were down. You would feel as though you had a major flu attack. It was – you were sweating, you were cold. So, it was really, really bad. (Eric)

Here, Eric appears ‘changed’ in some way; his emotional outbursts are uncharacteristic and uncontrollable. His use of the third person to describe himself is perhaps indicative of how these early treatments transformed his sense of self.

Unlike Eric, many other participants reported decreased self-awareness in relation to their treatment-related aggressive outbursts. They appeared to rely on reports from friends and relatives, rather than on their own firsthand recollections. Most of the participants also struggled to identify themselves with the behaviours they displayed as a result of INF treatment. In the interviews, they seemed to

seek an escape from their past actions, by emphasizing that it was not them who acted so impulsively, because they were ‘not like that’. The side effects seemed to overpower them and fracture a sense of the continuity of self:

There was difficult to understand what was happening to you, you know, but it wasn’t something that was made you are going to kill somebody, you know... nothing like that or go fighting or nothing, just felt not totally in control, which was an unusual thing for me. (Gus)

However ‘horrendous’ or debilitating the relentless, unsuccessful treatments were, it did not prevent or discourage participants from exploring further treatment options as they became available. Facing their own premature mortality, participants repeatedly put their lives in the hands of others in a desperate and all-too-frequent bid for survival.

### *‘I started to go downhill’: experiencing liver transplant*

Living with uncertainty in relation to treatment opportunities and outcomes (as highlighted in the previous theme) was further heightened by a rapid deterioration in physical functioning. For many patients, advanced symptomatology was pivotal in confronting the inevitability of an organ transplant: an eventuality they had attempted to repress in previous years:

I suppose in a way you always wondered what would happen, how you would feel and everything. But I always took the attitude just get on with life. But then, when I started to go downhill after that, you know, they had mentioned you know a number of years before, you know this ... I always knew there was always a transplant at the end of it, even if they didn’t work the treatments now, there is always a chance of transplant. I didn’t go into, you know, what that meant really, until when I started go downhill. (Gus)

When faced with the reality of a transplant as the only life-saving option, participants were then confronted with a series of related, subsequent challenges and uncertainties. Uncertainty around if and when they would receive a transplant came to fruition. Participants reported becoming impatient and frustrated questioning the meaning of being kept ‘on hold’:

Why is it taking so long? Why is it taking them two months to write this? Why am I not there? Why is it taking so long? And when you think back it wasn’t that long but it’s long to me because it’s another two months down the line where I should have started two months. Who knows what lengths of time that you are going to be on the list? Nobody knows. (Eric)

Eric’s recollections highlight how felt lost and abandoned, desperate for information and reassurance. He, like the

other participants, reported feeling alone, vulnerable and fragile in this critical moment, their lives literally ‘hanging in the balance’. There is a palpable sense of their helplessness here, and the participants’ fate lay in the hands of their medical teams.

In contrast, feelings of relief, calm and elation accompanied the news that they had been placed on the transplant list. The relief of the long-awaited decision was for some participants overwhelming awaking hope for the future:

They told me, you’ve been accepted, you’re on the list and I just broke down, totally. I think, I’m going to start getting my life back here. Then of course you don’t know how long you’ve got to wait, it’s just your luck I suppose. (Jimmy)

For Jimmy, the opportunity for transplant first brought unadulterated relief and hope for the future yet this was short lived. Soon after worry, fear and eschatological thinking occurred. Hope was increasingly stained with a profound fear of dying while on the waiting list. The uncertainty of receiving an organ in time led to extreme vulnerability and helplessness – their survival lay far beyond their control:

They said, ‘You might die on the operating theatre. Your liver might be rejected so you’ve got to go onto the super list, and that’s a case of you first to get a liver’. That’s quite scary as well, saying if I’m going for a liver transplant and that liver doesn’t take, how am I going to survive until they get me a new one because I don’t – you’ve not got that long to go. I don’t know if it’s a day or two days, I don’t know. But it’d be a case of I’m first to get a liver in the United Kingdom and it’s pretty scary. (Ted)

Analysis showed a clear sense of the multiple hurdles that were needed to survive hepatitis C infection. The gravity and precariousness of the situation is obvious. A sense of the ongoing ontological uncertainty runs through Ted’s account and his persistent feeling of helplessness.

Participants seemed to have no choice but to undergo the surgery hoping for the positive outcome. There is no expectation or anticipation of what the outcome would be or would not be. What counts for them is here and now the time of receiving new liver. However, the sense of acceptance and calmness does not last long after receiving the call to hospital. When they were taken to the operating theatre, fears of not surviving accelerated:

The worrying one is when you’re actually on your way there and – in your head, you know what to expect, but you don’t know. And when you get taken down, on the way through it and when you’re getting taken down in that theatre, you think to yourself, is this it? Is this my last breath sort of thing? (Jimmy)

Again, Jimmy’s extract reveals a stark realization of his own mortality and the fragility of his future at that moment

in time. Here, everything appears suspended, where Jimmy is fixed on this one moment, this one final hope for survival, as his life entirely depends on others.

Some participants reframed the seriousness of the situation they were in, by reassuring themselves that they were ‘strong enough to get through the operation’. Conversely, others appeared to accept the worst-case scenario, assigning the outcome to predestination, something that seemed to be beyond their control leaving them only with prayers and hope. By accepting the fact that their survival was beyond their control, they adopted a fatalistic approach:

So maybe something happened but I also said when it happened ... it happened. This is Allah brings, Allah, God, so if it’s happen it will happen but we’ll pray to God and something happen better for me. That was the only hope. (Harry)

***I’m going to have to go through it all again, and it’s that that gets to you: virus recurrence post-transplant***

Even a successful transplant could not alleviate feelings of uncertainty for many of the participants. HCV recurrence was ‘sort of hanging over’ participants, like ‘a shadow’, a ‘constant reminder’ that they would perhaps never fully recover or ‘get rid of their illness’:

I don’t sleep at night because it’s going through your head all the time. [...] knowing that you’ve still got it. Knowing you’ve had the transplant, is it just going to waste because you’re going to die of Hep C sort of thing, or you know, is it ruining this [graft] further? Am I going to have to go and get another, and wait until – I’m going to have to go through it all again, and it’s that that gets to you. (Jimmy)

The fear of organ rejection and dying were profound and led to assertion that receiving the transplant was in vain. A vision of burdensome process of another transplant became more real and preyed on participants’ mind. However, feelings of despair and helplessness were balanced or even outweighed by the possibility for a new cure. DAAs fuelled new foundations of hope for almost certain recovery:

I know there are new treatments [DAAs] out there but this one is meant to be [...] much better. It’s got like a 95%+ success rate especially with the genotype 1 which I have. [...] hopefully the new drug will get its license and they will be able to say, ‘You can have it’. (Eric)

Participants seemed to associate new treatments with something that could only ‘improve things’ and prevent them from suffering ‘badly’. The cure regained and intensified a sense of future possibilities in their lives. The possibility of clearing the virus seemed to restore their positive attitude to life and have the potential to erase everything that made their lives a constant struggle:

So, when I become healthy I can do a job. I can enjoy my life ... enjoy the world. I will get well and there will be no complications, no problems. (Harry)

The participants' hopes for a disease-free life seemed to be slightly counterbalanced by fears of detrimental side effects of DAAs. Most of the participants tended to look back and identify situations that were burdensome and prevented their adherence to the previous treatments and virus clearance. However, no matter how detrimental were the effects of the past drugs accessed through trials, they seemed to be desperate to receive it anyway and put themselves 'forward for anything':

It depends how bad the side-effects were. But if I thought I could live with them then I would carry on, it's only twelve weeks. I mean it sounds a long time, but it'll be worth it in the end I suppose. [...] So, I'm like a guinea pig I think, so you wait and see how that goes. I'm going to give it a bash, if it's going to get rid of the Hep C I'll give it a go. As long as it doesn't damage this liver. (Jimmy)

Jimmy's statement echoes participants' attitude at the beginning of the journey where the sense of perseverance and hope prevailed. Although he highlights his status of a guinea pig here, he does not oppose it; moreover, he chooses to give DAAs a 'bash'. Becoming a test subject seems to be necessary to survive. A strong need to overcome the HCV pushes him towards unknown treatments, but his willingness is not unconditional. Readiness to try anything is juxtaposed with a need to protect and preserve the new liver.

Participants identified multiple factors that they imagined could prevent adherence to DAAs. These included organ rejection, side effects or uncertainty about DAAs effectiveness in post-transplant patients. Participants imagined these obstacles and contraindications for the new therapy in order to protect themselves from disappointment and frustration if the INF-free treatment failed. Furthermore, captured in unspecified 'holdup' while awaiting new treatment, five of the participants in this study started raising questions and expressing their doubts:

They've said they've come up with quite a new drug [DAAs] that I'll go on and I'm still waiting. From what I've read it's been successful. [...] I think it'll be better to speak to somebody who's had the treatment. Doctors have these long words and I can't understand them. I think the not knowing is more of a worry than having the illness. They could explain more possibilities and what could go wrong here, and they don't seem to get that out. It just seems to be figures. I'll ask him (the doctor) next time I see him because it'll be six months since I've last seen him and he said I was getting put on it and I'm still waiting. (Chris)

Chris' description of lack of information provision and need for answers seemed to reveal how little many patients

knew about treatment that was already licensed and implemented. This gap in knowledge evoked concerns and speculations that led to nothing but another limbo. Therefore, they appeared to enquire into the circumstances of the decision-making regarding the new treatments:

For me there's not much evidence on the post-transplant because ... they are concentrating on the pre-transplant ... I don't know if one comes into that cos obviously, they've taken cleared that before transplant and they wouldn't have crossed the transplant, they wouldn't have crossed all the drugs after that... (Gus)

Although there was a sense of disappointment and frustration regarding lack of evidence on post-transplant treatment in some experts, it did not imply any unfair approach to the post-transplant patients, but it only reflected their scarce knowledge about the new treatment.

Two participants who had completed DAAs-based treatment post-transplant and had cleared the recurred virus successfully reported being initially seriously ill after receiving it. In their retrospective account of this time, a sense of determination and hope of being 'virus-free' supported their adherence to the course of treatment. Despite treatment-related adversities, they were still 'hoping for the best' and kept their 'faith' all along. When the treatment was considered successful, a sense of freedom was reported, giving birth to a new, healthy identity:

After it was clear [virus-free] I was a different person because that was always hanging over me after the transplant. There's a shadow, a thing on the new liver, the hepatitis C was attacking it, once I got clear, different, great, so it was. (Steve)

At the time of the interview, only two participants had the viral rebound successfully treated with DAAs and had been able to identify themselves with the new 'cured self'. However, what unified the experiences of all the participants was a sense of determination, and often desperation accompanied their need to 'get rid of the virus'. There seemed to be nothing that would prevent them from engaging in a 'trial and error' approach to treatment or assuming the role of 'guinea pig', so long that would mean to them avoiding more invasive treatment options and saving their new liver.

## Discussion

This study is novel in exploring the journey of prolonged treatment uncertainty in a group of individuals living with HCV recurrence after receiving a liver transplant. To date, only one qualitative study has addressed the lived experience of INF-free HCV treatments (Whiteley et al., 2016). However, no studies have specifically aimed to capture how this 'new cure' impacts the lives of post-transplant

patients with virus recurrence. This project thus extends the HCV literature on new antiviral therapy, both in post-transplant patients who have already received and cleared the virus as well as in those who have yet to be offered the treatment.

This study is unique in terms of capturing patients' lives on the edge of treatment development. Surviving a decade-long passage of unsuccessful treatments resulted in accumulating fears that now cast over patients' hopes about recovery. Those who are still awaiting referrals to DAAs regimens are extremely vulnerable and fragile. Knowing that there is an effective cure that they can't simply get access to seems to increase their emotional strain and sense of helplessness. All seven men in this study have been re-diagnosed with recurrent HCV post transplant and then have ridden the crest of a breaking wave in relation to treatment development, trial work and for some eventual success. Their accounts might illuminate the experience of other patients who have lived with chronic illness for years and suddenly have to re-examine their future in consequence of full recovery following biomedical treatment development.

Hope for an ultimate cure remained a crucial determinant in their participation in HCV regimens (Hill et al., 2014). This positive attitude counterpoised the uncertainty and even past experience of highly detrimental INF- $\alpha$  treatment that was found to cast 'a shadow' over the new INF-free regimens (Whiteley et al., 2016). However, this dissonance between past and future treatment that evoked uncertainty and doubts could be alleviated, if sufficient information and support from health care professionals had been provided (Bailey et al., 2009). This study builds on previous research, which described that patients can feel diminished as an individual by the lack of sufficient information (Harris, 2005; Hill et al., 2014). Moreover, lack of effective ways to communicate knowledge regarding new antiviral treatments and their side effects resulted in participants' speculations and caused additional distress that was previously reported in relation to HCV (Fry and Bates, 2012).

A state of sustained uncertainty was described in this study by five participants who had not yet received the 'new cure' (i.e. DAAs). This ongoing burden reduced their ability to incorporate HCV into their lives and accept their new illness identity. Thus, unlike previous evidence that showed that this kind of successful accommodation of HCV might be achievable (Sutton and Treloar, 2007), this study indicated that for many, a healthy life transition can be rather impossible. The uncertainty of living with a recurrent virus appears to prevent a full adjustment to life with HCV and the prospect of receiving new treatment suspends accommodation. These aspects of sustained uncertainty in post-transplant population with HCV have not been previously identified.

Conversely, two participants who had already received the new treatment and cleared the virus experienced a sense of liberation and complete control over their future. Thus, this study has also demonstrated how a limited framework of uncertainty, that is related to the diagnosis of a chronic illness (Bury, 1982), can suddenly shift towards a framework of possibilities and future certainty when a sense of healthy identity is regained through successful outcomes of treatment. Therefore, five of pre-treatment participants had great expectations for recovery and, despite their uncertainties, the importance to conquer the condition and survive dominated their decision-making (Hopwood and Treloar, 2005; Sgorbini et al., 2009). Their whole lives represented an endless ontological crisis defined by treatment choices or their lack.

It is important to highlight the limitations of this study. First, in relation to recruitment, the access to participants was gained exclusively through only one hospital-based outpatient clinic, and at its initial stage, direct involvement of the researchers was not permitted. Second, this study was exclusively focused on the population with HCV in Scotland; therefore, the findings can only be generalized to other regions, if similar methods of therapy are used and similar population with HCV is treated. Furthermore, participants who received the INF-free treatment were not able to indicate specifically which INF-free therapy they were prescribed, but investigating the differences between new therapies was not an aim of this study. However, subsequent research might provide more insight regarding different treatments and their impact on patients' perception of HCV therapy and their experience of transition to life without HCV.

The implications of this study lie in the potential for improvement in the quality of life of post-transplant patients with recurrent HCV, who are awaiting new treatment. Considering participants' scarce knowledge about the INF-free therapy and their escalating concerns regarding its side effects and effectiveness, more information should be provided through face-to-face consultations with their health care providers. Learning more about the current and anticipated treatments would lessen a sense of being 'a guinea pig' in a set of experimental trials and help participants regain their sense of control over their illness. Developing different psychoeducational groups that are specifically tailored for population with HCV would offer reassurance and allow to address specific needs that differ at specific stages of treatment. Those groups would aim at helping patients and their primary caregivers to prepare to initiate HCV treatments and cope effectively with their consequences. They could be delivered as complementary informational sessions, a form of support group meetings run by medical professional and where patients could share their uncertainties in order to 'normalize' and authenticate their fears.

Health psychology could respond to complex needs of patients with HCV by developing a model that would encompass treatment-related beliefs and fears – factors impacting adherence and solutions for reducing barriers to adequate health care. This model may also constitute a foundation for rebuilding a well-functioning patient–physician relationship and facilitate an efficient communication that had been challenged over the course of prolonged treatment. The analysis of subsequent stages of HCV treatment revealed also the need of providing counselling and HCV-specific psychological interventions along the course of prolonged HCV therapy.

Despite significant effectiveness and very minimal adverse effects of INF-free treatment, it still remains an emotionally and physically challenging life disruption for patients involved. Therefore, it is essential to highlight the importance of professional support that can lessen the burden of receiving and recovering from HCV treatment (Sgorbini et al., 2009). Developing a well-structured health care plans for outpatient clinics can resolve issues that have been raised in his study. Experiences of lack of information provision, uncertainty surrounding treatment effectiveness and a sense of lack of control over their HCV and decision-making in relation to HCV treatment might be replaced by enhanced confidence and improved health behaviours if a framework of HCV uncertainties is acknowledged and understood (Department of Health, 2005). Ongoing formal assessment to identify interventions issues and individual needs in patients at various points of HCV treatment is recommended.

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### References

- AASLD/IDSA HCV Guidance Panel (2015) Hepatitis C guidance: AASLD-IDSA recommendations for testing, managing, and treating adults infected with hepatitis C virus. *Hepatology* 62(3): 932–954.
- Afdhal N, Reddy KR, Nelson DR, et al. (2014) Ledipasvir and sofosbuvir for previously treated HCV genotype 1 infection. *New England Journal of Medicine* 370(16): 1483–1493.
- Annema C, Roodbol PF, Stewart RE, et al. (2015) Prevalence of psychological problems and associated transplant-related variables at different time periods after liver transplantation. *Liver Transplantation* 21(4): 524–538.
- Bailey R, Armour K, Kirk D, et al. (2009) The educational benefits claimed for physical education and school sport: An academic review. *Research Papers in Education* 24: 1–27.
- Bentley TS and Phillips SJ (2017) 2017 U.S. organ and tissue transplant cost estimates and discussion. *Milliman Research Report*. Available at: <http://us.milliman.com/uploadedFiles/insight/2017/2017-Transplant-Report.pdf> (accessed 20 April 2017).
- Bernstein D, Kleinman L, Barker CM, et al. (2002) Relationship of health-related quality of life to treatment adherence and sustained response in chronic hepatitis C patients. *Hepatology* 35(3): 704–708.
- Brown RS, O’leary JG, Reddy KR, et al. (2016) Interferon-free therapy for genotype 1 hepatitis C in liver transplant recipients: Real-world experience from the hepatitis C therapeutic registry and research network. *Liver Transplantation* 22(1): 24–33.
- Bury M (1982) Chronic illness as biographical disruption. *Sociology of Health and Illness* 4(2): 167–182.
- Carrion AF, Khaderi SA and Sussman NL (2016) Model for end-stage liver disease limbo, model for end-stage liver disease purgatory, and the dilemma of treating hepatitis C in patients awaiting liver transplantation. *Liver Transplantation* 22(3): 279–280.
- Cornberg M, Wedemeyer H and Manns MP (2002) Treatment of chronic hepatitis C with PEGylated interferon and ribavirin. *Current Gastroenterology Reports* 4(1): 23–30.
- Department of Health (2005) *Supporting People with Long Term Conditions: An NHS and Social Care Model to Support Local Innovation and Integration*. London: Department of Health.
- Dudley T, Chaplin D, Clifford C, et al. (2007) Quality of life after liver transplantation for hepatitis C infection. *Quality of Life Research* 16(8): 1299–1308.
- Fontana R (2000) Neuropsychiatric toxicity of antiviral treatment in chronic hepatitis C. *Digestive Diseases* 18(3): 107–116.
- Fraenkel L, McGraw S, Wongcharatrawee S, et al. (2005) What do patients consider when making decisions about treatment for hepatitis C? *The American Journal of Medicine* 118(12): 1387–1391.
- Fried MW (2002) Side effects of therapy of hepatitis C and their management. *Hepatology* 36(5 Suppl 1): S237–S244.
- Fry M and Bates G (2012) The tasks of self-managing hepatitis C: The significance of disclosure. *Psychology and Health* 27(4): 460–474.
- Fung J (2015) Era of direct acting antivirals in chronic hepatitis C: Who will benefit? *World Journal of Hepatology* 7(24): 2543–2550.
- Goossens N and Hoshida Y (2015) Hepatitis C virus-induced hepatocellular carcinoma. *Clinical and Molecular Hepatology* 21(2): 105–114.
- Harris M (2005) Living with hepatitis C: The medical encounter. *New Zealand Sociology* 20: 4–19.
- Hill R, Pfeil M, Moore J, et al. (2014) Living with hepatitis C: A phenomenological study. *Journal of Clinical Nursing* 24(3–4): 428–438.
- Hopwood M and Treloar C (2005) The experience of interferon-based treatments for hepatitis C infection. *Qualitative Health Research* 15: 635–646.
- Hopwood MN, Treloar C and Redsull L (2006) *Experiences of Hepatitis C Treatment and Its Management: What Some Patients and Health Professionals Say*. Sydney, NSW, Australia: National Centre in HIV Social Research, The University of New South Wales.
- Hutchinson SJ, Dillon JF, Fox R, et al. (2015) Expansion of HCV treatment access to people who have injected drugs through effective translation of research into public health policy:

- Scotland's experience. *International Journal of Drug Policy* 26(11): 1041–1049.
- Keating GM and Curran MP (2003) Peginterferon-alpha-2a (40kD) plus ribavirin: A review of its use in the management of chronic hepatitis C. *Drugs* 63: 701–730.
- Kwo PY, Mantry PS, Coakley E, et al. (2014) An interferon-free antiviral regimen for HCV after liver transplantation. *New England Journal of Medicine* 371(25): 2375–2382.
- Marshall AD, Cunningham EB, Nielsen S, et al. (2018) Restrictions for reimbursement of interferon-free direct-acting antiviral drugs for HCV infection in Europe. *The Lancet Gastroenterology & Hepatology* 3(2): 125–133.
- Merz JF and Fischhoff B (1990) Informed consent does not mean rational consent: Cognitive limitations on decision-making. *Journal of Legal Medicine* 11(3): 321–350.
- Monji A, Yoshida I, Tashiro KI, et al. (1998) A case of persistent manic depressive illness induced by interferon-alfa in the treatment of chronic hepatitis C. *Psychosomatics* 39(6): 562–564.
- National Services Division, NHS (2016) Commissioning transplantation to 2020. Available at: [www.nsd.scot.nhs.uk/publications/ServiceReviews/CTT2020%20final%20report.pdf](http://www.nsd.scot.nhs.uk/publications/ServiceReviews/CTT2020%20final%20report.pdf) (accessed 12 March 2016).
- Pungpapong S, Aqel B, Leise M, et al. (2015) Multicenter experience using simeprevir and sofosbuvir with or without ribavirin to treat hepatitis C genotype 1 after liver transplant. *Hepatology* 61(6): 1880–1886.
- Rimal RN and Real K (2003) Perceived risk and efficacy beliefs as motivators of change: Use of the risk perception attitude (RPA) framework to understand health behaviors. *Human Communication Research* 29(3): 370–399.
- Rogers RW (1975) A protection motivation theory of fear appeals and attitude change. *The Journal of Psychology* 91(1): 93–114.
- Rosenstock IM (1974) Historical origins of the health belief model. *Health Education Monographs* 2(4): 328–335.
- Samur S, Kues B, Ayer T, et al. (2018) Cost effectiveness of pre- vs post-liver transplant hepatitis C treatment with direct-acting antivirals. *Clinical Gastroenterology and Hepatology* 16(1): 115–122.
- Sgorbini M, O'Brien L and Jackson D (2009) Living with hepatitis C and treatment: The personal experiences of patients. *Journal of Clinical Nursing* 18(16): 2282–2291.
- Smith JA (1996) Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health* 11: 261–271.
- Smith JA, Flowers P and Larkin M (2009) *Interpretative Phenomenological Analysis: Theory, Method and Research*. London: SAGE.
- Sutton R and Treloar C (2007) Chronic illness experiences, clinical markers and living with hepatitis C. *Journal of Health Psychology* 12(2): 330–340.
- Whiteley D, Whittaker A, Elliott L, et al. (2016) The lived experience of interferon-free treatments for hepatitis C: A thematic analysis. *International Journal of Drug Policy* 38: 21–28.
- Yardley L (2000) Dilemmas in qualitative health research. *Psychology and Health* 15: 215–228.
- Younossi ZM, Stepanova M, Charlton M, et al. (2016) Patient-reported outcomes with sofosbuvir and velpatasvir with or without ribavirin for hepatitis C virus-related decompensated cirrhosis: An exploratory analysis from the randomised, open-label ASTRAL-4 phase 3 trial. *The Lancet Gastroenterology & Hepatology* 1(2): 122–132.