Connecting the Heart and the Liver

—By Lucinda K. Porter, RN

Red is the color associated with February. It’s not just for Valentine’s Day; red is the official awareness color for heart health. For years, I ignored American Heart Month, frustrated by the inadequate attention paid to liver disease. I was shortsighted. The liver and heart are more than organs sharing the underside of the rib cage. They rely on each other and we can’t live without either of these two organs or the vascular system that connects them.
Let’s start with some facts:

- 27.6 million adults in the U.S. have been diagnosed with heart disease; this is 11.5 percent of the population.\(^1\)

- Heart disease is the number one cause of death in the U.S. with 614,248 people dying from it every year.\(^2\)

- Heart disease is just as deadly for women as it is for men. Women have different symptoms, and approximately one in four women will die from heart disease. Nearly two-thirds of women who died from a sudden heart attack had no previous symptoms.\(^3\)

- Looking at race and ethnicity, the risk of death from all heart disease in descending order is Native Hawaiian/Pacific Islander (19.1 percent), American Indian/Alaska Native (13.7 percent), Caucasians (11.1 percent), Blacks (10.3 percent), and Asians (6 percent).\(^4\)

- If one just examines coronary artery disease deaths (CAD), the prevalence in descending order is Native Hawaiian/Pacific Islander (6.9 percent), American Indian/Alaska Native (6 percent), Caucasians (5.6 percent), Blacks (5.5 percent), and Asians (3.3 percent).\(^5\)

- The order of death risk changes when we focus on stroke. In descending order, the incidence is Native Hawaiian/Pacific Islander (8.6 percent), Blacks (4 percent), American Indian/Alaska Native (3 percent), Caucasians (2.3 percent), and Asians (1.5 percent).\(^6\)

Compare heart disease death to liver disease: Chronic liver disease and cirrhosis rank as the 12th cause of death in the U.S. with 38,170 people dying every year. However, this is a low number. It does not include some of the 20,722 alcohol-related deaths that were likely liver-related. Or, the 24,698 deaths from liver and bile duct cancers. And what do you do about diabetes deaths that may be linked to viral hepatitis? As for the prevalence of liver disease, it’s hard to know the numbers. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) reports that in 2011, around 3 million people in the U.S. had chronic liver disease. However, that does not include viral hepatitis cases, which more than doubles that figure. And who knows if any of these stats include liver cancer.\(^7\)

In 2013, the American Liver Foundation (ALF) stated that at least 30 million people in the U.S. had some form of liver disease. That is 1 in 30 people. It’s a higher number when compared to the 27.6 million adults in the U.S. that have been diagnosed with heart disease. However, the ALF data include children and approximately 100 liver conditions, so it makes a poor comparison. Nevertheless, even if I adjust the figure to include all deaths from liver-related illnesses, the total still pales when compared to the 614,248 people in the U.S. who die from heart disease every year.

Which leads me to the reason I am writing on this topic. I assume that you are reading this newsletter — CONTINUED FROM PAGE 1 — CONTINUED ON PAGE 3
because you have a stake in liver health. Perhaps you or a loved one has or had hepatitis C or another liver disease. Like me, you scoured the internet for information to help you feel better. You may be among the lucky ones with hep C who is now cured. But there is more to life than liver disease. Health is a package deal.

I didn’t go through hepatitis C treatment in order to sit on my derriere and ignore all the other lifestyle-related diseases I could get. Yes, I get that exercise is an overwhelming proposition when you are exhausted and in pain. It’s a heck of a lot easier to pick up a burger at the drive-thru than it is to prepare a salad. But these are problems with solutions. For me, baby steps worked best. So did making only one change at a time. Whispering kind and encouraging words to myself also helped.

It requires honesty. I need to keep a log. Paper and pencil will work, but electronic tools are easier. Lose It and My Fitness Pal are two popular apps. The log helped me see my strengths and weaknesses. It showed me what a liar I could be when I was tempted to underestimate the amount of a high calorie food I ate. Yes, I would even lie to myself.

Many years ago, I decided to try interferon treatment for my hep C. My rationale was based on the answer to one question: If I developed cirrhosis, would I regret not having tried everything I could when I was younger. Would I kick myself? The answer was yes. It’s like that with lifestyle-related ailments, such as heart, liver, and kidney disease. Cancer too. If I develop a blood clot, diabetes, or a stroke 20 years down the line, I don’t want my first thoughts to be, “I wish I had walked more or eaten better.”

So when I observe heart awareness month, it’s also because of my liver. It’s not a competition between the two organs. It is a competition between illness and health. We know we are going to die. The question is, how healthy will we be before we get there.

**The log helped me see my strengths and weaknesses.**

---

**Sources**

i: Centers for Disease Control and Prevention (CDC) National Vital Statistics Report 2014

ii: CDC’s Division for Heart Disease and Stroke Prevention www.cdc.gov/dhdsp

iii: www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_women_heart.htm


v: ibid.

vi: ibid.

vii: ibid.

viii: HCV Advocate’s Fact Sheets hcvadvocate.org/publications/fact-sheets/

---

Lucinda K. Porter, RN, is a long-time contributor to the HCV Advocate and author of “Free from Hepatitis C” and “Hepatitis C One Step at a Time.” She blogs at [www.LucindaPorterRN.com](http://www.LucindaPorterRN.com) and [HepMag.com](http://HepMag.com)
Hepatitis C (HCV) is about 8 times more transmissible per injection than HIV\(^1\). It can also live in dry blood at 71 degrees Fahrenheit for up to 6 weeks and still be viable for transmission\(^2\). These two facts alone highlight the important role harm reduction plays in HCV prevention and treatment. I’ve briefly touched on this topic in my article “Health Literacy and Hepatitis C,” as well as others, and want to take the opportunity to further expand on it here.

You may have already noticed that the HCV Advocate is rolling out some harm reduction fact sheets. As we publish more of these throughout 2017, they will focus on a range of topics concerning harm reduction that are both broad and more specific to HCV. If you’ve read our “Overview of Harm Reduction,” or are previously familiar with harm reduction, you know that it’s simply a set of practical strategies that when used reduce the likelihood of potential harm.

Harm reduction isn’t about encouraging use, but it is about acknowledging it. We must admit that people are using substances, will likely continue using them, that HCV transmission rates are tied to these things and ultimately that harm reduction is proven to lower those rates of transmission and improve people’s overall health\(^3\). Safety, respect and positive reinforcement in a judgement free space are important to reaching our goals of the 2017 – 2020 National Viral Hepatitis Action Plan. Harm reduction is a great way for all those things to happen.

So, what does harm reduction entail? Well, often when we hear these word we are likely to think of syringe exchange programs (SEPs) or syringe access programs (SAPs) as they are also referred to. If you’re unfamiliar with these and what goes on at them, you are more likely to have concerns about them encouraging use or making the problem worse. For reasons like these, this is likely the best place to begin. I’m going to take the liberty of summarizing a bit to save us time.

At most SAPs, clients will fill out an intake form that covers things like what drugs people are using, how they are using them (injection in the vein, in the muscle, or under the skin vs snorting or smoking), how many times a day they are using, if they’ve ever overdosed and if they have/had had any infections or injuries, as well as many other questions about overall health. The goal is to make sure help can be provided that is specific to each person who comes to an SAP. Participants of SAPs will also be provided community referrals to treatment and healthcare but only if they want them.

People who inject drugs (PWID), and use substances, are at the highest risk of contracting HCV\(^4\). There is also evidence that HIV+ persons and men who have
sex with men (MSM) are at a higher risk of HCV contraction. Given all we know about HCV transmission and treatment many people are still contracting it. A lot of painful and harmful things like infections, abscesses, vein collapse, heart infection, temporary numbing or loss of feeling and even blindness can happen from improper injection technique or using the wrong materials.

Missing or being unable to find a vein could mean someone must stick themselves multiple times before finding a usable vein. This can result in more bleeding and could open them up to not only contracting HCV but many other infections. This means knowing how to do the right “hit” on the first try is important. If HCV is about 8 times more transmittable per injection than HIV, then every time we can reduce the number of times injection occurs, or the risk associated with it, we can measurably reduce the likelihood of HCV contraction. This is a big deal and a major case for the importance of harm reduction in the battle against HCV and the opioid crisis.

Having worked in Southern Indiana for the last three years as a prevention specialist I know how contentious SAPs can be. I also know that many people’s concerns shouldn’t simply be dismissed, but instead they should be listened to and given information on the benefits of harm reduction so we can begin dispelling myths. I know that people’s opinions can change and that they can come around to supporting, at least partially, the benefits of SAPs. We won’t all agree all the time, but if most of us can agree most of the time, then we can make a measurable difference and move in a positive direction.

It is my hope as we continue to roll out these harm reduction fact sheets in 2017 we inform, empower, and engage everyone along the spectrum of those who support and oppose harm reduction. “It takes a village” isn’t just a kitschy saying. It’s an axiom born out of the understanding that like children, for ideas to have the best chance at reaching their full potential, their growth must be nurtured not by a select few, but ultimately by the entire community.

Matthew Zielske currently works as a HIV/HCV special populations prevention specialist at an HIV services organization. He utilizes a harm reduction model in his work with the substance use population focusing pointedly on persons who inject drugs. He is currently conducting research on Health Literacy and hepatitis C for his Master’s Thesis in Communications. www.umbrellaway.org


Study Aims and Results
The current study used data from the Third National Health and Nutrition Examination Survey (NHANES III) study to tabulate the number of hepatitis C (HCV)-related deaths and compare them to the number of deaths in the general population. The authors also examined the differences in deaths among ethnic and racial groups, and by sex and age.

A total of 9,117 adults with HCV aged 18 to 59 years old were assessed from 1988 to 1994 and they were followed up through 2011.

Conclusion
Nine hundred-thirty deaths occurred over an average period of approximately 20 years. The authors found that having HCV increased the risk of all-cause mortality (death) rate by 2.63—that is the death rate was 2.63 times higher. The study results also looked at the death rates among racial and ethnic Americans by variances as listed below:

- 7.48 times higher death rates among Mexican Americans
- 2.67 times higher death rates among non-Hispanic Whites and,
- 2.02 times higher death rates among non-Hispanic Blacks

The main factor for the higher rates of death among Mexican Americans was the lack of health insurance. The authors noted that a National Health Interview Survey (2008-2010) revealed that 41% of non-Hispanics, 26% non-Hispanics Blacks and 16% of non-Hispanic Whites were without health insurance.

Editorial Comments
The increased risk of death among non-Hispanic Whites, non-Hispanic Blacks and notably among Mexican Americans is alarming. The pending elimination of the Affordable Care Act (ACA) does not bode well for all Americans dependent on the ACA most notably for those who may not have another available option. Hopefully, Congress will keep their word to repeal and replace the ACA with a better national healthcare law as promised. Otherwise, the alarming trend will only get worse. We must all raise our voices to support a replacement plan that helps all Americans not just the people who can afford insurance.

“The main factor for the higher rates of death among Mexican Americans was the lack of health insurance.”
Study Aims and Results
The aim of the study was to understand and compare the most common reasons for the liver transplantation waitlist and what, if any, changes in rankings had occurred since the approval of hepatitis C (HCV) direct-acting antiviral medications. This is an important question since a significant amount of people have been treated and cured of hepatitis C thus reducing the need for inclusion on the liver transplant waitlist.

In the recent past, the three most common reasons for liver transplantation waitlist included (1) chronic hepatitis C (HCV) infection, (2) alcoholic liver disease (ALD), and (3) non-alcoholic liver disease (NASH)—build-up of fat in the liver (in this order).

In the current study, data was collected from the following records: National Health and Nutrition Examination Survey (NHANES), from the 2010 and 2013–2014, HealthCore Integrated Research Database on patients with cirrhosis and chronic liver failure (CLF) from 2006 through 2014 and United Network for Organ Sharing (UNOS) data on patients who received transplants from 2003 through 2015.

Conclusion
The data from the three studies is listed below:

- **NHANES**: HCV antibody and viral load was 0.5 down from 0.64 in 2010.
- **HealthCore**: Liver transplantation waitlist was not addressed in the abstract but the analysis did show that there were decreases in cirrhosis, chronic liver failure and liver cancer from hepatitis C. There was also a decrease in cases of cirrhosis, chronic liver failure and liver cancer attributed to ALD. NASH had 3-fold increase in chronic liver failure, cirrhosis and a small increase in liver cancer.
- **UNOS**: There was a significant decrease in those with HCV who were waiting for a liver transplant or who were receiving a liver transplant caused by liver cancer or from chronic liver failure. At the same time, there was an increase in patients with NASH or ALD undergoing or waitlisted for a liver transplant. In those patients with NASH or ALD there was no change between 2013 and 2015 in those undergoing a liver transplant or who were liver transplant waitlisted.

Take Home Message
In an analysis of 3 different databases (NHANES, HealthCore, and UNOS), it was found that the liver transplant waitlist from the disease consequences from HCV were decreasing but consequences from NASH and ALD were increasing.

Editorial Comments
The number one indication for liver transplants is still complications from HCV, but NASH and ALD are quickly catching up. The good news is that the new HCV direct-acting antiviral medications are curing many people before they need a liver transplant. The need for monitoring after being cured of hepatitis C, however, is still needed because some people, especially those with cirrhosis, can still progress on to serous disease progression. NASH due to a poor diet and lack of exercise is affecting millions of Americans. It is a deadly disease that can lead to cirrhosis, liver failure, liver cancer, the need for liver transplantation and unfortunately for some people death. Alcoholic liver disease is still a very large health problem among Americans that can lead to cirrhosis, liver cancer, the need for a liver transplant and death.
**Article: Uptake of hepatitis C screening, characteristics of patients tested, and intervention costs in the BEST-C study—J E Brady et al.**


**Study Aims and Results**

It is estimated that 4 of 5 HCV patients diagnoses are missed based on risk based testing—the current standard of care. Risk based HCV antibody testing includes Baby Boomer testing. In order to understand the most effective testing model a study was conducted using three interventions or testing models at different centers:

- Center 1: A letter delivered to Baby Boomers by the United States Post Office advising them to be tested
- Center 2: Electronic health record (EHR)-best practice alert (BPA) that would alert the medical provider to ask the patient if they wanted to be tested for hepatitis C
- Center 3: Physician office based direct patient solicitation – the medical provider would ask a patient (Baby Boomer) if they wanted to be tested for hepatitis C

The goal is to increase the number of people who would be identified with HCV and compare the results to the current —risk based testing (standard of care (SOC)). The start-up costs and the costs of the antibody test were factored in to the interventions.

**Conclusion**

Electronic health record (EHR—the best practice alert (BPA)) intervention was found to have the lowest incremental cost ($24.00 with fixed startup costs, $3 without) and “the lowest cost per new case identified after omitting fixed startup costs ($1691).”

**Editorial Comments**

Electronic health records are a good strategy to trigger a medical provider to ask patients to be tested for hepatitis C. The results of aged-based testing of hepatitis C have not been as successful in driving the undiagnosed HCV patients to medical care as originally believed. There will need to be a large investment in electronic health records as the next logical step. I have to wonder how this would be received in a physician’s office because of the time constraints that so many primary care offices are under these days.

---

“Electronic health records are a good strategy to trigger a medical provider to ask patients to be tested for hepatitis C.”

Alan Franciscus is the Executive Director of the Hepatitis C Support Project and the Editor-in-Chief of the HCV Advocate Website.
A brief overview of how this pipeline is laid out:

**Date:** The Pipeline will be updated on a monthly basis and will be included with the HCV Advocate Newsletter.

**Genotype (s):** This lists the drugs or combination of drugs and the particular genotype or genotypes that the drug is active against.

**Comments:** This section will list the study results. Within this section, I will list the genotype(s) being studied and the phase of the study with a brief recap of the study.

You will note that many of the drugs or combinations of drugs are pan-genotypic—that is they work on many or most of the HCV genotypes. **Note:** There is more detailed information about the drugs in development in our newsletter (http://hcvadvocate.org/publications/newsletter/2016-2/) and our blog (http://hepatitisc.hcvadvocate.org/)

If you are interested in finding out about clinical trials visit HCV Advocate Clinical Trial Reference Guide (http://hcvclinical.hcvadvocate.org/) for a list of trials that are currently recruiting patients.

### AbbVie

<table>
<thead>
<tr>
<th>Study Name</th>
<th>Patient Population</th>
<th>Treatment Duration</th>
<th>Treatment Regimen</th>
<th>SVR$_{12}$ Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENDURANCE-1</td>
<td>GT1 without cirrhosis, new to treatment or not cured with previous IFN-based treatments (pegIFN +/- RBV or SOF/RBV +/- pegIFN), and patients co-infected with HIV-1</td>
<td>8 week</td>
<td>G/P</td>
<td>99% (348 of 351 pts)</td>
</tr>
<tr>
<td>ENDURANCE-3</td>
<td>GT3 without cirrhosis, new to treatment</td>
<td>8 week</td>
<td>G/P</td>
<td>95% (149 of 157 pts)</td>
</tr>
<tr>
<td>SURVEYOR-2 (Part 4)</td>
<td>GT2, 4, 5, or 6 without cirrhosis, new to treatment or not cured with previous IFN-based treatments (pegIFN, SOF/RBV or pegIFN/SOF)</td>
<td>8 week</td>
<td>G/P</td>
<td>97% (196 of 203 pts)</td>
</tr>
</tbody>
</table>

*pegIFN = pegylated interferon; RBV= ribavirin; SOF=sofosbuvir; This combination was granted Breakthrough Therapy designation by the Food and Drug Administration (FDA) for those with HCV genotype 1 who had failed a previous course of therapy that contained a NS5A inhibitor.

In December 2016 AbbVie applied to the FDA to market and treat all HCV genotypes with the combination listed above.
COMMENTS:
Gilead released the results of four phase 3 studies (POLARIS) of the triple combination of sofosbuvir (polymerase inhibitor), velpatasvir (NS5A inhibitor), and voxilaprevir (protease inhibitor). The study included 1,056 patients who received the triple combination (sofosbuvir (SOF), velpatasvir (VEL), plus voxilaprevir (VOX)—611 were treatment naïve and 455 were treatment experienced.

Note: I am only listing the results from the triple therapy below—you will note that the percentage and numbers include all the patients treated. For a complete breakdown of all treatment regimens see November 2016 newsletter: http://hcvadvocate.org/news/NewsUpdates_pdf/Advocate_2016/advocate1116.pdf

The side effects were similar between the placebo (sugar pills) group, sofosbuvir plus velpatasvir, and the sofosbuvir, velpatasvir plus voxilaprevir groups. The most common side effects were headache, fatigue, diarrhea and nausea. Only one patient in the entire study discontinued therapy due to side effects.

This combination was granted Breakthrough Therapy designation by the Food and Drug Administration (FDA) for those with HCV genotype 1 who had failed a previous course of therapy that contained a NS5A inhibitor.

In December 2016 Gilead applied to the FDA to market and treat all HCV genotypes with the combination listed above—combined into one pill taken once-a-day.
Janssen (Achillion/Alios)  
Genotype(s) 1,2,3,4,5,6 (Pan-genotypic)

**COMMENTS:**

- **Genotype 1 – Phase 1:** In a small study of samatasvir, it was found to be safe and have antiviral properties against genotype 1, 2, 3 and 4. There is now a phase 2 study of samatasvir plus Olysio (simeprevir) in treatment-naïve patients with genotype 1b or 4.

- **Genotype 1 – Phase 2a Study** Janssen (Alios Pharma) has initiated a of AL-335, odalasvir, and simeprevir to treat HCV genotype 1 treatment-naïve patients. There will be 60 patients divided into three treatment arms who are treated for 4, 6 or 8 weeks. The results were listed in the October 2016 HCV Advocate newsletter. ([http://hcvadvocate.org/news/NewsUpdates_pdf/Advocate_2016/advocate1016pdf](http://hcvadvocate.org/news/NewsUpdates_pdf/Advocate_2016/advocate1016pdf))

- **Genotype 1 – Phase 2 Study:** ACH-3422 and Odalasvir (ACH-3102) and Sovaprevir are in studies with various combinations. Recently, Johnson & Johnson Innovation – JJDC, INC (Janssen) made an investment in Achillion for co-development and distribution.

- **Genotype 1 – Phase 2 Study:** Odalasvir plus sofosbuvir (used as a proxy drug) to treat genotype 1 patients for 6 weeks achieved 100% (12 of 12 patients) cure rates. A proxy drug is a drug used to stand in for another drug. Sofosbuvir is a polymerase inhibitor so it is assumed that odalasvir plus a polymerase inhibitor that is being developed by Achillion will produce similar cure rates.

- **Genotypes 1 through 6–Phase 2b Study:** Odalasvir, AL-335, and simeprevir in treatment-naïve and treatment-experienced patients with and without cirrhosis. The trial will enroll 400 patients for six or eight weeks. The study will include four arms with different combinations of drugs. The trial began in June 2016 and will end in July 2017.
**Merck**

| Genotype(s) | 1, 2, 3, 4, 5, 6 (Pan-genotypic) |

**COMMENTS:**

- **Phase 2- AASLD 2016:**
  
  **C-Crest:** The trial was a phase 2 study of a 3-drug co-formulation of MK-3682 (polymerase inhibitor), grazoprevir (protease inhibitor) plus ruzasvir (NS5A inhibitor) with and without ribavirin to treat HCV genotypes 1, 2 and 3. The treatment period was 8, 12 or 16 weeks. In the people who were previously treated with pegylated interferon plus ribavirin the SVR12/cure rates were 95% to 100% in genotype 1a, 1b and 3. In people with genotype 2 the cure rate was 87% in the 8-week group and a 100% rate in the 12 week group and 96% to 98% in the 16 week groups. There was very little difference in cure rates between the groups who had cirrhosis, and who did/did not receive ribavirin.

  **C-Surge:** An on-going phase 2 study to treat people with genotype 1 who had failed a previous course of a direct-acting antiviral therapy (Harvoni or Zepatier) using MK-3682, grazoprevir and ruzasvir with and without ribavirin. In the group that received ribavirin the treatment duration was 16 weeks; in the group that did not receive ribavirin the treatment duration was 24 weeks. The SVR 8 results were 98% in the 16 week group that received ribavirin and 100% in the 24 week group that did not receive ribavirin.

---

**Regulus**

| Genotype(s) | 1, 2, 3, 4, 6 |

**COMMENTS:**

**Regulus Therapeutic Inc.**

The study included 79 treatment-naive genotype 1 and 4 patients. RG-101 is a GalNAc-conjugated anti-miR targeting miR-122, a host factor for HCV infection. It is an injectable medication given at Day 1 and Day 29 plus 4 weeks of a once-a-day direct-acting antiviral medication –Harvoni (27 patients), Olysio (27 patients), Daklinza (25 patients). Regulus issued a press release on June 7, 2016 that reported through 24 weeks of follow-up an additional 4 patients relapsed.

<table>
<thead>
<tr>
<th>Time Since Treatment Completion</th>
<th>RG-101 + Harvoni</th>
<th>RG-101 + Olysio</th>
<th>RG-101 + Daklinza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 12</td>
<td>27/27 pts (100%)</td>
<td>26/27 pts (96.3%)</td>
<td>22/24 pts (91.7%)*</td>
</tr>
<tr>
<td>Week 16</td>
<td>21/21 pts (100%)</td>
<td>19/20 pts (95.0%)</td>
<td>20/22 pts (90.9%)</td>
</tr>
<tr>
<td>Week 20</td>
<td>14/14 pts (100%)</td>
<td>13/15 pts (86.7%)</td>
<td>13/13 pts (100%)</td>
</tr>
<tr>
<td>Week 24</td>
<td>10/10 pts (100%)</td>
<td>8/10 pts (80.0%)</td>
<td>8/9 pts (88.9%)</td>
</tr>
</tbody>
</table>

*One patient missed the Week 12 visit. Viral load results for this patient at week 8 and 16 were collected and indicate that the patient was a responder at both time points. This trial is on clinical hold due to safety concerns.*
WHAT’S UP!

We have three new Harm Reduction Fact Sheets

HARM REDUCTION AND ALCOHOL¹

CLICK TO DOWNLOAD

HARM REDUCTION AND INDIRECT SHARING²

CLICK TO DOWNLOAD

HARM REDUCTION DEFINITIONS³

CLICK TO DOWNLOAD

In mid-February we will be launching a new service for our Website Audience

• HCV Advocate •
Hepatitis C Drug Pipeline & Conference Coverage

The new service will include detailed conference coverage from the major national and international hepatitis C conferences as well as detailed information about drugs in development to treat hepatitis C.

1: http://hcvadvocate.org/hepatitis/factsheets_pdf/HarmReduction/Alcohol.pdf

The HCV Advocate offers information about various forms of intervention in order to serve our community. By providing information about any form of medication, treatment, therapy or diet we are neither promoting nor recommending use, but simply offering information in the belief that the best decision is an educated one.

Reprint permission is granted and encouraged with credit to the Hepatitis C Support Project.

© 2017 Hepatitis C Support Project