

5-2011

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Denise Christiansen  
*St. Catherine University*

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## Recommended Citation

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Diagnosis and Management of Hepatitis C in the Primary Care Setting

Denise Christiansen

Nursing 8000

Scholarly Project

May 11, 2011

Submitted to  
Gay Varecka, PhD, CNP, RN  
Saint Catherine University  
May 11, 2011

## **Introduction**

Hepatitis C is a virus transmitted through contact with infected blood or blood products. Infection with the virus presents with few, if any, symptoms and individuals can have the virus for several decades before diagnosis. It is an insidious disease and the diagnosis often carries a social stigma. While the rate of new infections has been declining; the rate of chronic hepatitis C related liver disease has increased (CDC, 2007). The role of primary care providers, particularly advanced practice nurses, in ordering appropriate tests for screening and management of patients infected with HCV is an important component of care and an understanding of the virus, and those at greatest risk, will aid in reducing potential complications of chronic HCV. This paper discusses the role of the primary care provider in diagnosis of HCV, counseling and education for patients and their families, and referral to a gastroenterologist or hepatologist for continuing care and possible treatment of HCV. The primary care provider is an important link, working in collaboration with medical specialists for effective management of those with HCV.

## **Epidemiology & Public Health Disease Burden**

According to the Centers for Disease Control and Prevention (2008), the most common blood borne pathogen is hepatitis C; it is also the leading cause of chronic liver disease as well as the primary indication for liver transplantation. Approximately 4.1 million individuals in the United States, or 1.6% of the population, have antibodies for HCV (anti HCV), and it is estimated that 3.2 million people, 1.3% of the population have chronic HCV. Currently, the peak prevalence of HCV is in the age group of 40 to 49 years, as compared with the findings of a similar survey in the 1990's showing most of those infected were ages 30-39. (Ghany, M, G., Strader, D, B., Thomas, D, L., Seef, L, B., 2009). The increasing age of the population with HCV indicates that the majority of those infected were exposed during the 1960's and 1970s, a period

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of time of increasing experimentation with illicit drugs. The number of new cases of HCV has decreased from an estimated 230,000 new cases per year in the 1980's to the current level of less than 30,000 new cases per year. The majority of new cases of HCV likely were contracted decades ago; however, have just come to clinical recognition when individuals seek care for other health reasons (AASSLD Guidelines, 2009). Also, considering that chronic hepatitis C infection causes little or no symptoms and acute HCV infection is usually mild with vague flu like symptoms, the virus can remain undetected for many years or even decades. Those at greatest risk for acquiring the infection are IV drug users, individuals who had a blood transfusion before 1992, hemodialysis patients, and health care workers with an exposure from a needle stick injury, although this accounts for very few cases. The perinatal route of HCV transmission is rare; occurring only 5 % of the time (CDC 2007). Sexual transmission, carries an overall risk of 5%, is more common among men who have sex with men, those with a history of sexually transmitted infections and, multiple sexual partners. The transmission risk for those in a monogamous relationship is less than 1 % (Ghany, et al, 2009).

The incidence of HCV may be under reported since many high risk groups were not included in the majority of HCV studies, such as individuals who are incarcerated, institutionalized or homeless (Flamm, 2007). To illustrate this point, a study from the Maryland Department of Corrections tested newly detained prisoners between January and March of 2002 and found 29.75% were infected with HCV, while the rate of infection of HIV was 6.6% and Hepatitis B was 25.2% (Rustigi, V, K, 2006 [Solomon, L, Flynn, c, Muck, K, Vertefuille, J, 2004]).

HCV infection takes a toll on those infected, the public, as well as the healthcare system and is an ever-growing concern. Chronic HCV is the cause of approximately 10,000 to 12,000

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deaths per year in the United States. The increase in the number of those infected with chronic HCV and the mortality of those who advance to cirrhosis and potentially hepatocellular carcinoma (HCC) is expected to increase significantly between 2010 and 2019 (McHutchinn, J. G, 2004). Nonetheless the costs of caring for the long term liver damage resulting from chronic HCV infection can affect individuals, their families, friends and caregivers. There is a loss of productivity, loss of emotional support and increased sense of isolation. The strain on the health care system has increased and the burden of the disease will continue to increase moving into the next few decades (Taylor-Young, P, Hildebrandt, E, 2009).

### **Pathophysiology**

The primary functions of the liver include filtration of blood and creation of bile. The liver processes 25 % of the cardiac output of blood, equal to 1500 mL every minute. Blood flow to the liver is via the portal system, a dual blood supply. The hepatic artery brings blood to the liver, and the portal vein branches from the small bowel bringing nutrients, as well as pancreatic hormones into the liver (McPhee, S, J, Hammer, G, D, 2010).

Humans are the only known natural vector for HCV infection (Pawlotsky, J, M, 2003). The hepatitis C virus is part of the Flaviviridae family of viruses; a single stranded RNA, genome *hepacivirus* (2010). Replication of HCV takes place in the hepatocytes. HCV is a spherical virus, approximately 50 nm in size (Mahy, B, W, J, Dictionary of Virology, 2005), and can also be found within several other areas of the body, such as peripheral blood cells, dendritic cells, epithelium and the central nervous system (O'Shea, R, S, Hepatitis C, 2010). HCV has six genotypes these are numbered 1-6, with as many as 50 subtypes (1a, 1b, 1c etc.). Genotype 1 is most prevalent in North America (70% of those infected); with the other genotypes more

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prevalent in other parts of the world. Genotypes 1 and 4 are the most difficult to treat, requiring a longer course of treatment, while genotypes 2 and 3 typically have a greater chance of a sustained response after treatment. Because of the many quasi-species of HCV and the mutations the virus makes, it is able to elude immunological responses and persist in the body past the acute phase of the infection. These factors have left attempts to develop an effective vaccine with disappointing outcomes (McPhee & Hammer, 2010). HCV causes acute infection which resolves on its own in 20-50 % of cases, but this does not constitute lifelong immunity to the virus. The transition to chronic infection occurs in the majority of cases, leading to cirrhosis and eventually the increased risk of hepatocellular carcinoma (HCC) (Pawlotsky, J. M., 2004). Injury to the liver from chronic HCV is mainly from an immunological response is thought to aid in the few cases of recovery from the acute infection. (Baptiste, A., Krahn, M., Heathcote, J., Tomlinson, G., 2009).

The effects of hepatitis C are not limited to the liver (Table 1). HCV can affect multiple body systems including the hematologic, renal, dermatologic, endocrine, neurologic and immune system (Palekar, N, A., and Harrison, S, A., 2005). While some of these diseases are common to hepatitis C, such as mixed cryoglobulinemia, most of these extrahepatic manifestations are uncommon. Knowledge of manifestations of hepatitis C outside of the liver can influence treatment of the virus and help to improve patient outcomes (Flamm, S, L., 2003).

Table 1

Extrahepatic Manifestations of Hepatitis C	
Hematologic	<ul style="list-style-type: none"> <li>• Mixed cryoglobulinemia</li> <li>• B-cell non-Hodgkins Lymphoma</li> </ul>
Autoimmune	<ul style="list-style-type: none"> <li>• Lymphocytic sialadenitis</li> <li>• Autoantibodies</li> <li>• Idiopathic thrombocytopenic purpura</li> </ul>
Renal	<ul style="list-style-type: none"> <li>• Membranoproliferative glomerulonephritis</li> <li>• Membranous nephropathy</li> <li>• Fibrillary glomerulonephritis</li> <li>• Rapid progressive glomerulonephritis</li> <li>• IgA nephropathy</li> </ul>
Dermatologic	<ul style="list-style-type: none"> <li>• Porphyria cutanea tarda</li> <li>• Leukocytoclastic vasculitis</li> <li>• Lichen planus</li> </ul>
Neurologic	<ul style="list-style-type: none"> <li>• Peripheral neuropathy</li> <li>• Guillain-Barre syndrome</li> </ul>
Endocrine	<ul style="list-style-type: none"> <li>• Hypothyroidism</li> <li>• Diabetes mellitus</li> </ul>

Palekar, N, A., and Harrison, S, A., Extrahepatic Manifestations of Hepatitis C

### Screening

The United States Preventative Services Task Force in 2006 did not find sufficient information that screening for HCV in high risk groups is able to impact the future of health care costs (USPSTF, 2006). In contrast the CDC recommends those at high risk be screened, and that this screening be facilitated in primary care, specialty care and public health settings. Education, counseling and opportunities for testing need to be made available for high risk populations. The AASLD guidelines for the Diagnosis, Management and Treatment of Hepatitis C: An Update (Ghany, M, G, Strader, D, B, Thomas, D, L, Seef, L, B, 2009) recommend those at highest risk

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be educated, counseled and tested for HCV. Screening should occur (1) “as part of a comprehensive health evaluation, all persons should be screened for behaviors that place them at high risk for HCV infection” and (2) “Persons who are at high risk should be tested for the presence of HCV infection” (Ghany et al, 2009). Studies which would aid primary care providers in the diagnosis of HCV include those examining the effectiveness of screening, the use of a screening tool in order to identify those at highest risk, specific testing criteria, and an algorithm for appropriate laboratory testing. The detection of HCV at an earlier stage could reduce the risks and disease burden.

## **Literature Review**

### *Screening Tools*

Nguyen, Herrine, Laine, Ruth and Weinberg (2005) developed a screening tool to assess patients at risk for exposure to HCV; the cross-sectional study examined a patient administered questionnaire, looking at seven factors that are strongly associated with HCV exposure. The seven question survey was focused from the results of a 72 question tool, self-administered by the 220 study participants. Examples of risk behaviors are having sex with a prostitute, injection drug use, a blood transfusion before 1992, witnessing illicit drug use and refusal as a blood donor or life insurance applicant.

Participants were randomly selected from the gastroenterology division clinic and an internal medicine clinic in a large teaching hospital. The first group of participants was known to have HCV antibodies, these patients were mainly from the gastroenterology division, the second group of patients from the general medicine division had not been tested for HCV, and did not have active liver disease. Inclusion requirements comprised of being 18-60 years old, able to



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give informed consent and competency in written English. Participants were given a confidential identification number at the start of the study. General medicine patients tested for anti HCV antibody with positive results were counseled. Results of the questionnaire revealed there were strong correlations between positive HCV status and a history of sex with a prostitute, exposure to blood products and intravenous drug use. The highest correlation occurred with four or more risk factors for HCV present.

Study limitations are related to the lack of diversity since participants had to be able to read and communicate in English. This would exclude those who had English as a second language. The study does not address individuals with limited or no access to healthcare, the homeless, undocumented workers and those who have been incarcerated.

The use of a screening tool evaluated by McGinn, O'Connor-Moore, Alfandre, Gardenier & Wisnivesky (2008), using a Multivariable Logistic regression analysis, identified the probability of HCV antibody risk factors. A total of 1,000 participants were randomly selected from a primary care clinic, affiliated with a large academic center and hospital, located in East Harlem, New York. Participants from the clinic were mostly African American, Hispanic and those from a low socioeconomic situation. The exclusion criteria for the study were spoken language other than English or Spanish and age less than 18 years. The questionnaire was developed by the Jefferson Medical Center and consisted of 27 questions evaluating HCV risk factors in 5 domains including work, medical, exposure, personal care, and social history. After completing the questionnaire participants underwent HCV antibody testing. 83 of the participants had positive HCV antibodies (8.3%; 95% CI). Of the positive results, mostly males and insured by Medicaid, 58 were known to have HCV antibodies, while 25 were newly diagnosed. There were no differences among participants in race/ethnicity, education level or reason for seeking

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care. A simplified questionnaire addressing three of the five domains, work, medical and social history was tested, which also showed a 95% CI.

The limitations of the study included an inner city clinic population which may not be generalizable. The HCV positive participant questionnaires may show a bias and the tool should be validated within other population groups. The study concluded that the use of a tool for assessing risk factors for HCV infection is of value in the primary care setting, by targeting those at greatest risk screening can increase detection in a more cost-effective manner.

The Department of Veterans Affairs in New York; conducted the screening of 5400 veterans, using a questionnaire in the primary care clinics (Zuniga, J, J. Lane, D, S. In a study by Allmer, J. Jimenez-Lucho, V, E., Analysis of Hepatitis C Screening Programme for US veterans. 2005). Using the guidelines from the Nutrition Health and Nutrition Examination Survey (NHANES III) the VA initiated HCV screening focusing on 11 potential risk factors, screening was recommended if the patient had 1 of 11 risk factors. The risk factors included (1) Viet Nam era service; (2) transfusion of blood before 1992; (3) IV drug use [past or present]; (4) blood exposure in or through the skin or mucus membranes; (5) multiple sex partners [past or present]; (6) hemodialysis; (7) tattoo or repeated body piercings; (8) intranasal use of cocaine [past or present]; (9) unexplained liver disease; (10) having been told of abnormal liver function tests; (11) intemperate ETOH [ $> 7$  alcoholic beverages in per week] (2005). Lab testing included anti HCV ELISA, with confirmatory HCV PCR (polymerase chain reaction). Demographic data were obtained using the institution EMR and paper records. Data were reported using frequencies and percentages. The study found that of the 11 identified risk factors only five were found to be significant in predicting risk for HCV infection, these included (1) IV drug use; (2) Viet Nam Era veteran; (3) tattooing and body piercing; (4) Intemperate ETOH use; (5) blood transfusion

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before 1992. The findings of the study indicated that a modified questionnaire could be used as a cost effective measure for screening and testing those at risk for HCV. Study limitations included possible selection bias as more than half of veterans at this facility were not tested for HCV. The use of a questionnaire can contribute to recall bias on the part of the participants, although multivariate testing did not show a difference in this retrospective study. A cost analysis could identify if the use of five risk factor screening questionnaire could be effective in predicting HCV infection in those at risk.

A more recent study completed by the U. S. Veteran Affairs, used the medical record of patients already identified to have tested positive for HCV and looked at the risk factor assessment of these patients (Malette, C, Flynn, M, A, Promat, K, Outcome of Screening for Hepatitis C Virus Infection Based on Risk Factors, 2008). Participants included patients found to be HCV positive who were diagnosed through the VA mandatory HCV screening program from October 1, 1998 to May 11, 2004. Inclusion in the study required an assessment that included an interview identifying their risk factors for HCV, length of infection, current health and mental health conditions, history of ongoing and past ETOH use, and score utilizing the AUDIT-C screening tool. A physical examination, confirmatory HCV testing, liver function test, liver biopsy and abdominal ultrasound to screen for hepatoma were offered. Counseling regarding hepatitis C was provided as well as vaccination for hepatitis B and hepatitis A. A review of medical records of 25,701 VA patients was examined, of those, 17,230 denied risk factors and were not offered testing for HCV antibodies. There were 8,471 participants who reported 1 risk factor, (5,646 had HCV testing), with 412 testing positive for infection and 228 having chronic HCV. A total of 152 patients were excluded because their diagnosis was not made in connection with the mandatory screening program. A sub-group of 260 patients were diagnosed with HCV

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solely through the VA screening, and were included for evaluation. Another 112 patients responded according to the protocol and had a full physical assessment; the remaining 148 participants could not be reached, or declined to be involved in the study.

Most of the participants (~88.4%) were able to confirm at least 1 risk factor, (70.5 % had injection drug use or blood transfusion before 1992 as their risk factor), 21.5% had more than 1 risk factor and 13.4 % did not report traditional risk factors. Confirmatory testing, HCV RNA PCR or RIBA, showed that of 219 patients, 38 of these had a false-positive HCV antibody test. Of the 211 who had HCV RNA PCR testing 122 were shown to have chronic HCV infection. The positivity of the anti-HCV testing showed 7.3% (95% CI 6.6-8.0%), this is higher than previously thought. The result of the study concluded that screening for risk factors for HCV had value. Findings also suggested the importance of confirmation with a test such as HCV RNA PCR with reflex testing of positive samples for confirmatory lab studies given that many of the participants did not return for follow-up testing after preliminary evaluation.

### **Management of HCV in the Primary Care Setting**

Primary care providers are poised to be a force in the diagnosis and management of patients with chronic HCV infection. Screening of patients for tobacco, alcohol and drug use could be expanded to include risk factors for HCV, as these risk factors are also associated with other viruses such as HIV and HBV. The knowledge needed in order to approach testing and management of these patients can be daunting for PCPs who are expected to manage many more patients with complicated comorbid health problems. Even though the rate of new infection with HCV has dropped, the rate of new diagnosis of chronic HCV continues to rise.

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The patient with chronic HCV infection requires a referral to a gastroenterologist or hepatologist for possible treatment and continued management, screening for HCC, fibrosis, and cirrhosis. Treatment of the patient infected with HCV is a long and arduous process; this is best managed by a specialist. The treatment regimen requires a provider to have expertise in the management, as well as potential side effects and complications of treatment.

There are few studies regarding primary care providers and HCV. With the increasing need for primary care providers and the declining numbers of physicians pursuing primary care, the role of APN's in primary care is increasing. The primary care provider's knowledge of epidemiology, pathophysiology, diagnosis and management of HCV is fundamental to their ability to assess patients for risk factors for HCV and screen appropriately.

The management of chronic hepatitis C often falls to primary care providers; unfortunately, the treatment of hepatitis C is complicated and requires specialized knowledge of the medication regimen, side effects, and frequent monitoring patients require during this time. According to Zevin (2007) the treatment of hepatitis C must be more broadly defined. Consideration of primary providers as a logical source of care for people living with hepatitis C is a model which would increase access to care and funding in order to provide necessary treatment.

### **Nurse Practitioners Role in the Diagnosis and Management of HCV**

Nurse practitioners in the primary care setting are a logical choice for the care of patients diagnosed with chronic hepatitis C. The holistic approach of nurse practitioners, based on theories of caring and patient autonomy is well suited to the care of HCV patients. This is a challenging group of patients. They are often motivated for treatment but either lack insurance or

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government aid or are not able to start treatment due to ongoing drug and alcohol use. Even if patients do meet the criteria for treatment, the regimen is lengthy (~48 weeks), and medications have multiple side effects such as depression, anemia, flu like symptoms, and hair loss. Often these patients lack a support system and the NP is the “cheerleader” for the patient. The NP and clinic staff provides close medical supervision and emotional support, especially when treatment is affecting their lives in many adverse ways.

As primary care providers, NP’s can screen and assess for complications of chronic HCV infection. If the patient has been referred to specialty care, the primary care NP can continue monitoring the patient for signs of cirrhosis, decompensating cirrhosis and assist in their care during treatment. NPs work in gastroenterology and hepatology clinic settings treating HCV patients, and often times the majority of their care during treatment is provided by an NP. This provides the benefit of continuity of care that these patients may lack. There are few studies that look directly at the NP role in the care of the patient with Chronic Hepatitis C, but with the growing shortage of primary care providers in the face of health care reform, NPs are poised to become the main provider of care for those with HCV as well as other complex patients.

An Australian study showed that the introduction of hepatology nurse practitioners (HNP) improved access and allowed more patients to be treated for HCV (Nazareth, S, Piercey, C, Tibbett, P, Cheng, W, Innovative practice in the Management of Chronic Hepatitis C: Introducing the Nurse Practitioner Model, 2005). The article addressed the need for greater access for individuals with HCV to receive treatment and management. The HNP role was created after approval had been gained and training was coordinated with the Nurses Board of Western Australia (NBWA). The HNP was able to prescribe medications, provide advanced assessment, initiate routine laboratory and imaging studies and refer to members of the

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interdisciplinary teams. The role of the HNP included combined management utilizing drug treatment and coordination of the multiple psychosocial components of the patients care in order to achieve the best outcome while maintaining cost effectiveness. Working with the established clinic protocols and collaboration with the care team the HNP was able to provide care and treatment options for those who would not have had access to this specialized care. The patient satisfaction scores for the HNP reached more than 98%, while increasing the number of patients treated for hepatitis C from an average of 60 to 120 per year. This was a small study conducted at only one facility looking at the outcomes for an HNP as a new role, specifically designed for one practice, thus more study would need to be done for generalizability. The overall role of the Advanced Practice nurse is likely different in Australia than it is in the United States, and may not fully reflect the more autonomous role of NPs in the United States.

The role of the advanced practice nurse in the treatment of HCV can be validated by other articles which are not necessarily research related, but do reflect the role NPs play in creating greater access for this group of patients. Clark and Ghalib, (1999) propose that the role of the NP, in caring for and educating patients regarding the risk factors, modes of transmission, disease course, and treatment options, to be critical in the future. The flexibility of the NP to be a PCP or to specialize in one area of care lends itself to the diagnosis and treatment of patients with HCV. In the primary care setting, NPs provide screening, surveillance and education. In the specialty area, NPs can co-manage the treatment of patients with anti-viral treatments in collaboration with a gastroenterologist or Hepatologist. Management of the treatment regimen and the control of side effects of treatment lend itself to the NP's practice. The need for careful management of these patients is crucial for treatment completion. For example, by keeping side

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effect journals and scheduling frequent follow-up for lab results and adjustment of medication dosages, NPs can greatly influence the outcomes of treatment for those infected with HCV.

### **Patient and Family Counseling and Education**

Patients diagnosed with HCV as well as their families, should be counseled regarding the prevention of transmission to others and treatment of HCV. Those infected with HCV may have many questions regarding transmission, and may be embarrassed with a diagnosis of HCV as it can be as stigmatizing as HIV. Family members, significant others and friends along with the primary care provider can be a resource and support system for the patient with HCV.

The approach to counseling patients, families or caregivers regarding HCV is important in the treatment and establishing a trusting relationship with the patient. A recent study from Australia showed that approaching patients and assessing their strengths and providing pre-treatment assessment and counseling can help improve patient compliance with treatment and overall healthy behaviors (Hopwood, M, Treloar, C, 2007).

Patient and family education should be accurate and reassuring. The information should include disease management, modes of transmission as well as strategies for improving general health (Kerbelski, M, 2005). Mental health, as well as chemical dependency issues need to be addressed. HCV support groups, chemical dependency and mental health groups should also be encouraged. The education of HCV patients has often fallen to physicians, but patient education is more often a part of nursing and the education of these patients might be better suited to the advanced practice nurse (Kerbelski, 2005).

Maintaining or improving health should be a priority for HCV patients in order to decrease the progression of liver damage. One of the most crucial areas that improves health and



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slows the progression of liver damage and worsening of fibrosis is abstinence from alcohol.

There is some debate as to whether complete abstinence or the “light” use of alcohol for health benefits is most beneficial. In a study looking at the question of a “safe” level of alcohol consumption, this was not shown to be the case. Alcohol intake at all levels contributes to progression of liver fibrosis (Monto, A, Patel, K, Pianko, S, Pockros, P, McHutchison, J, G. Wright, T, L, 2004). It is thought that even three drinks per day can enhance replication of HCV. The intake of alcohol can stress the cells of the liver and lead to increased scarring (fibrosis) of the liver and speed the progression to cirrhosis (Monto, A, 2002).

In managing patients with HCV, daily exercise can be beneficial both physically and emotionally. Patients often have symptoms of fatigue, depression and insomnia. Daily exercise has been shown to have multiple health benefits for the general population, as well as for patients with HCV. For instance patients with lower body weight have a greater chance of completing combination treatment with fewer adverse side effects (Levine, C, D., Ghalib, R, H., 2005). Exercise has also been shown to decrease stress and improve mood along with contributing to better sleep patterns. Regular exercise helps to prevent complications from diabetes and cardiovascular disease, obesity contributes to fatty liver disease. There are few studies of the benefit of exercise and hepatitis C, but further research could be done in this area. The positive effects of exercise for the general population can easily be applied to those with HCV (McKenna, O, Blake, C, 2007).

Mental health issues are common among patients with hepatitis C. Making sure that psychiatric concerns are under control and that the patient has a good support system in place prior to treatment to aid in management of side effects or for continued abstinence from illicit drugs and ETOH will improve outcomes. Many times the family and friends of the patient, due

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to past behavior of the individual with HCV, are not supportive or involved and ultimately the patient needs to develop a support system. Depression is a major side effect of treatment for HCV, adequate control of depression is required before treatment can be continued (Brennan, C, S., 2010).

Immunity to HAV and HBV is recommended for patients with chronic HCV and vaccination should be offered. A study showed that out of 86,000 patients, who tested positive for HCV, 82.2% were tested for HBV and 68.6% were tested for HAV. Of the patients who were tested, 57.2% and 63.8% had no immunity to HBV and HAV respectively. Most of the patients who had been vaccinated for HBV and HAV had been seen by a provider specializing in HCV. Vaccination against HAV and HBV are now considered quality marker for the care of HCV patients (Kramer, J, R, Hachem, C, Y, Kanwal, F, Mei, M & El-Serag, H, 2010). Table 2 provides a summary of counseling and education topics for care of individuals with HCV.

**Table 2**

Patient Counseling and Education	Interventions
Nutrition	<ul style="list-style-type: none"> <li>• Consume a healthy diet (plenty of fruits and vegetables).</li> <li>• Decrease the salt and sugar in your diet.</li> <li>• Decrease fats in the diet.</li> </ul>
Physical Activity	<ul style="list-style-type: none"> <li>• Regular exercise can help with weight loss.</li> <li>• Regular exercise can also help with decreasing depression.</li> <li>• Conserve energy when you can</li> </ul>
Treatment of Psychiatric Illness	<ul style="list-style-type: none"> <li>• Find ways to relax.</li> <li>• Make sure you get enough rest.</li> <li>• Reduce stress and anxiety.</li> <li>• If you have feelings of anxiety or depression contact your health care provider.</li> <li>• If you have an established relationship with a psychiatrist or counselor, see them on a regular basis.</li> </ul>
Abstaining from Alcohol	<ul style="list-style-type: none"> <li>• Alcohol can increase fibrosis</li> <li>• Causes further liver damage</li> <li>• Can cause faster progression of cirrhosis</li> </ul>
Smoking Cessation	<ul style="list-style-type: none"> <li>• General good health</li> </ul>
Supplements	<ul style="list-style-type: none"> <li>• Be sure to inform your health care provider of any OTC medications and supplements you are taking.</li> <li>• Tylenol is hepatotoxic, and should be avoided.</li> <li>• NSAID (Advil, ibuprofen, Naprosyn, aspirin)</li> <li>• Vitamins especially those with iron should be avoided.</li> </ul>
Vaccinations	<ul style="list-style-type: none"> <li>• If no Immunity to Hepatitis B or Hepatitis A, the patient should have these vaccine series.</li> <li>• This is a quality measure for the care of patients with chronic hepatitis C or cirrhosis.</li> </ul>

### **Conclusion**

Hepatitis C infection is a growing health concern. Having a screening tool available in the primary care setting would be influential in identifying those at risk for the infection, and has been proven to be instrumental in diagnosing those patients infected with the virus. The long-term management and care for those with undiagnosed HCV infection can be costly in terms of morbidity and mortality of the patient as well as a strain on the healthcare system. The fact that chronic HCV infection is increasing, despite a decrease in new infections, shows the disease burden of HCV will continue to be problematic. Primary care providers particularly NPs have a major role to play in the screening and diagnosis of patients with HCV.

The care of the HCV may require referral to a physician or NP specializing in hepatology. This will require collaboration between the primary care provider and the specialist. The unique skills of the NP lend themselves to the care of these complex patients. The counseling and education and on-going treatment of the HCV patient, requires time and attention and a team effort by the providers and the staff, offering the patients support and encouragement and acceptance.

### Websites

[www.cdc.gov](http://www.cdc.gov). This website has a lot of information, statistics, and patient information. Most of the information is aimed at Health Care Providers. The website is difficult to navigate.

[www.aasld.com](http://www.aasld.com). The AASLD website has information regarding HCV and also addresses any liver disease. This website has the most up to date information for health care professionals and has some patient information. Research articles are available, updated guidelines for the treatment of HCV.

[www.mayo.com](http://www.mayo.com). The Mayo Clinic website is user friendly, particularly for patients and their families as well as for health care providers. The information is easy to understand and accurate.

[www.health.state.mn.us/divs/idepc/diseases/hepc/disease.html](http://www.health.state.mn.us/divs/idepc/diseases/hepc/disease.html). The Minnesota Department of Health website is useful for providers and families, the site has information about HCV, support groups, testing and syringe services. It provides the provider with access to patient educational material in several languages. The site is difficult to navigate.

[www.hepatitis.va.gov](http://www.hepatitis.va.gov). The VA website is very useful for providers. The site also has patient information and educational material it addresses coping with hepatitis c, transmission of the disease, diagnosis, treatment and management, healthy living options to help slow the progression of the disease and to better care for their liver. The site has research data and care management for the health care provider.

<http://www.liverfoundation.org/>. The American Liver Foundation website has information geared towards patients as well as healthcare providers. It is easy to navigate and user friendly. They have information about liver diseases, fund raising events and clinical research trials.

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