

# Hepatitis C Virus: An Overview of the Disease and Update on the Current State in the US

Project ID: 5838

## Target Audience

Nurse practitioners and physician assistants involved in the management of patients with chronic liver disease.

## Educational Objectives:

*Upon completion of this activity, participants will be able to:*

- Summarize recommendations relating to HCV screening and diagnosis
- Discuss treatment goals and current treatment options for HCV
- Describe the current state of HCV in the United States
- Analyze the role of the APP in HCV management

## ANCC Accreditation

Annenberg Center for Health Sciences is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

A maximum of 1.0 contact hours may be earned for successful completion of this activity.

## Physician Assistant Statement



This activity has been reviewed by the AAPA Review Panel and is compliant with AAPA CME Criteria. This activity is designated for 1 AAPA Category 1 CME credits. Approval is valid from 5/28/2021 to 5/28/2022. PAs should only claim credit commensurate with the extent of their participation. AAPA reference number: CME-202397.

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Hepatitis refers to inflammation in the liver and is most often caused by viral invasion of hepatic cells. Hepatitis A, B and C viruses are most frequently discussed in the US. Although the focus of this newsletter will be hepatitis C virus (HCV), it is important to understand how HCV differs from hepatitis A virus (HAV) and hepatitis B virus (HBV).

## Comparison of Hepatitis A, B and C

	Transmission	Chronic Infection	Vaccine	Treatment
Hep A	• Fecal-oral	No	Yes	Not needed
Hep B	• Mother to child • Blood to blood • Sexual contact	Yes	Yes	Effective treatments to slow liver damage
Hep C	• Blood to blood	Yes	No	Cure available with 8-12 weeks of oral therapy

In the US, 3.5 million Americans are living with HCV, the majority of whom are baby boomers born between 1945 and 1965.<sup>1</sup> Most people with HCV don't know they have it, since they likely were infected decades ago and remain asymptomatic until the disease reaches late stages. Among HCV-exposed individuals, those untreated will develop chronic infection that can ultimately lead to dire consequences.<sup>2</sup> HCV infection is a leading cause of chronic hepatitis, cirrhosis, and hepatocellular carcinoma, and it is the most common indication for adult liver transplantation in the US.<sup>3</sup> Globally, from 1990 to 2013, viral hepatitis moved from the tenth to seventh leading cause of global deaths, while other major communicable diseases (e.g., diarrheal disease, malaria, tuberculosis) improved in ranking.<sup>4</sup>

The recently updated *Viral Hepatitis National Strategic Plan for the United States: A Roadmap to Elimination (2021-2025)* classifies HCV as a serious, preventable public health threat that puts those infected at increased risk for liver disease, cancer, and death. The goal of this plan is to eliminate all viral hepatitis by 2030, with elimination defined by the World Health Organization (WHO) as a 90% reduction in new chronic infections and a 65% reduction in mortality, compared with the 2015 baseline (WHO). According to this report, the current state of HCV is as follows:<sup>5</sup>

- Globally, ~2.4 million individuals are living with HCV
- From 2014 – 2018, there were ~65% increase in acute cases
- One, 8-to-12-week course of treatment cures most patients

The American Association for the Study of Liver Diseases (AASLD) and the Infectious Disease Society of American (IDSA) state that, in the absence of a vaccine against HCV, testing and linkage to care combined with antiviral treatment have the potential to decrease HCV incidence and prevalence.<sup>6</sup>

### Improving HCV Screening and Diagnosis

According to the AASLD and IDSA, "HCV screening is recommended because of the known benefits of care and treatment in reducing the risk of hepatocellular carcinoma and all-cause mortality, and the potential public health benefit of reducing transmission through early treatment, viral clearance, and reduced risk behavior".<sup>6</sup> The AASLD/IDSA provides specific recommendations for one-time, periodic and annual testing. Risk activities, risk exposures and other conditions and circumstances are also specified.<sup>6</sup>

## AASLD/IDSA HCV Screening Recommendations

RECOMMENDATION	RATING
One-time, routine, opt out HCV testing is recommended for all individuals aged 18 years and older.	I, B
One-time HCV testing should be performed for all persons less than 18 years old with behaviors, exposures, or conditions or circumstances associated with an increased risk of HCV infection (see below).	I, B
Periodic repeat HCV testing should be offered to all persons with behaviors, exposures, or conditions or circumstances associated with an increased risk of HCV exposure (see below)	IIa, C
Annual HCV testing is recommended for all PWID and for HIV-infected men who have unprotected sex with men	IIa, C

### Risk Activities

- Injection drug use (current or ever, including those who injected only once)
- Intranasal illicit drug use
- Men who have sex with men

### Risk Exposures

- Persons on long-term hemodialysis (ever)
- Persons with percutaneous/parenteral exposures in an unregulated setting

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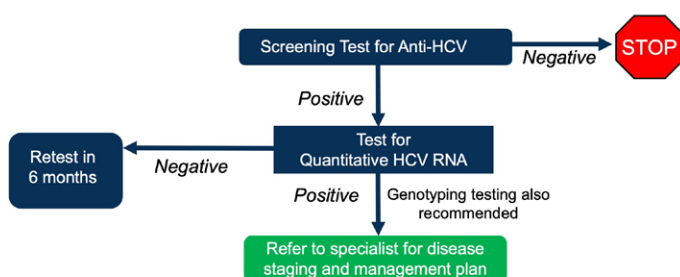
- Healthcare, emergency medical, and public safety workers after needlestick, sharps, or mucosal exposure to HCV-infected blood
- Children born to HCV-infected women
- Recipients of a prior transfusion or organ transplant, including persons who:
  - Were notified that they received blood from a donor who later tested positive for HCV
  - Received a transfusion of blood or blood components, or underwent an organ transplant before July 1992
  - Received clotting factor concentrates produced before 1987
- Persons who were ever incarcerated

## Other Conditions and Circumstances

- HIV infection
- Sexually active persons about to start pre-exposure prophylaxis (PrEP) for HIV
- Chronic liver disease and/or chronic hepatitis, including unexplained elevated alanine aminotransferase (ALT) levels
- Solid organ donors (living and deceased) and solid organ transplant recipients

Once the decision is made to test the patient, the screening process is straightforward. The CDC provides a recommended testing sequence for individuals with suspected HCV infection.<sup>7</sup>

## CDC Algorithm for HCV Screening and Diagnosis



All persons for whom HCV screening is recommended should initially be tested for the HCV antibody using an assay approved by the US Food and Drug Administration (FDA). A positive HCV-antibody test indicates current (active) HCV infection (acute or chronic) or past infection that has resolved. Therefore, HCV-RNA PCR testing is then recommended, which will indicate HCV viremia, and, as the patient has confirmed HCV, linkage to specialty care is

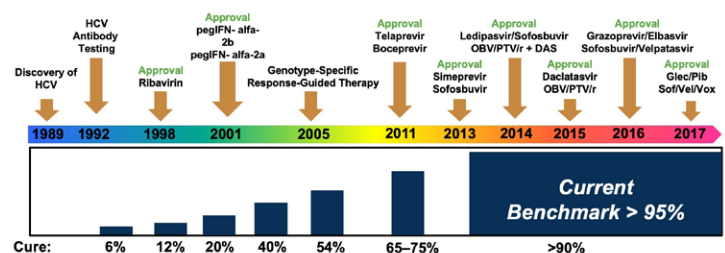
needed care for disease staging and management, including the initiation of HCV treatment.<sup>6</sup>

## HCV Treatment Goals and Therapeutic Options

Unlike HIV and HBV infection, HCV infection is a curable disease because it does not archive its genome into the nucleus and does not integrate into the host DNA. Cure in HCV is defined as achieving sustained virologic response (SVR), or as an absence of detectable HCV RNA in the serum with use of an assay with a sensitivity of at least 50 IU/mL 12 weeks after therapy is complete (SVR12).<sup>8</sup> Patients who achieve SVR with antiviral therapy demonstrate viral eradication<sup>9</sup>, improved outcomes<sup>10</sup> and improved liver histology<sup>11</sup> which in turn leads to decreased hepatic decompensation, hepatocellular carcinoma and mortality.

It is therefore essential that, following diagnosis and linkage to specialty care, HCV patients are administered an effective treatment regimen proven to achieve SVR. For about 20 years (1990 – 2010), interferon-based therapy was the gold standard, but treatment response rates capped at <50%. The first direct-acting antivirals (DAAs), telaprevir and boceprevir, were approved in 2011. Interferon therapy was required in conjunction with these DAAs and these first-generation DAAs were overtaken by IFN-free regimens. New DAA approvals occurred almost annually until 2017. Over the last few years, these successive combinations have generally become better tolerated, more potent with all currently recommended regimens with SVR rates >95%, and progressively pangenotypic. If treated appropriately, patients with HCV can be cured within 8-12 weeks on oral treatment regimens associated with few adverse events.

## Discovery of Direct Acting Antivirals (DAAs) Revolutionized HCV Therapy



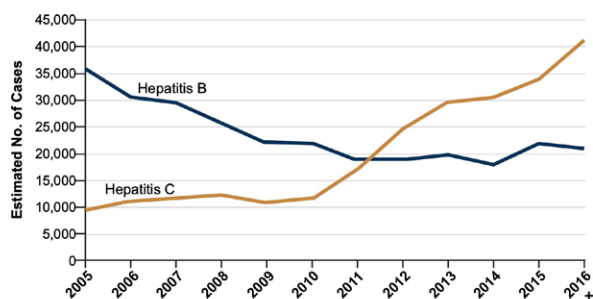
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## The Current State of HCV in the US

In an article published in the New England Journal of Medicine by Liang and Ward, the authors describe the discovery and understanding of HCV and its complications and the recent development of highly effective treatments with cure rates of greater than 90% as "triumphs of modern medicine". However, as the authors point out, a curable disease is not a conquered disease. Although public health initiatives to prevent HCV-related disease and death are focused on screening, linkage to care and curative treatments, the number of acute cases of HCV have risen dramatically since 2009.<sup>1</sup>

### Estimated Number of New Hepatitis B and Hepatitis C Infections in the US, by Year

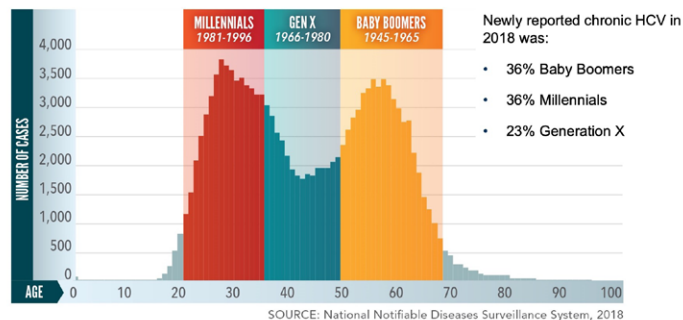


People who use drugs (PWUD) are driving new HCV infections in the US.<sup>1</sup> PWUD are at risk for HCV infection through the sharing of needles and syringes, any equipment used to prepare and inject drugs and even straws and pipes. Less sharing is needed for transmission and, as a result, HCV is easier to transmit than HIV. In fact, the prevalence of HCV is much higher than the prevalence of HIV in PWUD.

In 2016, 117,000 Americans reported that they started using heroin. This figure is significantly higher than the 90,000 individuals that reported new heroin use in 2006.<sup>12</sup> In addition, of the 1,535 acute HCV cases that were reported to the Centers for Disease Control (CDC) in 2018 that contained information about injection drug use (IDU), 72% (n=1102) indicated use of injection drugs. As a result, increasing rates of HCV infection are appearing in younger people. A 3.5-fold increase in new HCV cases has been observed since 2010 in persons aged 20-to-29.<sup>13</sup> Another alarming consequence is that increasing rates of acute HCV among people of reproductive

age are putting even younger generations at risk.<sup>14</sup>

### New Reports of Chronic HCV High in Multiple Generations



In the US, in order to meet the 2030 WHO goals, this means diagnosing at least 110,000 cases per year until 2020, 89,000 cases per year between 2020-2024 and more than 70,000 cases per year between 2025-2030.<sup>15</sup> However, of patients currently living with HCV, only 50% are aware of their infection and 5 to 9% of patients become cured. Despite prevention and treatment guidelines and the availability of curative therapies, the bottleneck in the HCV cascade to cure is that screening and linkage to care remain low.<sup>16</sup>

One recent obstacle is the COVID-19 pandemic, which has resulted in many hepatitis elimination programs slowing or stopping altogether. A 1-year delay in hepatitis diagnosis and treatment could result in an additional 44,800 liver cancers and 72,300 deaths from HCV globally by 2030.<sup>17</sup> Furthermore, telemedicine was incorporated into clinical workflows and much preventive care and, as a result, HCV testing was not routinely performed.<sup>18</sup>

### Conclusions: The Impact of These Data/Recommendations on How APPs Practice

APPs made a name for themselves treating HCV. Many started in the fields of gastroenterology and hepatology to treat the large number of HCV patients. This trend has continued. As the treatments have become easier to use and more highly effective, the process of obtaining therapy has become increasingly cumbersome. The APPs role as part of the treatment team remains pivotal and essential to treat these patients. APPs' ability to provide much needed access for patients with HCV plays a major role in the goal of eradication. To achieve eradication, access to care is paramount. Screening and

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diagnosis are needed, but it is the linkage to care that will make the biggest impact on the disease.

As was noted, "a curable disease, is not a conquered disease". Therefore, the APP is essential to making HCV a "conquered disease". The expertise of training in obtaining medical history, physical examination and knowledge to educate patients about risk factors, testing and diagnosis are extremely important. Providing patients medication to cure HCV is just one part of the process. Patient education to prevent further infection or re-infection is essential and this is an area of specialty for APPs.



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