



Resources for Medical and Behavioral Health Professionals.

# Increasing Hepatitis C Knowledge

Presented by  
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**ATTC** Addiction Technology Transfer Center Network  
Funded by Substance Abuse and Mental Health Services Administration



# HCV Current and Curriculum Authors

**HCV Current** is a national initiative developed by the ATTC Regional Centers, funded by Substance Abuse and Mental Health Services Administration (SAMHSA) as a comprehensive response to the hepatitis C (HCV) epidemic in the US.

**HCV Current** is designed to help increase HCV knowledge among medical and behavioral health professionals, especially staff at federally qualified health centers. The project offers an array of resources and tools for health professionals, including online and in-person curriculum and training, downloadable provider tools, and region-specific resources.

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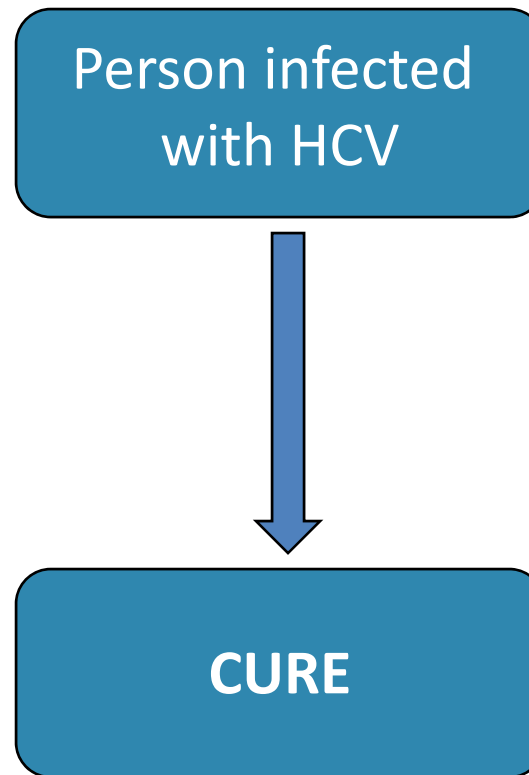
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# Hepatitis C Burden

- Hepatitis C virus (HCV) infection is the **leading cause** of cirrhosis, liver cancer, and liver transplantation.
- At least **2.7 million persons** in the US living with HCV today, **75% were born between 1945 and 1965** and are unaware of their infection
- Up to **37% (900,000)** of infected people in the United States will die from HCV-related complications if untreated.

# Bridging the Gap to a Cure

Hepatitis C can now be cured with all oral therapies without interferon in the vast majority (>95%) of patients.



# Increase Hepatitis C Prevention

- Educate and train primary care providers and healthcare systems in **treating hepatitis C** and **caring for stigmatized populations** including PWID
- Improve **primary and secondary prevention effectiveness** center on policy development, education and training initiatives, and applied research
- Assess and address **missed opportunities for medical evaluation, care, and treatment**, as well as for **counseling to promote behavioral changes** that might **reduce disease progression** and **avert transmission of infection**

# Blood Borne Diseases: HIV and Hepatitis A, B, & C

	HIV	HAV	HBV	HCV
Lifelong Infection				
Protective Immunity from Natural Infection				
Vaccine				
Genetic Material				
Curable				

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# Blood Borne Diseases: HIV and Hepatitis A, B, & C

	HIV	HAV	HBV	HCV
Lifelong Infection	100%	No	Adults: 2-5% Perinatal: ~90%	
Protective Immunity from Natural Infection				
Vaccine				
Genetic Material				
Curable				



# Blood Borne Diseases: HIV and Hepatitis A, B, & C

	HIV	HAV	HBV	HCV
<b>Lifelong Infection</b>	100%	No	Adults: 2-5% Perinatal: ~90%	75-85%
<b>Protective Immunity from Natural Infection</b>	No	Yes	Yes	No
<b>Vaccine</b>	No	Yes	Yes	No
<b>Genetic Material</b>	RNA	RNA	DNA	RNA
<b>Curable</b>	No	Self limited	Rare	>95%!

# Transmission of Viral Infections

## HIV

- **Injection drugs:**  
Contaminated needles
- **Sexually:**  
Blood, semen (pre-seminal fluid), vaginal secretions
- **Perinatally:**  
From HIV-infected mother to newborn, breast milk

## HBV

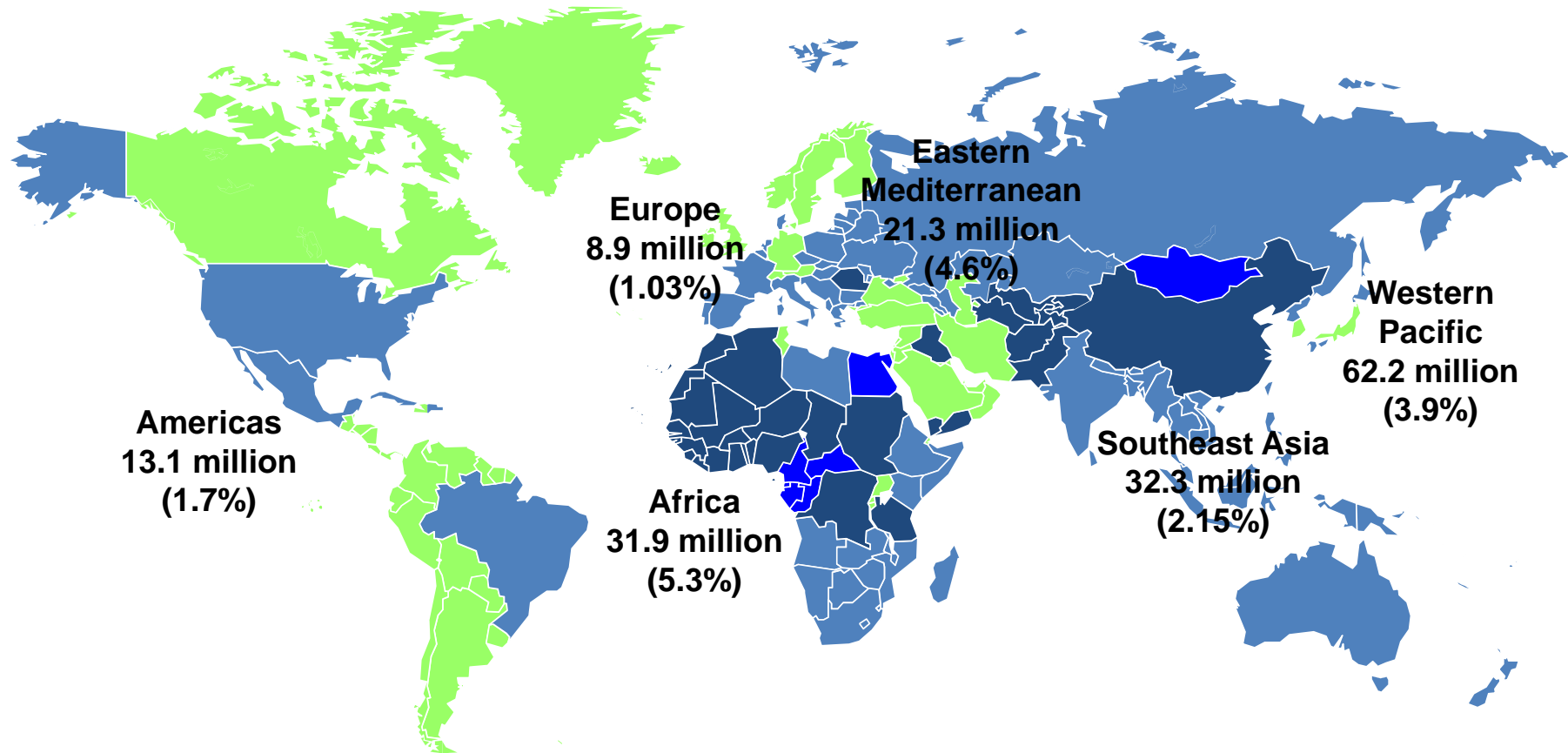
- **Injection drugs:**  
Contaminated needles/equipment: syringes, cookers
- **Sexually:**  
Blood, semen, vaginal secretions
- **Perinatally :**  
From HBV-infected mother to newborn
- **Household contact:**  
Sharing razor, toothbrush, nail clipper
- **Open sores**

## HCV

- **Injection drugs:**  
Contaminated needles, syringes, cooker, cotton,
- **Sexually:**  
Traumatic sexual exposure
- **Perinatally:**  
From HIV-infected mother to newborn

An Estimated 135 Million Persons Are Infected With HCV Worldwide

An Estimated 4-5 Million Persons Are Infected With HCV in the U.S.



**SOURCES:** Ward, J.W. (2014). The epidemiology of hepatitis C: How did we get here? Available at: <http://www.cdc.gov/cdcgrandrounds/pdf/gr-hepc-6-17-2014.pdf>; Chak, E. et al. (2011). Hepatitis C virus infection in USA: An estimate of true prevalence. *Liver International*, 31, 1090-1101.

# Screening for Hepatitis C Infection

- The CDC & USPSTF recommend screening for HCV infection in persons at elevated risk for infection.
- The CDC & USPSTF also recommend offering one time screening for HCV infection to adults born between 1945 and 1965.

## Risk Based Recommendations for HCV Testing

- Persons who have ever injected illegal drugs, including those who injected only once many years ago, ever shared needles and works
- All persons born between 1945 - 1965
- All persons with HIV infection
- Persons presenting with symptoms of hepatitis, or elevated enzyme levels
- Received transfusion or blood products before 1992
- Received clotting factor prior to 1987
- Ever on hemodialysis
- Healthcare, emergency, public safety workers after exposures to HCV-positive blood
- Children >1 year born to HCV-positive women
- Tattoo and/or body piercing done while incarcerated or by an unlicensed artist

# Other Groups at Elevated Risk

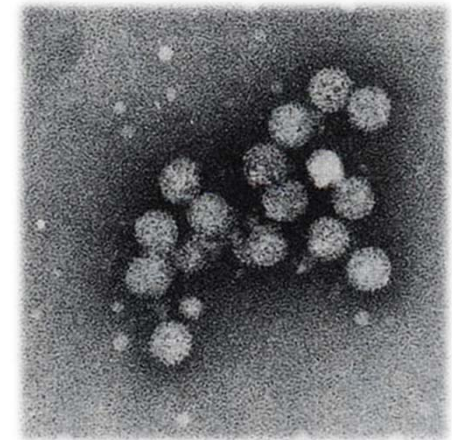
- Low income communities
- History of homelessness
- History of incarceration
- History of mental health conditions or substance use
- African American ethnicities
- Immigrants from endemic regions
- Patient populations with over-representation of the above

# Emerging Trends

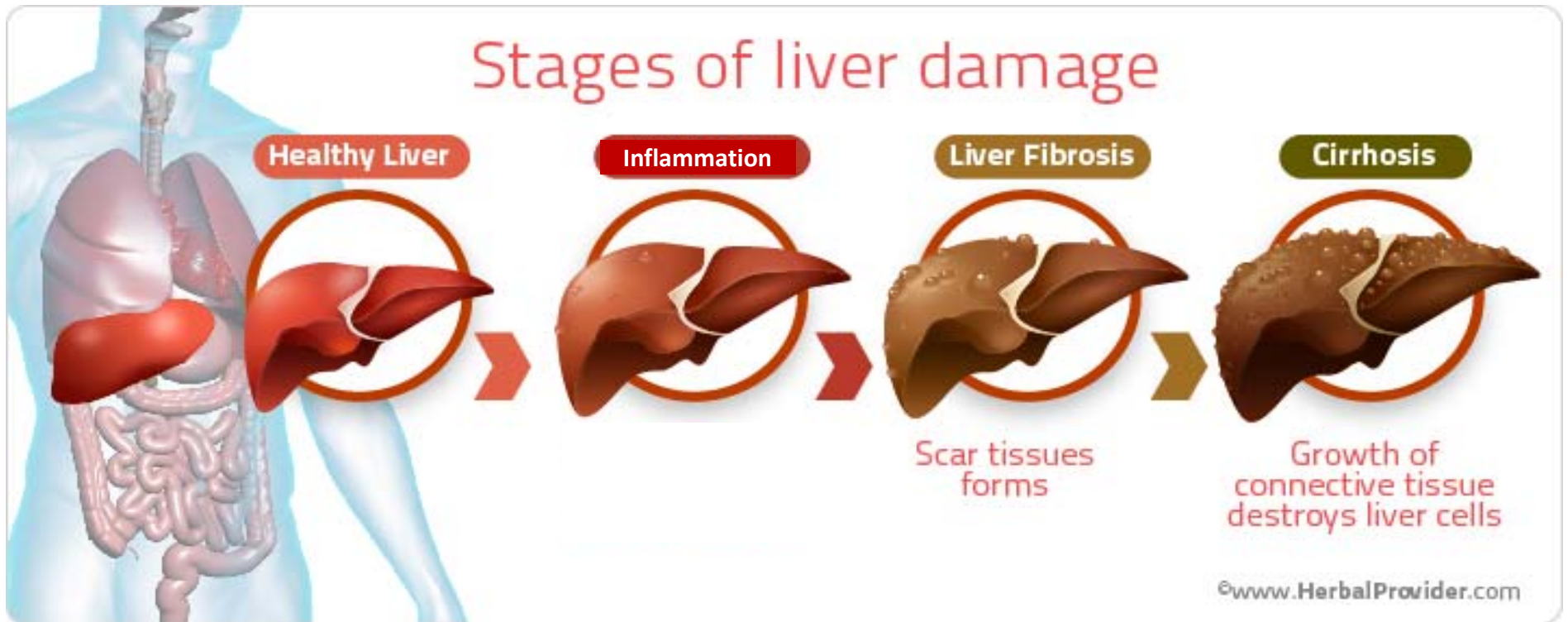
- Rising rates (22.3%) of HCV infection among **young injection drug users**
  - Over 5 million young people used pharmaceutical opioids non-medically in the past year
- Iatrogenic transmission (**healthcare exposure**)
- **Sexual transmission** of HCV amongst HIV-infected and HIV-uninfected men who have sex with men (MSM)

# Characteristics of Hepatitis C

- Hepatitis C virus is a **rapidly replicating blood borne pathogen** that causes inflammation of the liver
- Clinical presentation during acute HCV infection **may or may not include** jaundice, abdominal pain, or flu-like symptoms such as fatigue, muscle aches, and nausea.
- Can live in blood for days **outside the body** - much longer than HIV
- *No vaccine...yet!*

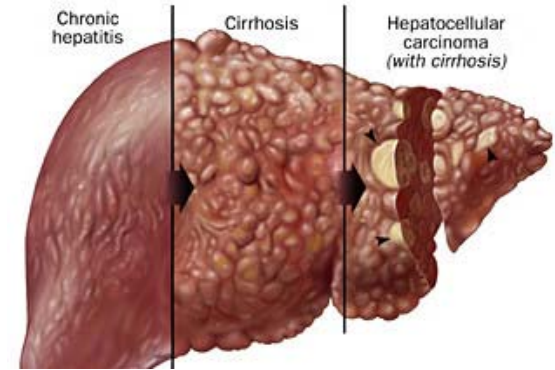






- HCV infection causes inflammation of the liver
- Over years, inflammation leads to scarring (scarring = fibrosis)
- Severe scarring (stage 4 fibrosis = cirrhosis)
- Cirrhosis can lead to end stage liver disease (decompensated cirrhosis), hepatocellular carcinoma (liver cancer), which is fatal without a liver transplant

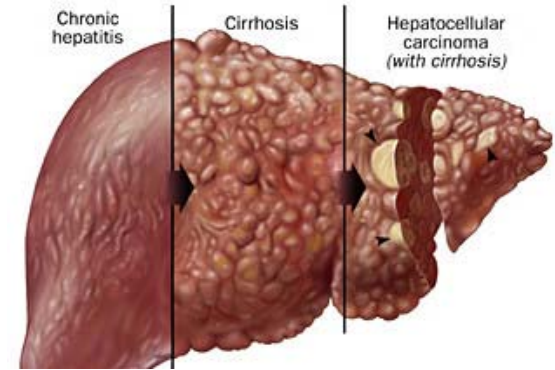
# Chronic HCV Infection



- About 75-85% develop chronic infection
- Most with chronic infection remain stable for years
- Of those with chronic infection
  - 20%-30% develop cirrhosis and serious illness within 20 years if untreated
  - 20%-37% will die as a result of liver failure or liver cancer due to HCV disease if untreated

# Chronic HCV Infection

## “Extrahepatic” manifestations



Hematologic      Essential mixed cryoglobulinemia  
Non-Hodgkin's lymphoma

Metabolic      Insulin resistance, diabetes mellitus

Renal      Membranoproliferative glomerulonephritis  
Membranous nephropathy

Dermatologic      Porphyria cutanea tarda

Autoimmune      Idiopathic thrombocytopenic purpura

Nonspecific      Chronic fatigue  
Cognitive impairment (“mental fog”)

## Monitoring Liver Health and Disease

- Liver enzyme tests (LETs) use measured levels of enzymes as markers of inflammation and injury: ALT, AST (1/3 HCV+ have normal enzyme levels)
- Other liver function tests (LFTs) help show how the liver is working (bilirubin, albumin, platelet count, prothrombin time)
- AFP (for liver cancer)

# Decompensated Cirrhosis

- Jaundice
- Portal hypertension
- Ascites (fluid in abdomen)
- Variceal bleeding
- Hepatic encephalopathy

# Screening & Testing for HCV

## Two-Part Process

- **Anti-HCV**
  - Non reactive (negative)
  - Reactive (positive)
- **HCV RNA (PCR)**
  - Undetected
  - Detected

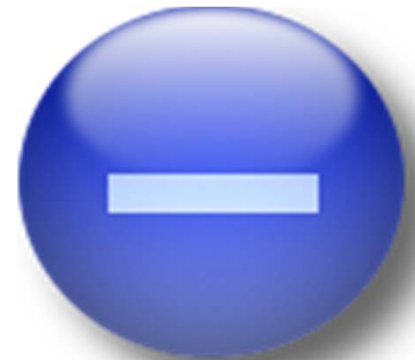
# Anti-HCV Tests

## Serologic Antibody Assays

- EIA (enzyme immunoassay)
- CIA (enhanced chemiluminescence immunoassay)
- OraQuick<sup>®</sup> HCV Rapid Antibody Test
  - Point-of-care antibody test results in 20 minutes
  - Fingertstick, venipuncture, serum, or plasma (not oral fluid)

## Working with Anti-HCV Test Results

- A ***non-reactive*** (negative) result means no antibodies to HCV were found – probably not infected with HCV but you're not protected from future HCV infection or may still be in the window period





# Non-Reactive Counseling Messages

- If person engaged in **risky behavior** within the last 6 months, they should get retested (anti-HCV) in 6 months
- To stay negative, **don't share needles or other injection equipment, or anything that may have blood on them**
- Tattoos, piercings, and body art from a **licensed artist and explain what consumer should expect**
- Vaccinate **against hepatitis A and B**
- Safer sex practices, get treated for STDs

# Working with Anti-HCV Test Results

- A ***reactive*** (positive) test result means antibodies to HCV were detected in your blood



# Reactive Counseling Messages

- Hepatitis C infection occurred and you may still be infected; Further testing must be done with an HCV RNA (PCR) test to see if they are still infected
- HCV RNA test measures HCV in your blood
- If there is no virus, test will come back undetected. If detected, then you are infected with hepatitis C.
- Until you get the HCV RNA, *assume* you are infected with HCV and help *protect your liver* by avoiding alcohol, get vaccinations to HAV and HBV, eat healthy
- See a doctor, learn about hepatitis C, and HCV treatment
- Facilitate *access to and schedule* second test

# Working with HCV RNA Results

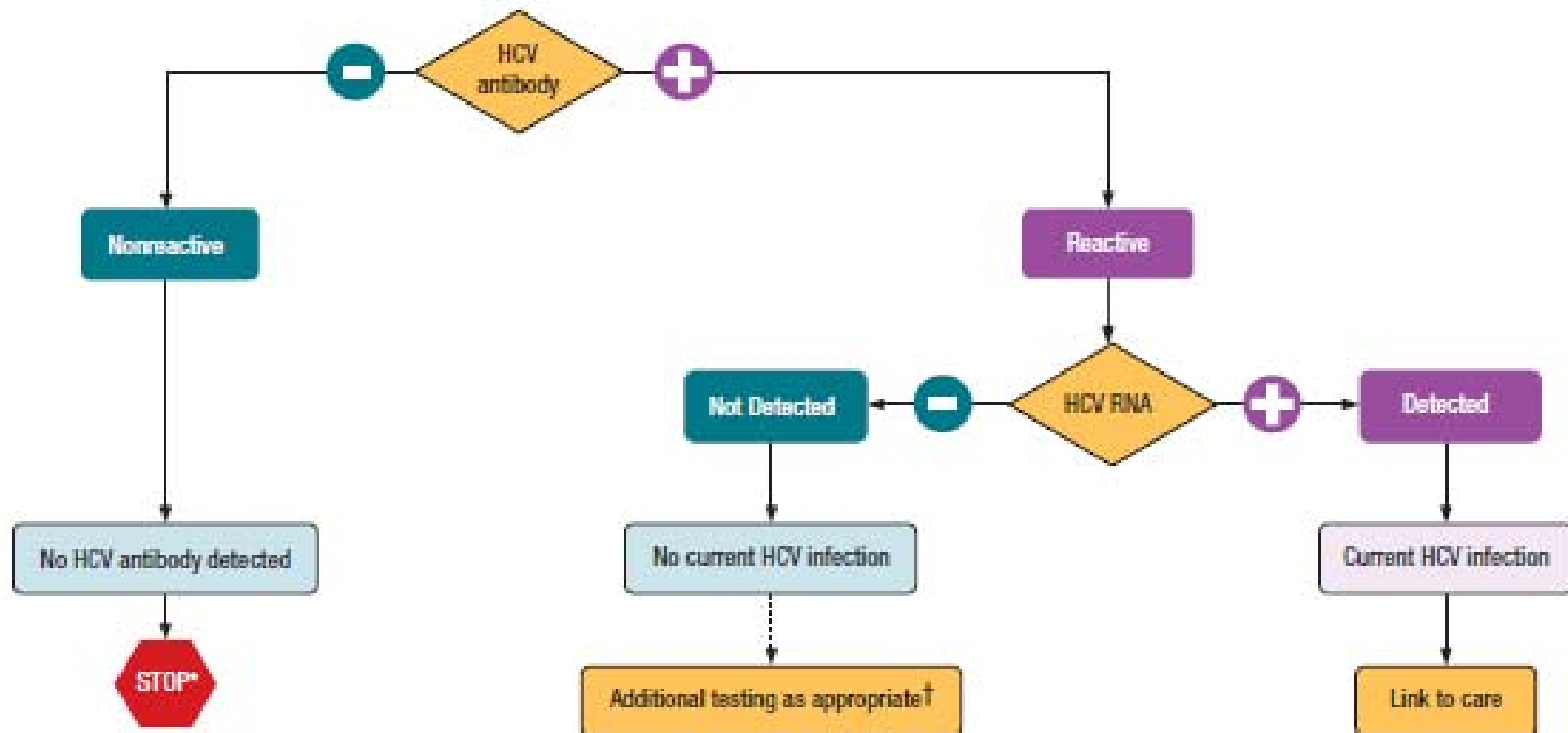
## HCV RNA Detected or Viral Load

- Diagnosis of active infection
- Conduct genotype testing
  - *Six known genotypes (1a & 1b subtypes, 2-6)*
  - *75% of US infections are Genotype 1*
- Knowing your genotype is important when considering treatment
- Evaluate for treatment eligibility

# Recommended Testing Sequence for Identifying Current Hepatitis C Virus (HCV) Infection



U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention



\* For persons who might have been exposed to HCV within the past 6 months, testing for HCV RNA or follow-up testing for HCV antibody is recommended. For persons who are immunocompromised, testing for HCV RNA can be considered.

† To differentiate past, resolved HCV infection from biologic false positivity for HCV antibody, testing with another HCV antibody assay can be considered. Repeat HCV RNA testing if the person tested is suspected to have had HCV exposure within the past 6 months or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

# Monitoring Progression of Hepatitis C

- Factors that may accelerate the progression of hepatitis C
  - Heavy alcohol consumption
  - HIV Infection
  - Older age at the time of infection
  - Male gender
  - Insulin resistance
  - Abnormal accumulation of fat in the liver (steatohepatitis – fatty liver disease)
    - Alcoholic
    - Non alcoholic – diabetes (obesity)
    - HCV genotype 3

# Monitoring Progression of Hepatitis C

- Recommend vaccination for hepatitis A and B
- Education on hepatitis C transmission, progression and strategies to reduce harm
- Clinical evaluation for treatment eligibility

# Clinical Evaluation

- Blood tests
  - Liver enzymes (ALT, AST)
  - Liver function tests (bilirubin, albumin, prothrombin time)
  - Platelet count
- Assess degree of hepatic fibrosis, using noninvasive testing (**FibroSure or FibroScan**) or liver biopsy.
- Liver cancer screening for patients with cirrhosis (every six months)
  - Serum alpha-fetoprotein
  - Hepatic ultrasound



## Treatment Factors to Consider

- Extent and severity of liver disease
- Extrahepatic manifestations (e.g., cryoglobulinemia, nonspecific symptoms)
- Patient preference
- Drug-drug interactions
- Comorbid HIV or other liver disease
- Adherence issues and possibility of resistance
- Reinfection
- Insurance coverage

# HCV Treatment Timeline

## Genotype 1

2001: Peginterferon (IFN)+ ribavirin (RBV)

2011: Boceprevir (Victrelis) + IFN + RBV

2011: Teleprevir (Incivek) + IFN + RBV

Nov 2013: Simeprevir (Olysio) + IFN + RBV

Dec 2013: Sofosbuvir (Sovaldi)+ + IFN + RBV

# HCV Treatment Timeline

## Genotype 1

Oct 2014: Sofosbuvir + ledipasvir (Harvoni)

\*\* One pill once a day, no peg, no riba \*\*

Dec 2014: Paritaprevir, ritonavir, ombitasvir, dasabuvir  
(Viekira Pak) ± RBV

2016:	Zepatier	Genotype 1 and 4
	Daklinza/Sovaldi	Genotype 1 and 3
	Technivie/Sovaldi	Genotype 4

# Treatment Markers & Benefits

- Sustained virologic response (SVR) 12 weeks after treatment completion, (no virus detected) means cure
- Reduction in liver failure, liver cancer, and liver-related deaths
- Oral therapies
- HCV therapy is shorter duration (8-24 weeks)
- Increased treatment tolerability

# Treatment Recommendations

- Immediate treatment is assigned the highest priority for those patients with advanced fibrosis (F3), those with compensated cirrhosis (F4), liver transplant recipients, and patients with severe extrahepatic hepatitis C
- Transmission can be interrupted by treating those engaging in risk behavior (PWID, MSM)
- Evidence clearly supports treatment in all HCV-infected persons (life expectancy > 12 months)
- **Payers should not deny treatment to anyone**

# High Priorities for Treatment

## Highest risk for **severe complications:**

- Advanced fibrosis (F3 or F4)
- Organ transplant
- Type 2 or 3 essential mixed cryoglobulinemia with end-organ manifestations (eg, vasculitis)
- Proteinuria, nephrotic syndrome, or membranoproliferative glomerulonephritis

## Elevated risk for **complications:**

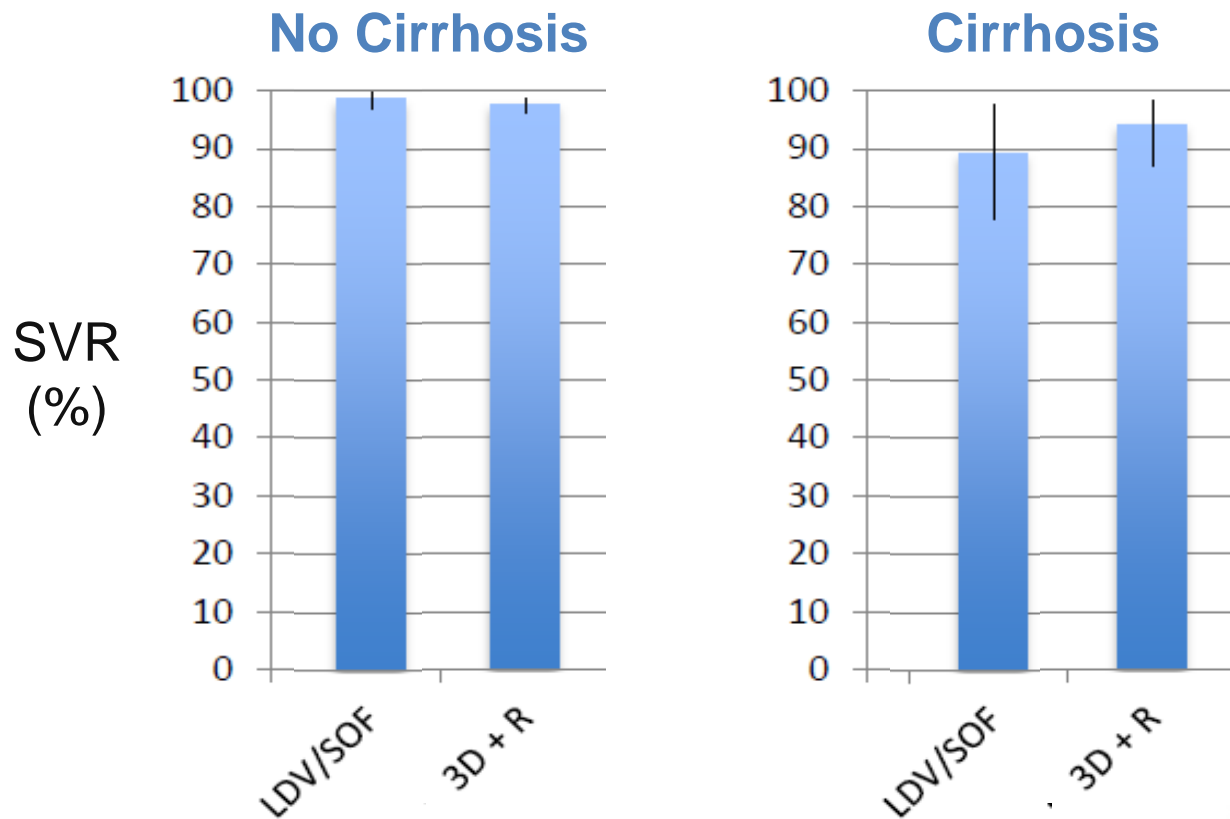
- Fibrosis (F2)
- HIV-1 coinfection
- HBV coinfection
- Other coexistent liver disease (eg-NASH)
- Debilitating fatigue
- Type 2 diabetes
- Porphyria cutanea tarda

## **At-risk for complications:**

- All HCV-infected patients

# Sustained Virologic Response (SVR) to All-Oral Antiviral Treatment for Hepatitis C

Genotype 1 (treatment-naïve patients)

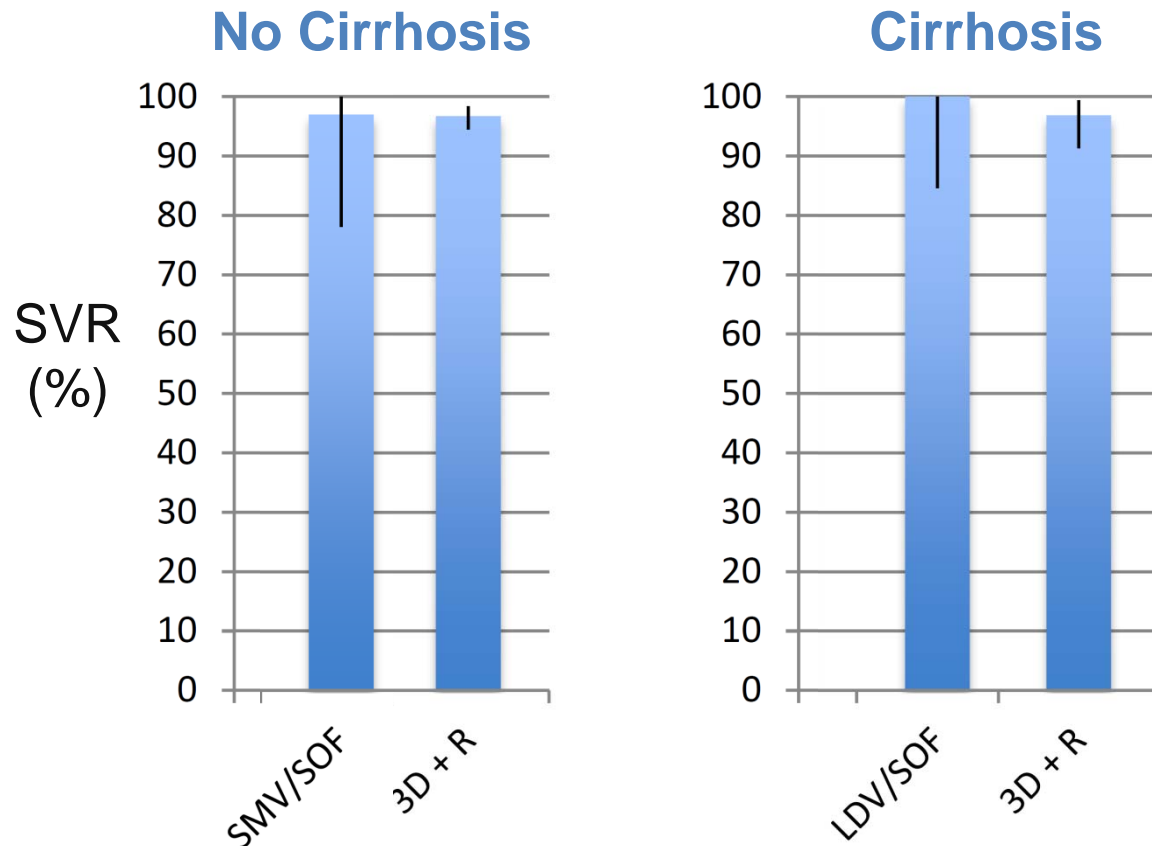


SOF=sofosbuvir; LDV=ledipasvir

3D=paritaprevir, ritonavir, ombitasvir, and dasabuvir; R=ribavirin

# Sustained Virologic Response (SVR) to All-Oral Antiviral Treatment for Hepatitis C

Genotype 1 (treatment-experienced patients)



SMV= simeprevir; SOF=sofosbuvir; LDV=ledipasvir;  
3D=paritaprevir, ritonavir, ombitasvir, and dasabuvir; R=ribavirin



# Integration Activity

Discuss these two questions, and list at least 2 strategies by practice setting:

- 1. How can screening be incorporated at your practice setting and at various patient contact points, with those entering or already in care?*
- 2. Does anyone at your practice treat hepatitis C or do you have a place to refer out, and do those patients who are referred go?*

(Handout: HCV cascade of care)

# HCV Resources for Patients

- Caring Ambassadors, <http://caringambassadors.org/>
- National Viral Hepatitis Roundtable, <http://nvhr.org/>
- Help-4-Hep, <http://help4hep.org/>
- HCV Advocate: Hepatitis C – Living with Hepatitis C, <http://www.hcvadvocate.org>
- American Liver Foundation Support Services, <http://www.liverfoundation.org/support>

# HCV Resources for Providers

- AASLD & IDSA, [www.hcvguidelines.org](http://www.hcvguidelines.org)
- CDC, Center for Disease Control and Prevention, Viral Hepatitis, <http://www.cdc.gov/hepatitis>
- US Department of Veteran Affairs, Viral Hepatitis, [www.hepatitis.va.gov](http://www.hepatitis.va.gov)
- Stakeholders' Workbook: Exploring Vital Roles and Opportunities to Break the Silence, <http://aids.gov/pdf/vhap-workbook-for-stakeholders.pdf>

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