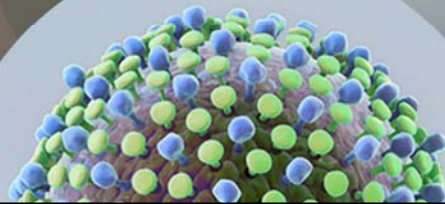




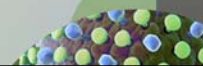
Focus on Epidemiology

Presented by
Dr. Gail Bridges, PharmD
Dr. Ziad Younes, MD
June 21st, 2017



AbbVie disclosures

- This is an AbbVie-sponsored educational webinar which is being presented by Dr. Gail Bridges, PharmD and Dr. Ziad Younes, MD, on behalf of AbbVie
- The purpose of the medical educational webinar is to foster increased awareness of the latest science in the management of HCV



Speaker disclosures

- Dr. Ziad Younes, MD
 - Speaking honoraria: AbbVie, Gilead, Intercept
 - Research contracts: AbbVie, BMS, Gilead, Janssen, Intercept, Conatus, Trek Pharmaceuticals, Allergan
- Dr. Gail Bridges, PharmD
 - No disclosures

Objectives

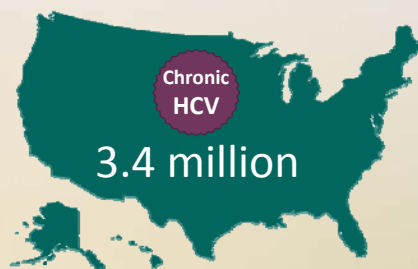
- Which populations are most at risk of HCV infection?
- What proportion of patients remain undiagnosed?
- What is the epidemiology of HCV infection in high-risk populations?
 - People who inject drugs (PWID)
 - US correctional facilities
 - HCV/HIV coinfection
 - Other populations at risk
- What is the current state of access to treatment?
- How will the epidemiology of HCV change in the future?

HCV, hepatitis C virus; HIV, human immunodeficiency virus.

Introduction

Approximately 1 in 100 people in the United States has chronic HCV infection

- In the United States, ~3.4 million people have chronic HCV infection, a prevalence of ~1%¹
- HCV genotype 1 (GT1) accounts for 3 out of 4 cases of HCV¹



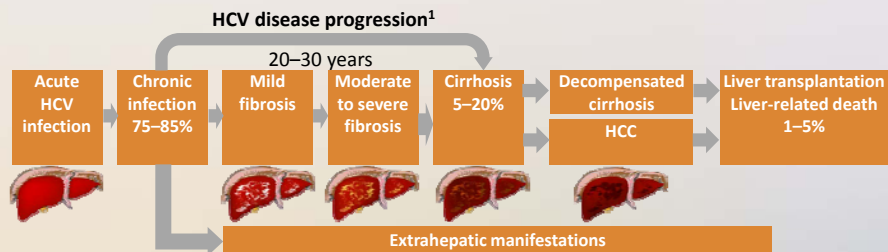
- 3 out of 4 people with HCV are "baby boomers"²



Born between 1945 and 1965

1. Messina JP, et al. Hepatology. 2015;61:77–87; 2. Smith BD, et al. Ann Intern Med. 2012;157:817–22.

Up to 85% of individuals infected with HCV develop chronic infection¹



- Chronic infection with HCV is the leading cause of end-stage liver disease, liver transplantation, HCC, and liver-related death in the Western world²
- It is not uncommon for patients to remain undiagnosed with HCV until they present with the complications of end-stage liver disease^{2,3}

HCC, hepatocellular carcinoma.

1. CDC. Hepatitis C FAQs for Health Professionals. Available at: <https://www.cdc.gov/hepatitis/hcv/hcvfaq.htm>. Accessed May 2017; 2. Westbrook RH, Dusheiko G. J Hepatol. 2014;61:558–68; 3. AASLD-IDSA. Recommendations for testing, managing, and treating hepatitis C. Available at: <http://www.hcvguidelines.org>. Accessed May 2017.

Up to 86% of patients with chronic HCV infection experience EHM within 5 years of diagnosis

Retrospective analysis of the 5-year cumulative prevalence and incidence of EHM among HCV-infected patients (n=4032) and matched uninfected controls (n=4032) using US longitudinal claims data

Prevalence of EHM among HCV vs. non-HCV 5 years post-index

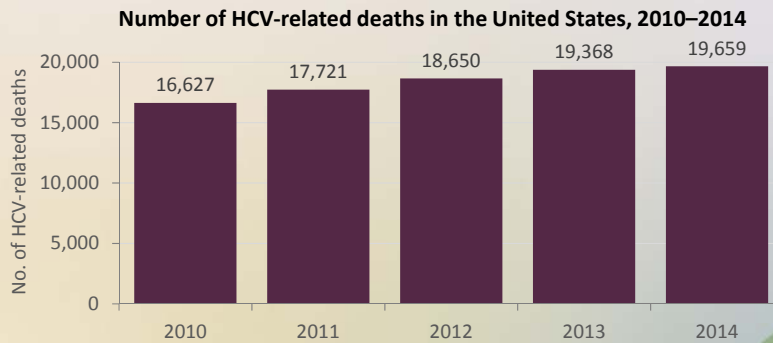
EHM	HCV	non-HCV
CVD	40%	23.3%
Type 2 diabetes	27.3%	18.8%
CKD	10.7%	4.4%
Depression	26.5%	11.8%

- EHM impose a high clinical burden on patients with HCV
- The burden of EHM grow over time after HCV infection

CKD, chronic kidney disease; CVD, cardiovascular disease; EHM, extra-hepatic manifestations. Reau N, et al. EASL 2017 #SAT-216. Available at: http://www.natap.org/2017/EASL/EASL_99.htm. Accessed May 2017.

The number of HCV-related deaths in the United States is increasing

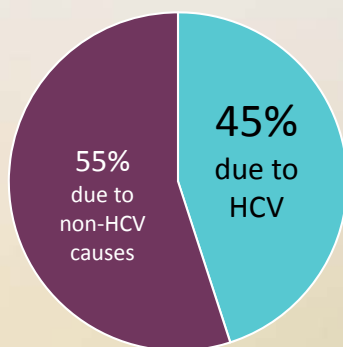
The overall number of HCV-related deaths in the United States increased by 18% from 2010 to 2014



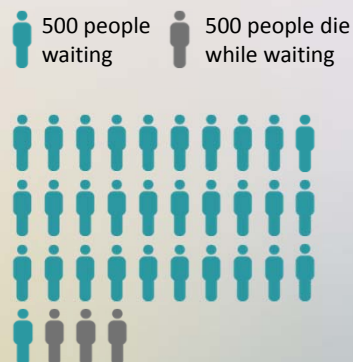
Centers for Disease Control and Prevention, Division of Viral Hepatitis. Surveillance for Viral Hepatitis – United States, 2014. Revised September 2016. Available at: https://www.cdc.gov/hepatitis/statistics/2014surveillance/pdfs/2014HepSurveillanceRpt_Rev2016-09-26.pdf. Accessed May 2017.

Chronic HCV infection is the leading cause of liver transplant in the United States¹

Indications for liver transplants²



Liver transplant waiting list³



1. Westbrook RH, Dusheiko G. J Hepatol. 2014;61:558–68. Available at: <https://hepcassoc.org/pdf/2015/AASLD-nov24.pdf>. Accessed May 2017; 2. World Hepatitis Alliance. Available at: <http://www.worldhepatitisalliance.org/latest-news/infohep/3018940/clinical-impact-effective-hcv-daas-referrals-liver-transplant-drop-after-their-introduction>. Accessed June 2017; 3. American Liver Foundation. Available at: <http://www.liverfoundation.org/patients/organdonor/about/>. Accessed May 2017.

Which populations are most at risk of HCV infection?

Populations at increased risk of HCV infection



CURRENT AND PAST INJECTION DRUG USERS¹



HIV INFECTED PERSONS¹



PATIENTS ON LONG-TERM HEMODIALYSIS¹



HEALTHCARE WORKERS¹



INCARCERATED INDIVIDUALS¹



CHILDREN BORN TO HCV-INFECTED WOMEN¹



PEOPLE WITH A LOWER EDUCATIONAL LEVEL^{2,3}



PEOPLE WITH A LOWER ANNUAL HOUSEHOLD INCOME^{2,3}



RECIPIENTS OF TRANSFUSIONS OR ORGAN TRANSPLANTS, including people who received:¹

- Blood from an HCV-positive donor
- A blood transfusion or organ transplant before July 1992
- Clotting factor concentrates produced before 1987

1. AASLD-IDSA. Recommendations for testing, managing, and treating hepatitis C. Available at: <http://www.hcvguidelines.org>. Accessed May 2017; 2. Denniston MM, et al. Ann Intern Med. 2014;160:293–300; 3. Tohme RA, et al. Public Health. 2013;103:112–9.

Populations with a disproportionately high prevalence of HCV infection



HIV+ INDIVIDUALS

- 1 in 4 are coinfecting with HCV¹
- Among HIV+ MSM in the United States, HCV incidence increased >4-fold from 2000–2003 to 2012–2015²



AFRICAN AMERICANS

- Represent 11% of the general population, but 25% of the HCV-infected population³
- Less likely to receive HCV care than other racial and ethnic groups^{4,5}



US VETERANS

- At least 4% have chronic HCV infection⁶
- Most are part of the “baby boomer” birth cohort⁶
- An estimated 700,000 veterans born between 1945 and 1965 have not been screened for HCV⁷

MSM, men who sleep with men.

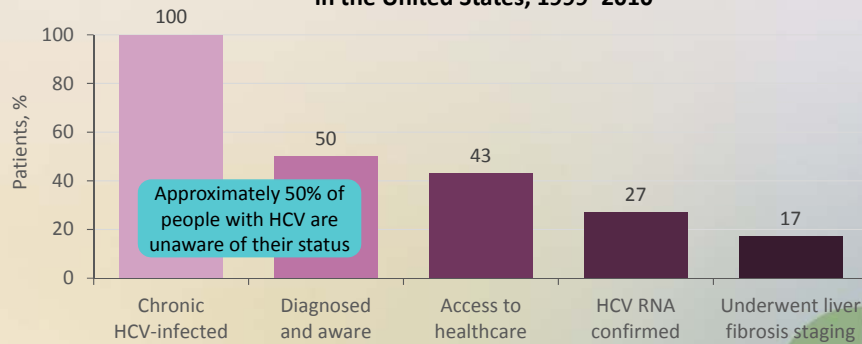
1. Centers for Disease Control and Prevention. HIV Fact Sheet: HIV and Viral Hepatitis. Available at: <https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf>. Accessed May 2017; 2. Chaillon A, et al. CROI 2017 oral #134. Available at: http://www.natap.org/2017/CROI/croi_104.htm. Accessed May 2017; 3. Denniston MM, et al. Ann Intern Med. 2014;160:293–300; 4. Tohme RA, et al. Public Health. 2013;103:112–9; 5. Schaeffer S, Khalili M. Ann Hepatol. 2015;14:234–42; 6. Beste LA, Ioannou GN. Epidemiol Rev. 2015;37:131–143; 7. Stars and Stripes. VA estimates 107,000 vets have undiagnosed or untreated hepatitis C. September 2016. Available at: <http://www.stripes.com/news/va-estimates-107-000-vets-have-undiagnosed-or-untreated-hepatitis-c-1.427437#.WMh4G2-LTdc>. Accessed May 2017.

What proportion of patients remain undiagnosed?

Many chronic HCV-infected patients are unaware of their status

Systematic review and meta-analysis to assess the proportion of the population infected with chronic HCV in the United States who complete each step of the proposed treatment cascade

Treatment cascade for individuals with chronic HCV infection in the United States, 1999–2010

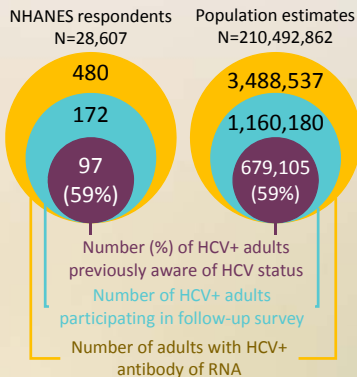


RNA, ribonucleic acid.
Yehia BR, et al. PLoS One. 2014;9:e101554.

Awareness of HCV status in US adults is low

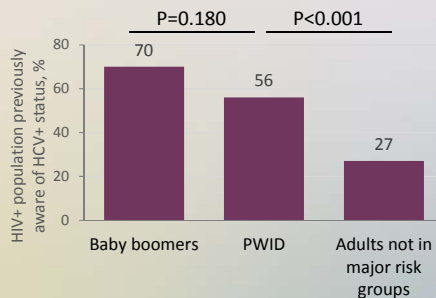
Large disparities exist in awareness of HCV status, particularly among marginalized and low-risk groups

HCV status awareness among non-institutionalized, housed adults ≥18 years of age in the United States



NHANES, National Health and Nutrition Examination Survey.
Linthicum MT, et al. AASLD 2015; poster #1042.

Awareness varied considerably by risk group:



Awareness also varied by race and income

High-risk populations

People who inject drugs

Injection drug use is the primary route of HCV transmission in newly infected patients

The estimated HCV seroprevalence in PWIDs is **30–70%**, depending on frequency and duration of use¹

EMERGING TREND^{1–5}

HCV

Young PWID:

- Male and female
- People aged 18–29 years
- White
- Non-urban populations

- Injection drug use has driven the **294% increase** in HCV incidence from 2010 to 2015^{2,3}
- Injection drug use also increases the risk of HCV/HIV coinfection: **34%** among 1176 current and former injection drug users^{4,5}

1. Zibbell JE, et al. Am J Public Health. 2014;104:2226–32; 2. Centers for Disease Control and Prevention. Surveillance for Viral Hepatitis – United States, 2015. Revised May 2017. Available at: <https://www.cdc.gov/hepatitis/statistics/2015surveillance/commentary.htm>. Accessed May 2017; 3. Campbell CA, et al. MMWR. 2017;66:465–9; 4. Kirk GD, et al. Ann Intern Med. 2013;158:658–66; 5. Suryaprasad AG, et al. Clin Infect Dis. 2014;59:1411–9.

Young people are at a higher risk of HCV transmission if they are injection drug users¹

- However, **awareness of HCV infection status remains low:**²
 - In a sample of over 3000 injection drug users, aged 15 to 30 years from 5 US cities, 34% had positive HCV antibody tests
 - **72% of HCV+ drug users were unaware of their infection status**
 - Drug treatment and needle exchange were associated with increased awareness
- Furthermore, **the rise in HCV in people aged 18 to 29 years has been correlated to America's growing opioid epidemic**³
 - A study of 123 PWID in rural New York found that those who had injected prescription opioid analgesics in the previous year were 5 times as likely to have HCV than those who injected other drugs

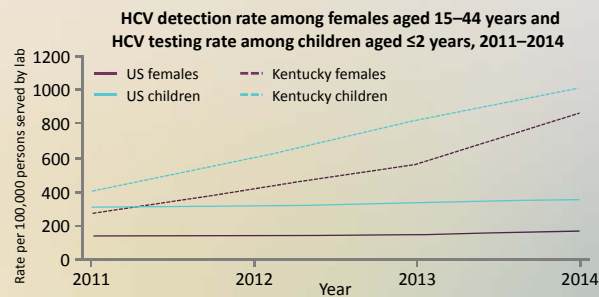
1. Centers for Disease Control and Prevention. Surveillance for Viral Hepatitis – United States, 2015. Revised May 2017. Available at: <https://www.cdc.gov/hepatitis/statistics/2015surveillance/commentary.htm>. Accessed May 2017;
 2. Hagan H, et al. Public Health Reports. 2006;121:710–9; 3. Zibbell JE, et al. Am J Public Health. 2014;104:2226–32.

HCV infection rates are increasing among women of childbearing age

Growing rates of injection drug use is fuelling the increasing incidence of HCV among young people, including women aged 15 to 44 years, increasing the risk for mother-to-child transmission

Between 2011 and 2014:

- Rates of HCV detection **increased 22% among women of child-bearing age** (>200% in Kentucky)
- The proportion of **infants born to HCV-infected mothers increased 68%** (124% in Kentucky)
- HCV infection among **children aged ≤2 years increased 14%** (151% in Kentucky)



Koneru A, et al. MMWR. 2016;65:705–10.

High-risk populations

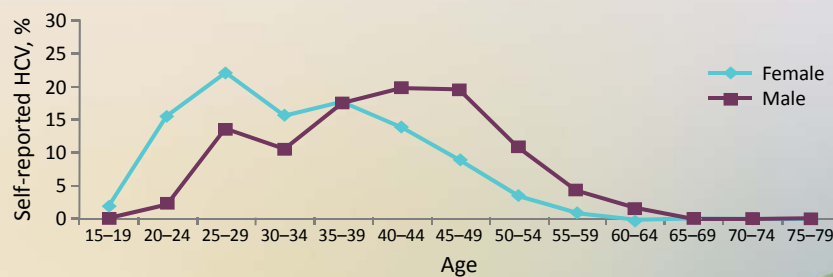
US correctional facilities

US correctional facilities have a higher prevalence of HCV than the general population

An estimated 500,000 of incarcerated individuals in the United States are infected with HCV¹⁻³

- A third of HCV-infected individuals pass through a prison every year^{1,2}
- High prevalence due to increase in drug-related arrests³

Distribution of self-reported HCV cases among Massachusetts inmates⁴



1. Edlin BR, et al. Hepatology 2015;62:1353-63; 2. Department of Health and Human Services, USA. National Viral Hepatitis Action Plan 2017-2020. Available at: <https://www.cdc.gov/hepatitis/hhs-actionplan.htm>. Accessed May 2017; 3. Boutwell AE, et al. Clin Infect Dis 2005;40:S367-72; 4. Kim AY, et al. Hepatology 2013;57:944-52.

Screening for HCV is low in US correctional facilities

The high prevalence of HCV infection in correctional facilities presents a public health opportunity for screening and treatment programs¹

Screening for HCV infection is relatively uncommon in state prison systems²

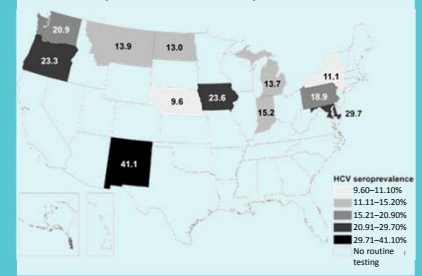
Previous barriers to treatment uptake:

- Toxic effects and long treatment duration of interferon-based therapies
- Cost
- Truncation due to release from prison

New direct-acting antiviral therapies provide treatment options that may facilitate HCV treatment in prison settings

12 of 50 state correctional departments surveyed conduct routine HCV screening³

HCV seroprevalence in state prisons 2001–2012



1. Boutwell AE, et al. Clin Infect Dis 2005;40:S367–72; 2. AASLD guidelines April 2017. Available at: http://hcvguidelines.org/sites/default/files/HCV-Guidance_April_2017_a.pdf. Accessed May 2017; 3. Varan AK, et al. Public Health reports 2014;129:187–95.

Transmission and reinfection rates are high in correctional facilities

High rates of injection drug use and prison acquired tattoos are major risk factors for reinfection^{1,2}

The high rates of HCV among the incarcerated population are partly due to the high prevalence of HCV among injection drug users, estimated to be 30-70%^{1,3}

- ~50% of drug-dependent prisoners have previous histories of imprisonment¹

Reinfection within correctional facilities may be as high as 17%, and possibly higher in active injection drug users¹

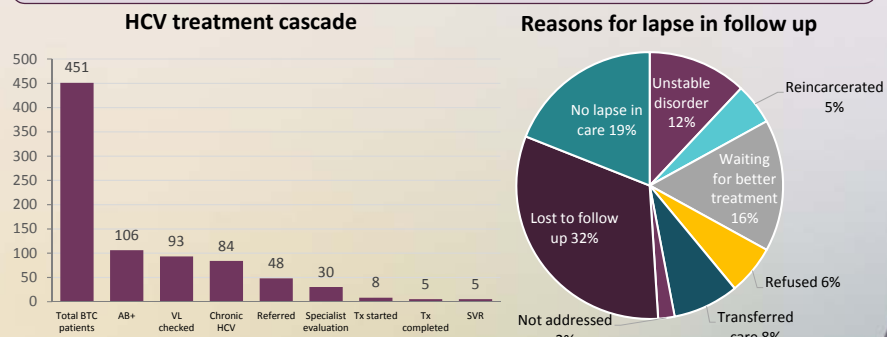
Maintenance opioid agonist therapy reduced the risk for reinfection among young injection drug users in a community study¹

Receipt of a tattoo in prison increased the risk of acquiring HCV by >3 times, regardless of injection drug use²

1. American Correctional Association. Hepatitis C in Correctional Settings: Challenges and Opportunities. April 2015. Available at: http://www.aca.org/ACA_PROD_IMIS/Docs/OCHC/HCVinCorrectionalSetting_Final.pdf. Accessed May 2017. 2. Hellard ME, et al. Am J Infect Control. 2007;35(7):477-80. 3. Zibbell JE, et al. Am J Public Health. 2014;104:2226–32.

Case study: Bronx transitions clinic

Retrospective study of 451 patients accessing care at an urban post-incarceration transitions clinic in the Bronx, New York City, New York



Although HCV was common among clinic patients, few patients were treated. Referral to specialty providers was identified as a particular gap in care

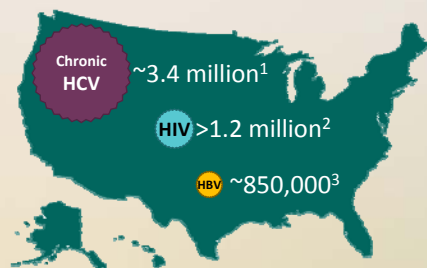
BTC, Bronx transitions clinic; SVR, sustained virologic response; Tx, treatment; VL, viral load. Hawks L, et al. J Viral Hepat 2016;23:473-78.

High-risk populations

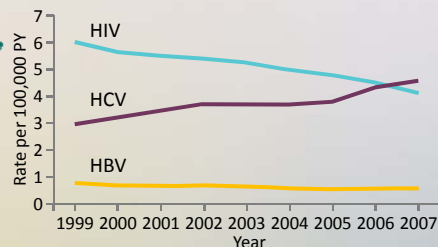
HCV/HIV coinfection

HCV is not only more common than HIV and HBV, but it also results in more deaths

HCV is more prevalent than HIV and HBV in the United States¹⁻³



Mortality rates from HBV, HCV and HIV in the United States, 1999–2007⁴



HBV, hepatitis B virus.
 1. Messina JP, et al. Hepatology. 2015;61:77–87; 2. CDC Statistics Center. HIV in the United States: At A Glance. Available at: <https://www.cdc.gov/hiv/statistics/overview/ata glance.html>. Accessed May 2017; 3. Centers for Disease Control and Prevention. Surveillance for Viral Hepatitis – United States, 2015. Revised May 2017. Available at: <https://www.cdc.gov/hepatitis/statistics/2015surveillance/commentary.htm>. Accessed May 2017.; 4. Ly KN, et al. Ann Intern Med 2012;156:271–8.

HCV/HIV coinfection rates are high in the United States, particularly among injection drug users

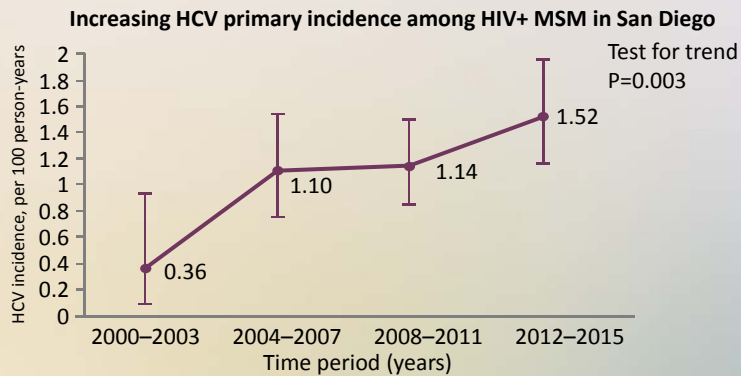
- 5–10% of people with chronic HCV are coinfectd with HIV¹
- ~25% of people with HIV are coinfectd with HCV²
- ~75% of people with HIV, who inject drugs, are coinfectd with HCV²



1. Hepatitis C Online. April 2015. Available at: <http://www.hepatitisc.uw.edu/go/special-populations-situations/treatment-hiv-coinfection/core-concept/all>. Accessed May 2017; 2. CDC HIV and Viral Hepatitis Fact Sheet. June 2016. Available at: <https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf>. Accessed May 2017.

HCV infection rates are increasing in the HIV+ MSM population

Retrospective cohort of HIV+ MSM attending a San Diego clinic to determine the primary incidence rate of HCV infection and reinfection rates following successful treatment¹



HCV reinfection rate following SVR: 2.89/100 PY

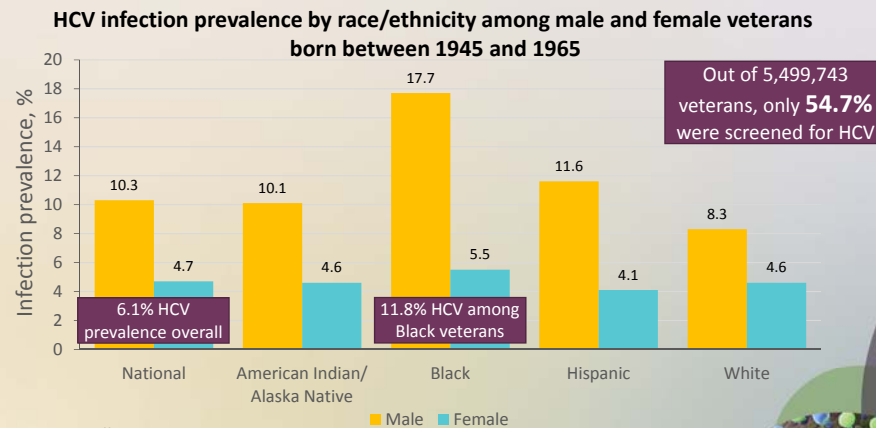
PY, person years.
1. Chaillon A, et al. CROI 2017. Seattle, WA. Abstract 134.

Other populations at risk

US veterans
Homeless people
Chronic kidney disease
Decompensated cirrhosis

There is a higher prevalence of HCV in US veterans than in the general population

The VA corporate data warehouse was used to identify screening and prevalence of HCV among 5,499,743 veterans in 2012



The VA offers HCV testing for all veterans

- The Centers for Disease Control and Prevention recommends 1-time HCV screening for all people born between 1945 and 1965
- Veterans born between 1945 and 1965 were more likely to have been screened than those born in other years (54% vs. 41%)¹
- The VA has recently offered HCV testing for all of its veterans in an effort to expand screening²

HEPATITIS C
TESTING INFORMATION FOR VETERANS

WHAT IS HEPATITIS C?

- Hepatitis C is an infection of the liver caused by the hepatitis C virus (HCV).
- HCV exposure can lead to chronic (lifelong) HCV infection that can progress to liver damage, including cirrhosis and liver cancer.
- There is no vaccine to prevent HCV infection.
- Having an HCV test is the only way to know if you have HCV infection.
- If you have HCV infection, you may not show symptoms for years, but can still pass the virus to others.

WHO SHOULD GET A HEPATITIS C TEST?

Talk with your health care provider about being tested for HCV infection if you:

- Were born between 1945 and 1965
- Are a current or former injection drug user or have ever shared needles, syringes, or other equipment to inject or snort drugs, even if it was many years ago
- Were treated for a blood clotting problem before 1987
- Received a blood transfusion or organ transplant before July 1993
- Are on kidney dialysis treatment
- Are a Vietnam-era veteran
- Have abnormal liver test results or liver disease

HOW CAN I BE TESTED FOR HEPATITIS C?

- Work in health care or public safety and were exposed to blood through a needlestick or injury with another sharp object on the job
- Are infected with HIV
- Had multiple sex partners
- Have current or past sex partner(s) with HCV infection
- Obtained tattoos or body piercings in non-regulated settings
- Have a history of alcohol abuse or dependence
- Were born to a mother infected with HCV
- Were incarcerated

HOW CAN I BE TESTED FOR HEPATITIS C?

- Your VA health care provider can order the HCV blood test for you.
- Results will be available in 1-2 weeks.

IS HEPATITIS C TREATMENT AVAILABLE AT VA?

- If you test positive for HCV infection, talk to your VA provider about treatment for HCV infection.

For more information: www.hepatitis.va.gov/patient

CONNECT WITH US:

- Twitter: twitter.com/VAhepatitis
- Facebook: www.facebook.com/VAhepatitis
- YouTube: www.youtube.com/VAhepatitis

HEPATITIS C TREATMENT AVAILABLE AT VA

FACT SHEET | APRIL 2016
WWW.HEPATITIS.VA.GOV

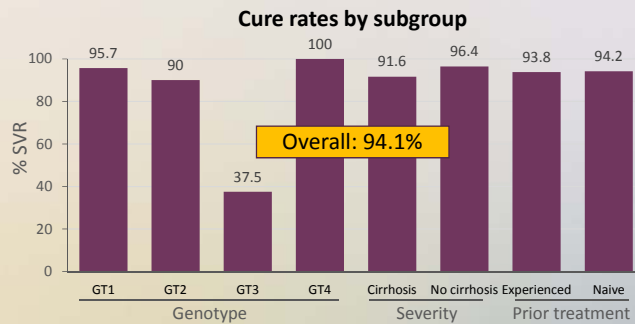
1. Cartwright EEJ, et al. BMC Research Notes. 2014;7:449;
2. VA Fact Sheet. Available at: <https://www.hepatitis.va.gov/pdf/Hepatitis-C-Testing-Factsheet-Veterans-2016.pdf>. Accessed May 2017.

Pharmacy-led management of veterans with HCV has proven benefits

A retrospective study of 372 patients assessed the economic and clinical outcomes of pharmacy-led HCV management in a single VA medical center

Pharmacist-led HCV therapy utilization management strategies include:

- Clinical guidance
- Optimized operational flow
- Budgetary tracking and forecasting
- Outcomes tracking



Pharmacy-led HCV management may allow practitioners to maximize available funding while maintaining high efficacy and safety using HCV therapy

Yang S, et al. J Manag Care Spec Pharm. 2017;23:364-9.

Homeless populations are at a greater risk for HCV infection

HCV prevalence estimates among homeless adults in the US range from 26.5% to 69.1%¹

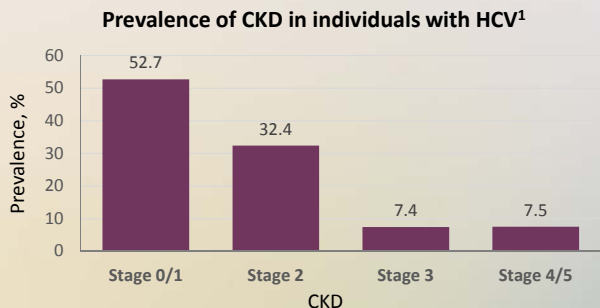
- A community-based sample of 534 homeless adults in 41 shelters and meal programs in downtown Los Angeles, California, found an HCV prevalence of 26.7%²
 - **77.6%** among injection drug users
 - **46.1%** were unaware of their status

Community-based primary care settings have proven effective at attaining high SVR rates in homeless patients with HCV³

1. Strehlow AJ, et al. J Health Care Poor Underserved. 2012;23:811-33; 2. Gelberg L, et al. Public Health Reports. 2012;127:407-21; 3. Barocas JA, et al. JAMA Intern Med. 2017 [Epub ahead of print].

Approximately 1 in 13 individuals infected with HCV has CKD stage 4/5

Analysis of 282,955 patients with HCV who had viral load tests carried out by 2 large national laboratory companies in 2016¹

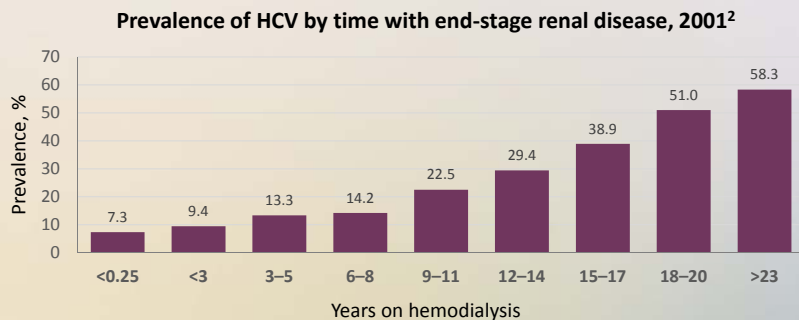


Testing for HCV is recommended in patients on maintenance hemodialysis (CKD Stage 5) and kidney transplant candidates²

1. AbbVie Inc. Data on file H17.DoF.024. 2. Kidney Disease: Improving Global Outcomes (KDIGO). Kidney Int Suppl. 2008;109:S1-99.

9% of patients on hemodialysis have HCV infection

The Dialysis Outcomes and Practice Patterns Study is an international, prospective, cohort study of adults on hemodialysis. Of 1,013 patients enrolled between 2012 and 2015, 9% were HCV+ at enrollment¹

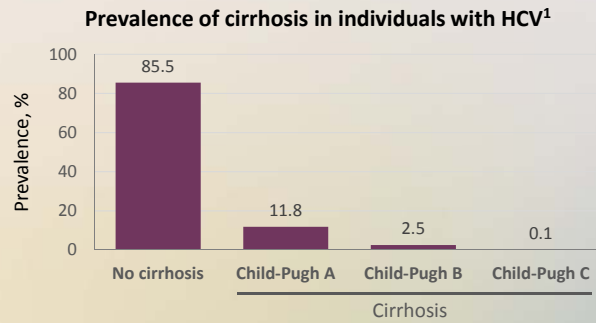


HCV infection among patients on hemodialysis is associated with higher risk of death, hospitalization, anemic complications, and worse QoL scores¹

1. Goodkin DA, et al. Clin J Am Soc Nephrol. 2017;12:287-97; 2. Fissell RB, et al. Kidney Int. 2004;65:2335-42.

Approximately 2.6% of individuals infected with HCV have decompensated cirrhosis

Analysis of 269,073 patients with HCV who had viral load tests carried out by 2 large national laboratory databases in 2016¹



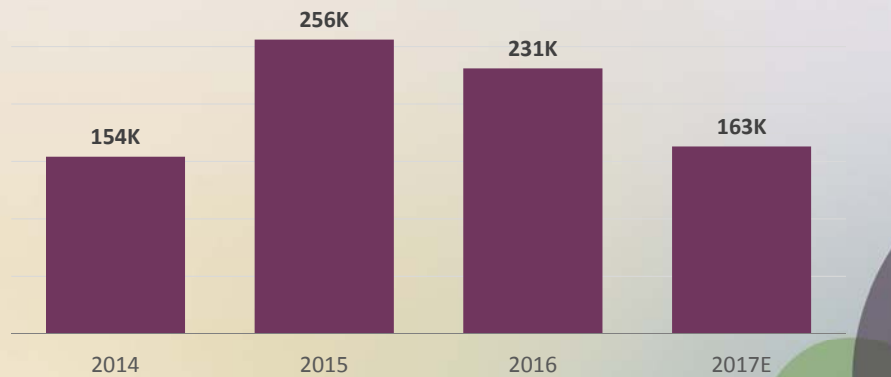
Approximately 1 in 7 individuals with HCV has cirrhosis, and is at high risk for liver-related disease including hepatocellular carcinoma and liver failure

AbbVie Inc. Data on file H17.DoF.024.

What is the current state of access to treatment?

Estimated total number of patients initiating HCV therapy

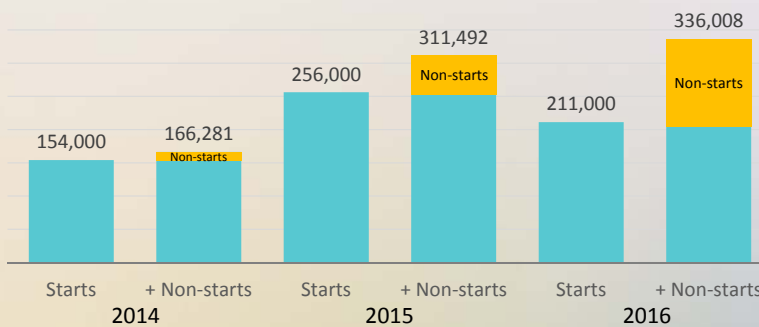
Currently about 800,000 patients have received HCV treatment since 2014



E, estimate.
 Trio Health Advisory Group, Inc. Real-World Evidence: Hepatitis C Treatment Demand & Non-Starts. March 2017.
 Available at: <http://www.natap.org/2017/HCV/TrioHealthTroutGroupHepC.PDF>. Accessed May 2017.

Estimated demand for HCV treatment in the United States

Demand for treatment (adjusted for payer mix)



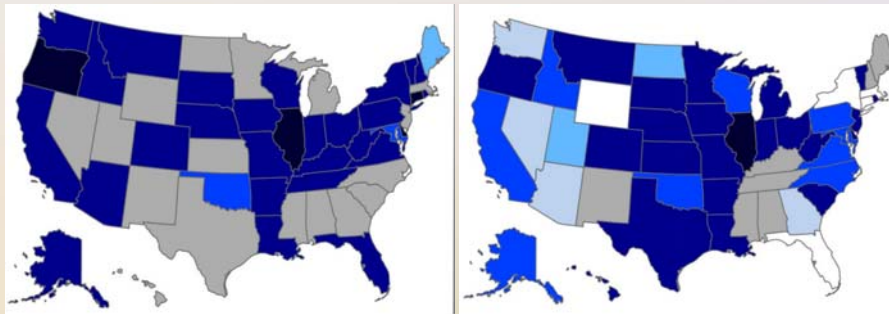
The number of HCV treatment starts may not reflect the true demand of treatment

Trio Health Advisory Group, Inc. Real-World Evidence: Hepatitis C Treatment Demand & Non-Starts. March 2017.
 Available at: <http://www.natap.org/2017/HCV/TrioHealthTroutGroupHepC.PDF>. Accessed May 2017.

Access to HCV treatment in Medicaid channels has improved over time

2014 FFS Medicaid liver disease requirements

2016 FFS Medicaid liver disease requirements



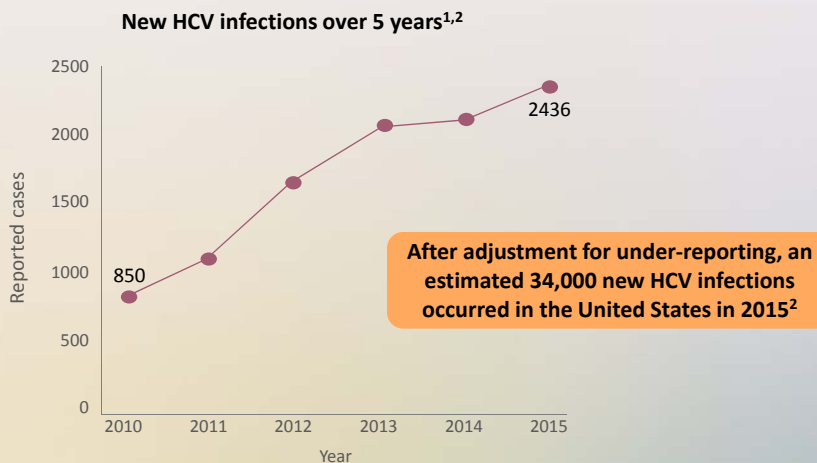
■ No restrictions ■ Chronic HCV ■ F1 ■ F2 ■ F3 ■ F4 ■ Restrictions unknown

Access has improved with reduction of liver disease/fibrosis restrictions and, to a lesser extent, a reduction in sobriety and prescriber limitations

FFS, fee-for-service.
Center for Health Law and Policy Innovation of Harvard Law School (CHLPI); National Viral Hepatitis Roundtable (NVHR). Hepatitis C: The State of Medicaid Access. Preliminary Findings: National Summary Report. November 2016. Available at: http://www.chlpi.org/wp-content/uploads/2013/12/HCV-Report-Card-National-Summary_FINAL.pdf. Accessed May 2017.

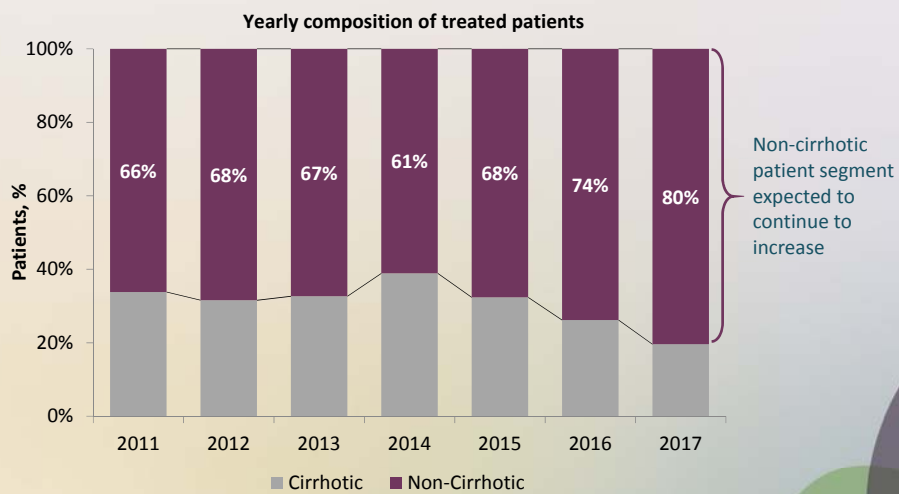
How will the epidemiology of HCV change in the future?

New acute HCV infections have tripled in the last 5 years



1. Surveillance for Viral Hepatitis – United States, 2014. Revised September 2016. Available at: https://www.cdc.gov/hepatitis/statistics/2014surveillance/pdfs/2014HepSurveillanceRpt_Rev2016-09-26.pdf. Accessed May 2017;
 2. Centers for Disease Control and Prevention. Surveillance for Viral Hepatitis – United States, 2015. Revised May 2017. Available at: <https://www.cdc.gov/hepatitis/statistics/2015surveillance/commentary.htm>. Accessed May 2017.

The proportion of treated HCV patients who are cirrhotic has declined since 2014



Data Source: IMS LRx (Jan 2011 – April 2017). Please note 2017 is a partial year (January 2017 – April 2017).

Patient characteristics are changing



1945–1965

- The majority (75%) of people infected with HCV are still **baby boomers** born between 1945 and 1965¹



- However, increasing rates of **injection drug use** are driving new HCV infections in **younger people**, particularly those **aged 20–29 years**^{2,3}

- This population is experiencing the most rapid increase in HCV infections



- Increasing rates of HCV infection in **women of child-bearing potential**⁴

1. Smith BD, et al. Ann Intern Med. 2012;157:817–22; 2. Centers for Disease Control and Prevention. Surveillance for Viral Hepatitis – United States, 2015. Revised May 2017. Available at: <https://www.cdc.gov/hepatitis/statistics/2015surveillance/commentary.htm>. Accessed May 2017; 3. Department of Health and Human Services, USA. National Viral Hepatitis Action Plan 2017–2020. Available at: <https://www.cdc.gov/hepatitis/hhs-actionplan.htm>. Accessed May 2017; 4. Koneru A, et al. MMWR. 2016;65:705–10.

Changing demographics: Populations most at risk of HCV infection and its complications in 2017 and beyond

- The number of HCV infections has increased across the nation in recent years, with 30 states reporting increases of 200% or more when compared to 2010–2014 rates¹
- Around 70% of new infections are believed to occur among PWIDs²

Populations most likely to be infected with HCV²

AGED
20–29 YEARS
30–39 YEARS

AFRICAN AMERICANS

YOUNG PWID

Populations at an increased risk of mortality from HCV disease²

AGED
55–64 YEARS
65–74 YEARS

AMERICAN INDIANS
AND ALASKAN NATIVES

US VETERANS

1. Centers for Disease Control and Prevention. Viral Hepatitis and Young Persons Who Inject Drugs. Available at: <https://www.cdc.gov/hepatitis/featuredtopics/youngpwid.htm>. Accessed May 2017; 2. Department of Health and Human Services, USA. National Viral Hepatitis Action Plan 2017–2020. Available at: <https://www.cdc.gov/hepatitis/hhs-actionplan.htm>. Accessed May 2017.

Summary: The epidemiology of HCV infection

In the United States, ~3.4 million people have chronic HCV infection, and approximately 50% of people with HCV are unaware of their status¹⁻³

Populations at high risk for HCV include: people who inject drugs, incarcerated individuals, HCV/HIV coinfecting individuals, US veterans, and patients on dialysis⁴⁻⁶

Reported acute HCV infections tripled over the last 5 years and indicate a changing demographic of patients⁷

Increasing rates of injection drug use are driving new HCV infections in younger people,⁷ including women of child-bearing potential⁸

The non-cirrhotic HCV patient population is rising and decompensated cirrhotic HCV patients account for a small percentage^{9,10}

The number of HCV treatment starts does not reflect true demand but access is improving, primarily with a reduction of liver disease/fibrosis restrictions^{11,12}

1. Messina JP, et al. *Hepatology*. 2015;61:77-87; 2. Yehia BR, et al. *PLoS One*. 2014;9:e101554; 3. Linthicum MT, et al. AASLD 2015; poster #1042; 4. AASLD-IDSA. Recommendations for testing, managing, and treating hepatitis C. Available at: <http://www.hcvguidelines.org>. Accessed May 2017; 5. Beste LA, Ioannou GN. *Epidemiol Rev*. 2015;37:131-143; 6. Goodkin DA, et al. *Clin J Am Soc Nephrol*. 2017;12:287-97. 7. Department of Health and Human Services, USA. National Viral Hepatitis Action Plan 2017-2020. Available at: <https://www.cdc.gov/hepatitis/hhs-actionplan.htm>. Accessed May 2017; 8. Koneru A, et al. *MMWR*. 2016;65:705-10; 9. IMS Dx (Jan 2011 - March 2017). 10. AbbVie Inc. Data on file H17.Dof.024. 11. Trio Health Advisory Group, Inc. Real-World Evidence: Hepatitis C Treatment Demand & Non-Starts. March 2017. Available at <http://www.natap.org/2017/HCV/TrioHealthTroutGroupHepC.PDF>. Accessed May 2017; 12. Center for Health Law and Policy Innovation of Harvard Law School (CHLP); National Viral Hepatitis Roundtable (NVHR). Hepatitis C: The State of Medicaid Access. Preliminary Findings: National Summary Report. November 2016. Available at: http://www.chlp.org/wp-content/uploads/2013/12/HCV-Report-Card-National-Summary_FINAL.pdf. Accessed May 2017

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