

# Hepatitis Elimination in Persons who Inject Drugs

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# Disclaimer

*The findings and conclusions in this presentation are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention.*

# Injection Drug Use

## 2011 US Estimate:

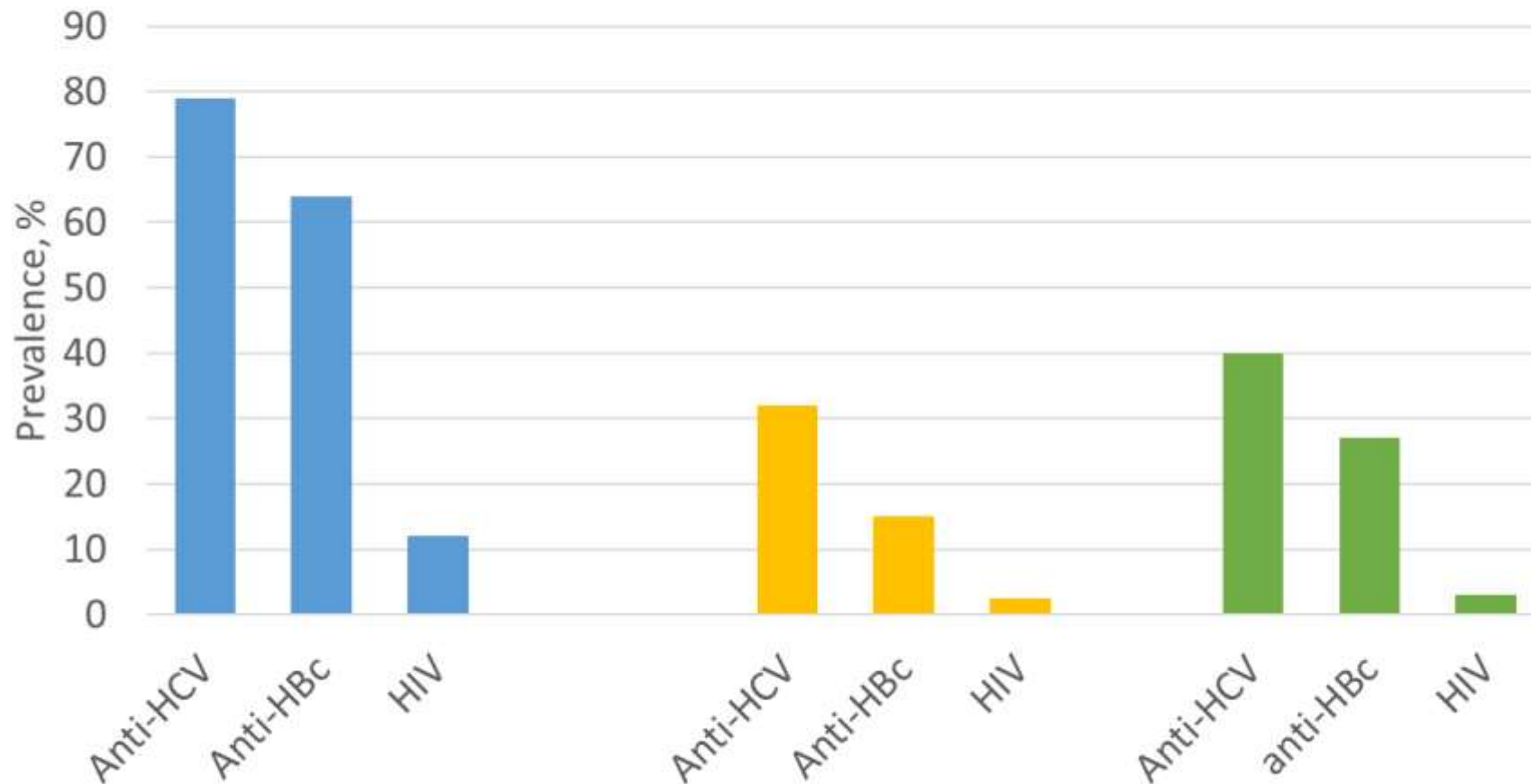
- Lifetime prevalence
  - 2.6% persons  $\geq$  13 years
  - 6.6 million persons
- Past year prevalence
  - 0.30%
  - 774,434
- 2011 prevalence
  - 2.2% HIV (+)
  - 43.1% anti-HCV (+)

## 2008-2017 Global Estimate:

- 10.2–23.7 million persons 15–64 years
- 17.8% HIV (+)
- 52.3% anti-HCV (+)



## HIV, Anti-HBc and Anti-HCV Seroprevalence in Persons Who Inject Drugs, Selected US Studies



### United States, 1993-1994

Murill CS, et al (2002) *AJPH*, 92: 385.

### Seattle, 2004

Burt RD, et al (2007)  
*J Urban Health*, 84(3): 436

### Connecticut, 2008-2011

Akselrod H, et al (2014)  
*AJPH*, 104:1713

# Anti-HCV and HCV RNA Prevalence in Substance Use Treatment

Reference	Year	Location	Population	Anti-HCV	HCV-RNA
Norton, J Subst Abuse Treat 75: 38	2017	Bronx, NY	Primary care patients initiating buprenorphine	52.9%	33.9%
Carey, J Subst Abuse Treat 66: 54	2016	Boston, MA	Primary care patients receiving buprenorphine	47.7%	32.3%
Jordan. Drug Alcohol Depend 152: 194	2015	New York City	Methadone maintenance treatment programs (MMTP)	67%	--
Perlman, J Addict Dis 33: 322	2014	New York, San Francisco	MMTP	59%	--
Martinez, J Viral Hepat 19: 47	2012	New York City San Diego	MMTP	64.1%	39.2%

# Hepatitis B and C

# Symptoms of acute hepatitis

## Systemic

- Fever
- Fatigue
- Loss of appetite
- Joint pain

## Gastrointestinal

- Nausea
- Vomiting
- Abdominal pain
- Diarrhea

## Jaundice

- Yellow skin and eyes
- Dark urine
- Clay-colored bowel movements

# Asymptomatic

## Hepatitis B

- Most children < 5 years
- Immunosuppressed adults
- 50-70% of persons  $\geq$  5 years

## Hepatitis C

- 70-80%



# Chronic infection

## Hepatitis B

- 90% of infants
- 25%–50% of children 1–5 years of age
- 5% of adults

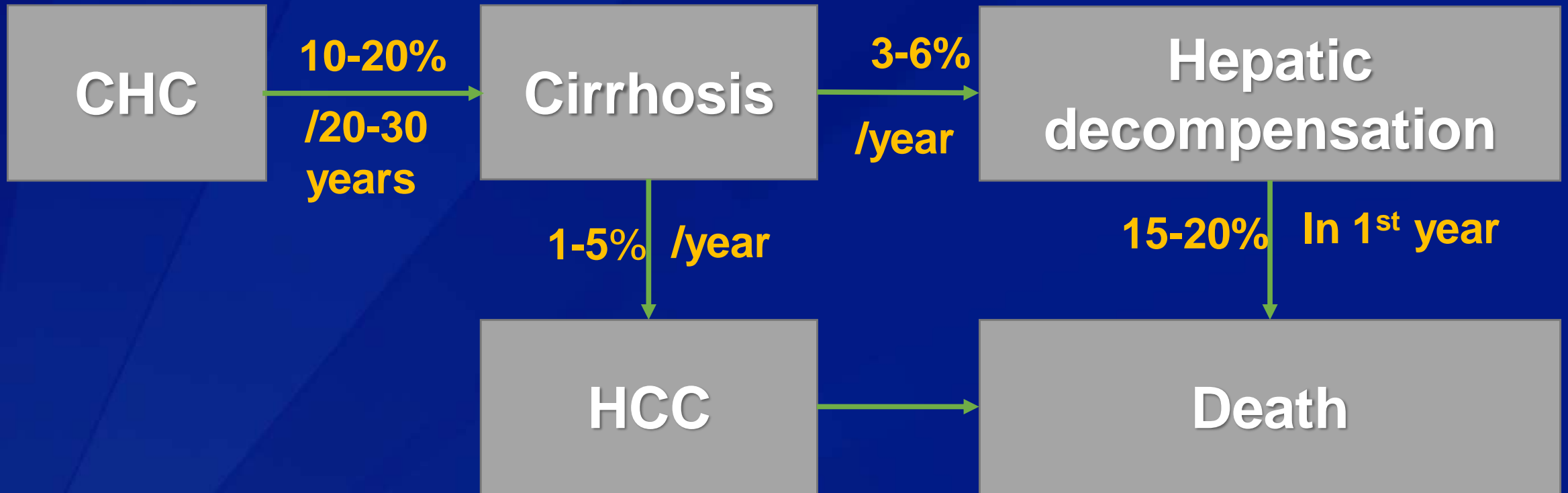
## Hepatitis C

- 75%–85% of cases

# Natural history of chronic hepatitis B (CHB)

- Inflammation, elevated ALT
- Cirrhosis
- Liver failure
- HCC
- 40-50% of deaths are liver-related at average 60 years

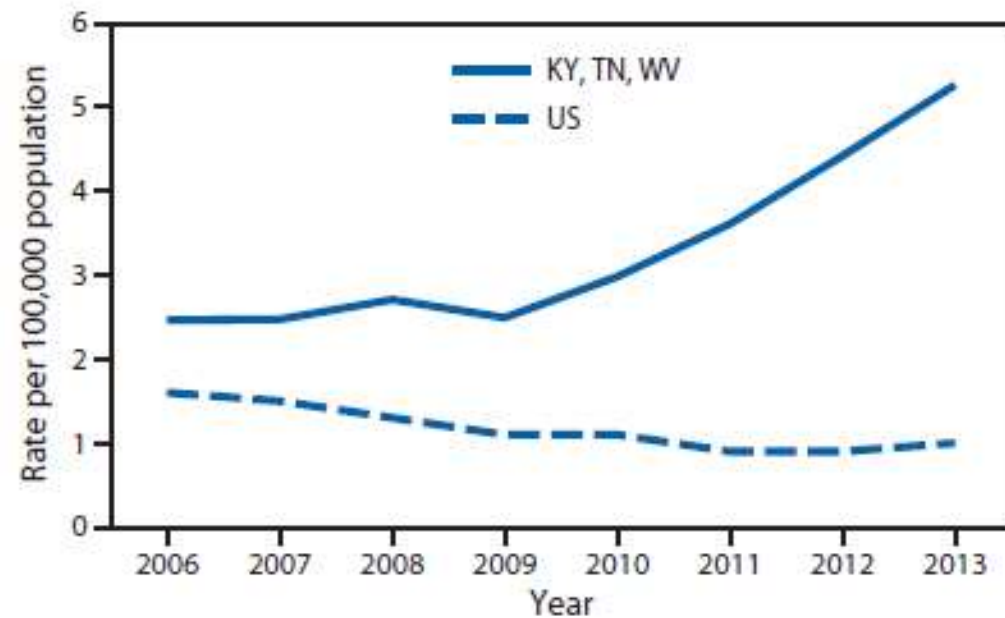
# Natural history of chronic hepatitis C (CHC)



# Surveillance Data

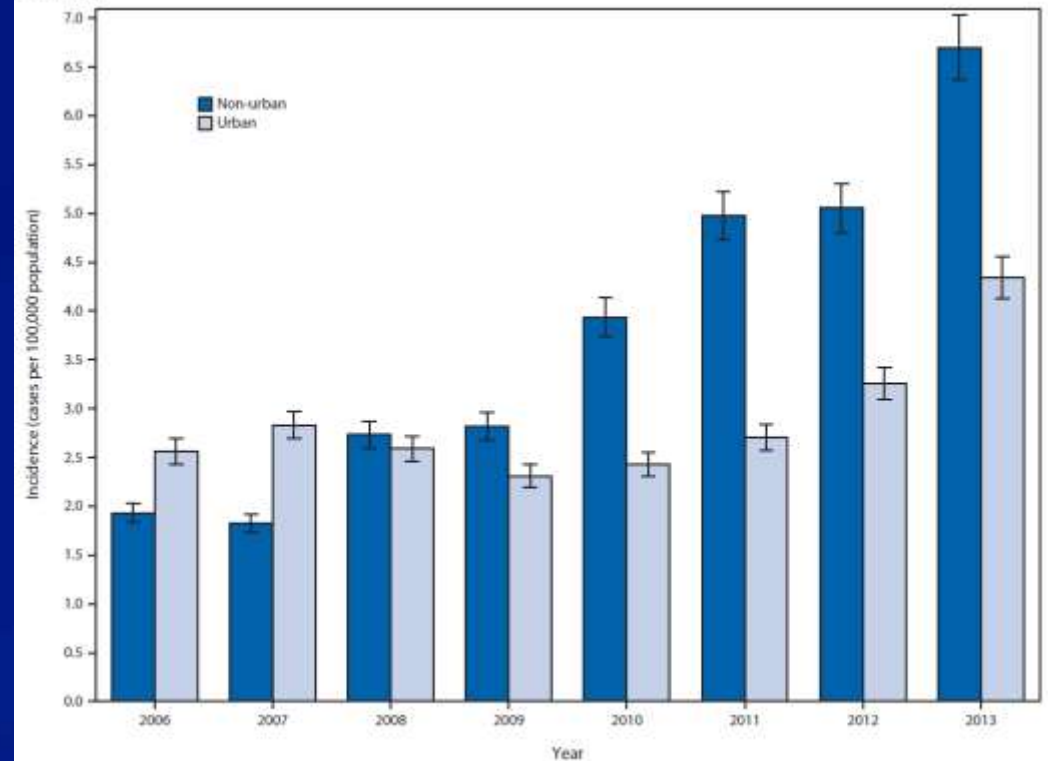
# Hepatitis B in PWID

FIGURE 1. Incidence of acute hepatitis B virus infection, by year—United States and Kentucky, Tennessee, and West Virginia, 2006–2013



Abbreviations: KY = Kentucky; TN = Tennessee; US = United States; WV = West Virginia..

FIGURE 2. Incidence\* of acute hepatitis B virus infection by urban/non-urban† county of residence — Kentucky, Tennessee, and West Virginia, 2006–2013



\* With 95% confidence intervals as error bars.  
† Trend significant among non-urban residence data at  $p < 0.001$ .

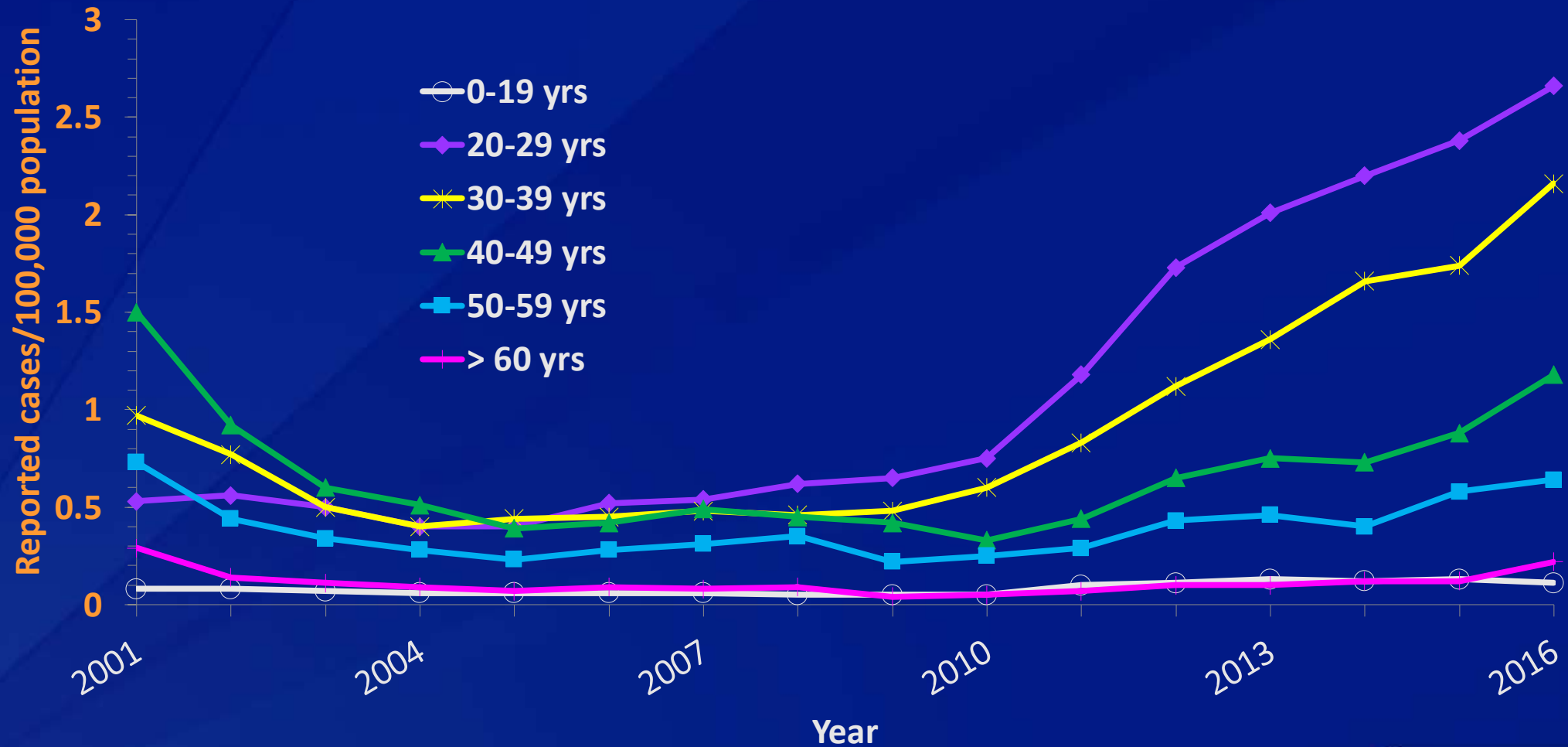
Map 3.1 State Acute Hepatitis B Incidence Compared to Healthy People 2020 National Goal\*  
United States, 2016



Source: CDC, National Notifiable Diseases Surveillance System (NNDSS)

\*National goal: 1.5 cases/100,000 population

# Incidence of acute hepatitis C, by age group — United States, 2001–2016





Map 4.1 State Acute Hepatitis C Incidence Compared to Healthy People 2020 National Goal\*  
United States, 2016

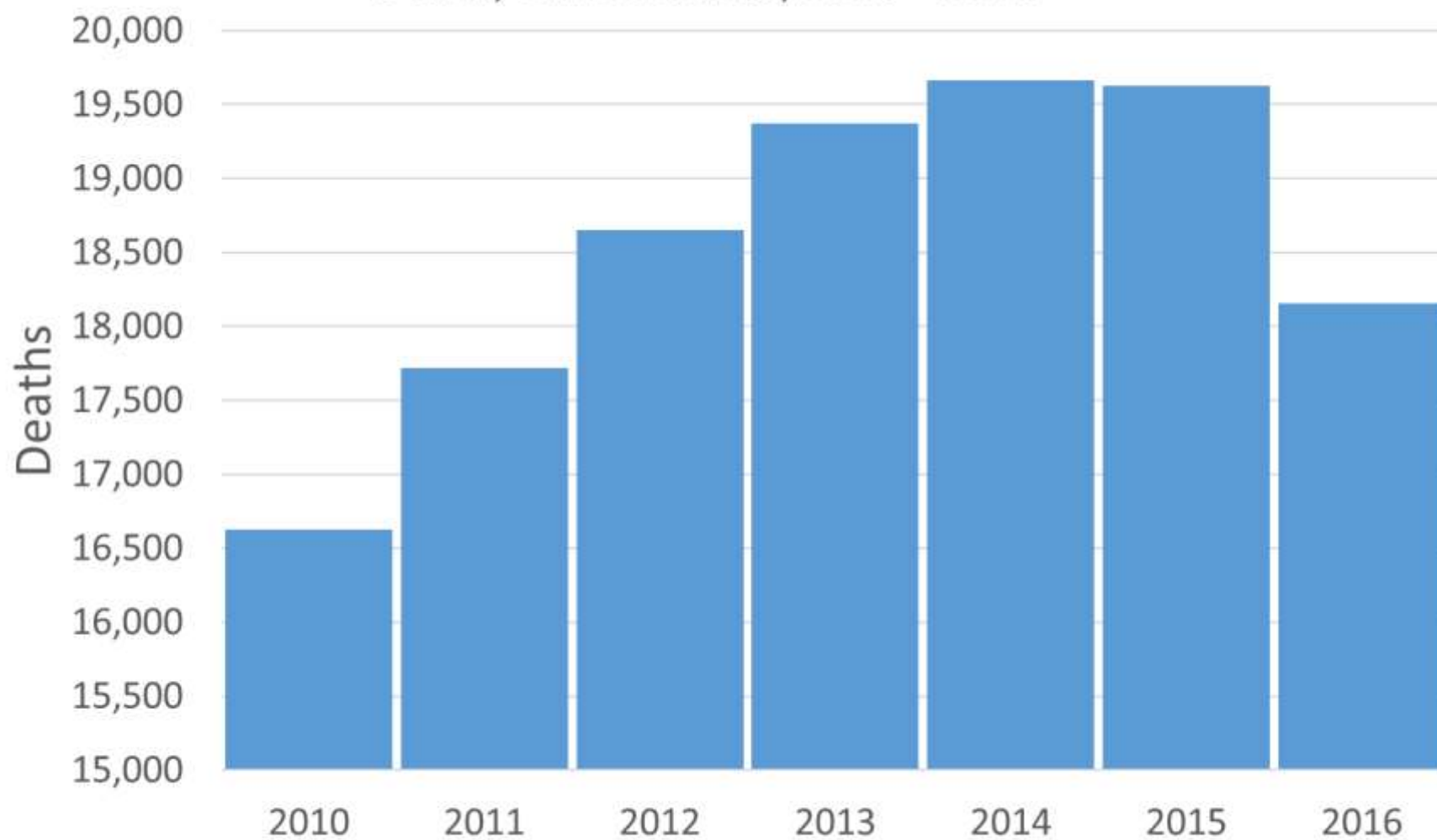


Source: CDC, National Notifiable Diseases Surveillance System (NNDSS)

\*National goal: 0.25 cases/100,000 population



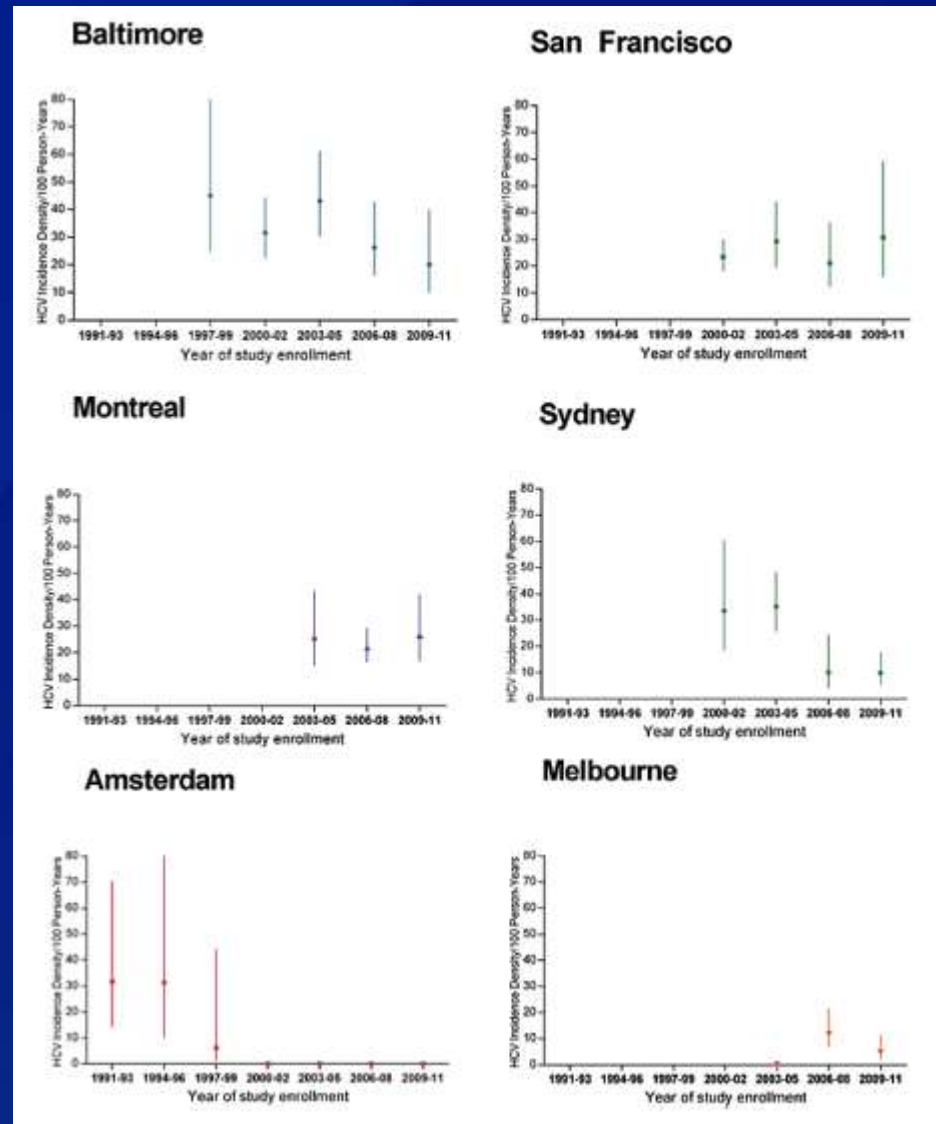
## Hepatitis C Listed as Underlying or Contributing Cause of Death, United States, 2010 - 2016



<https://www.cdc.gov/hepatitis/statistics/index.htm>

# Hepatitis B and C Elimination in PWID

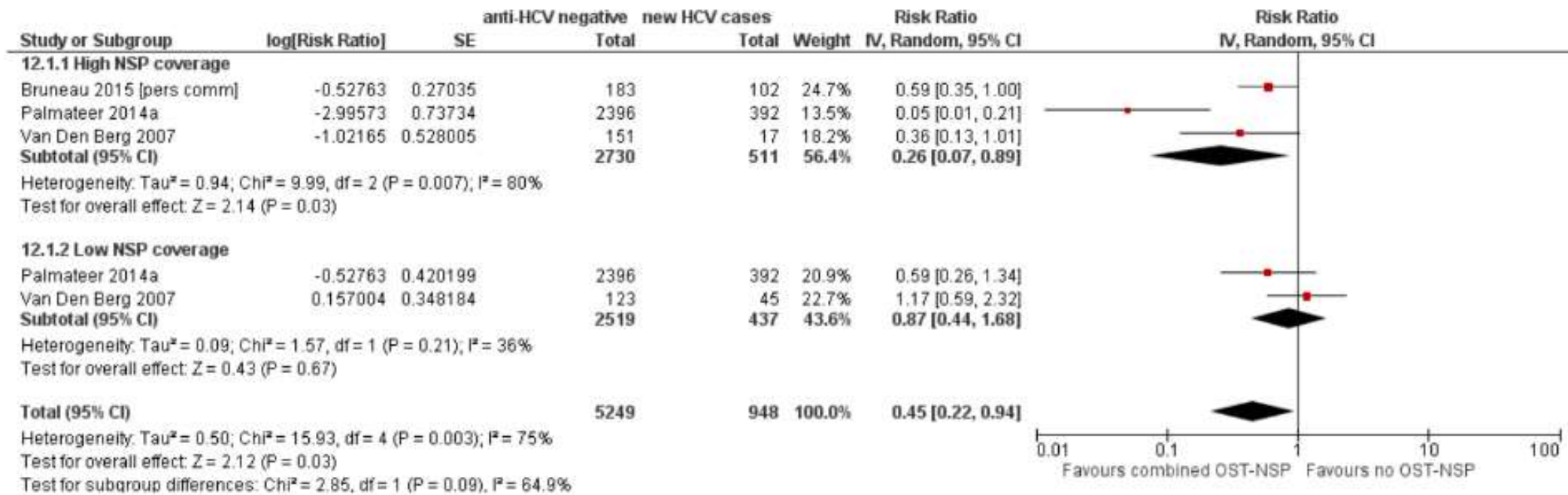
# Trends in Hepatitis C Virus (HCV) per 100 Person-Years for PWID Across Calendar Period, by City



Morris, CID, 2017; 64:860

# Combined MAT (OST) and SSPs (NSP) Decreases HCV Transmission by 74%

**Figure 5. Forest plot of comparison: 4 Combined OST and high/low NSP versus no OST and low/no NSP, outcome: 4.1 HCV incidence adjusted analyses.**



# What are comprehensive syringe services programs (SSPs)?

- Sterile needles, syringes, injection supplies
- Safe disposal of injection supplies
- Vaccinations, PrEP
- Testing for hepatitis, HIV, referral to treatment
- Naloxone and training
- STD prevention and treatment
- Patient-centered reproductive health including LARC
- Linkage to MAT

# Treatment of Hepatitis C in PWID

## □ Comparable SVR in PWID

- ~ 100% for persons retained in follow-up
- LTFU as high as 20% for persons in unstable housing

## □ Reinfection rate $\approx$ 2 per 100 person-years

- Increased in IDU relapse

Aspinall EJ, CID, 2013; 57 (Suppl 2): S80-S89. Lalezari J, J Hepatol, 2015; 63:364-369. Ho SB, Clin Gastroenterol Hepatol, 2015; 13: 2004-2014. Dore GJ, Ann Intern Med, 2016; 165: 625-634. Morris L. Int J Drug Pol, 2017; 47: 216-220. Read P. Int J Drug Pol, 2017; 47: 209-215.

Simmons B, CID, 2016; 62: 683-94. Midgard H. J Hepatol, 2016; 54: 1020-1026. Martinello N. J Viral Hepat, 2017; 24: 359-370. Weir A. Drug Alcohol Dep, 2016; 165:

# HCV treatment integrated into substance use treatment

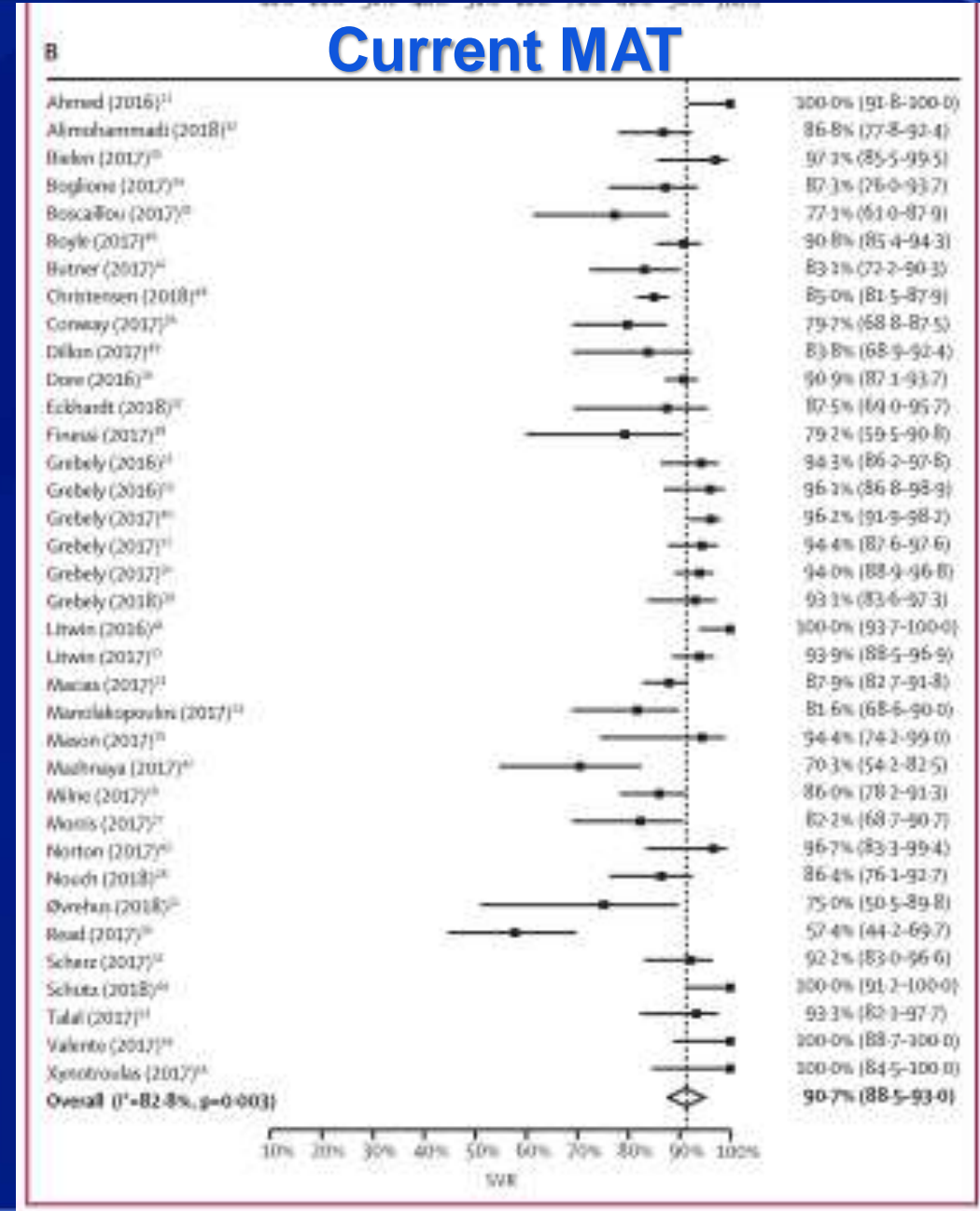
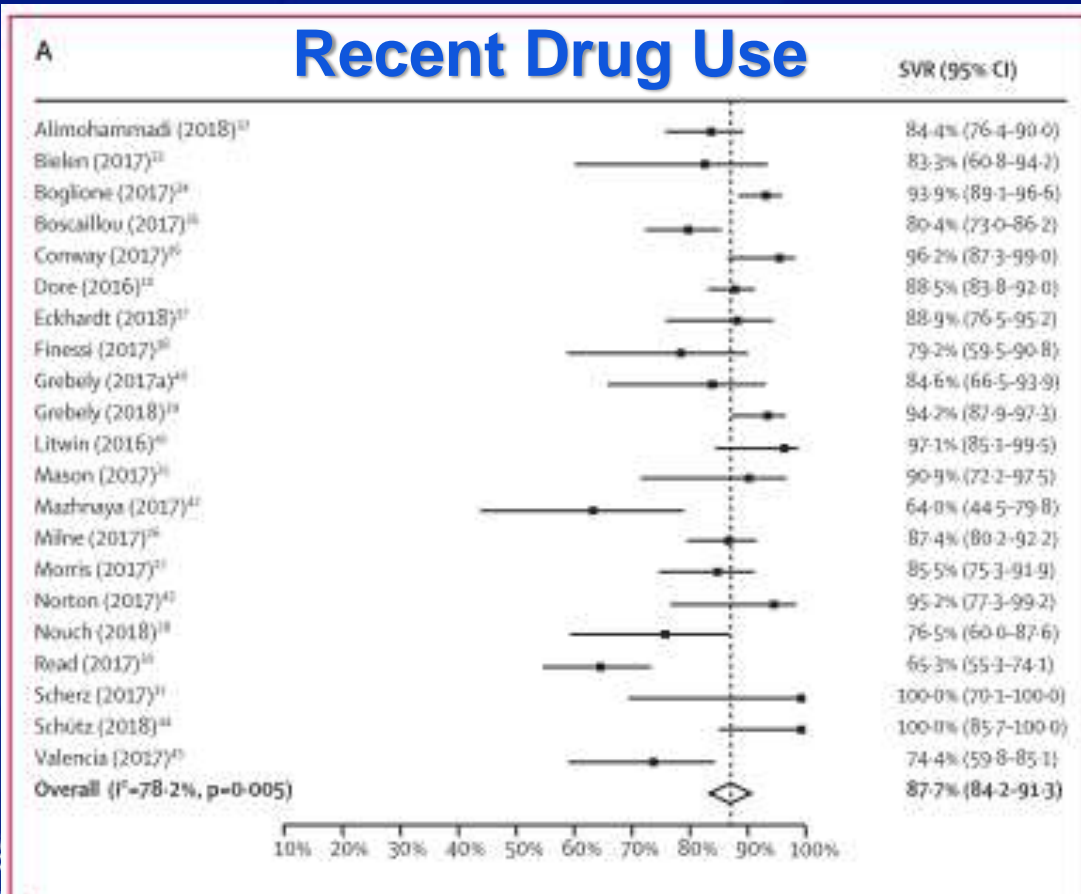
- **First consecutive 75 CHC patients opting to initiate DAAs 2013-2015.**
  - 10 LTFU
  - 98% SVR among those completing therapy
  - 23% ongoing illicit drug use





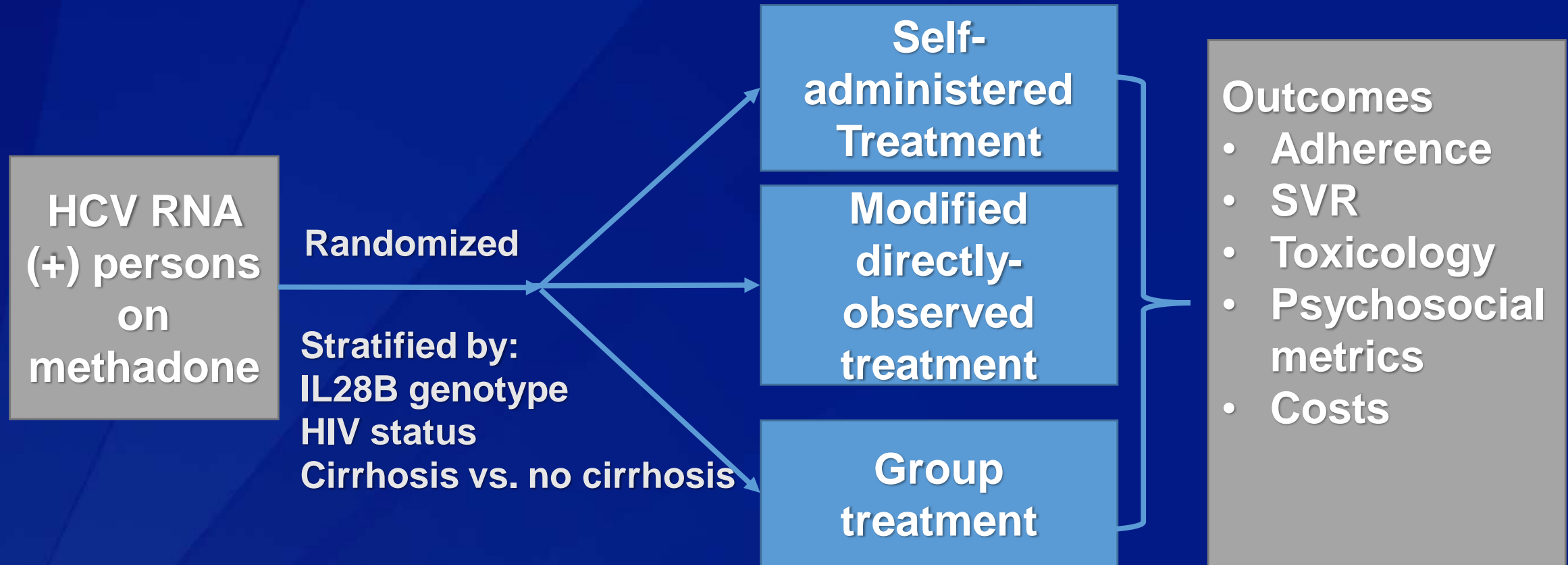
# Meta-Analysis – SVR Among PWID Treated with DAAs for HCV

Hajarizadeh B, et al. (2018).  
Lancet Gastroenterol Hepatol 3: 754.



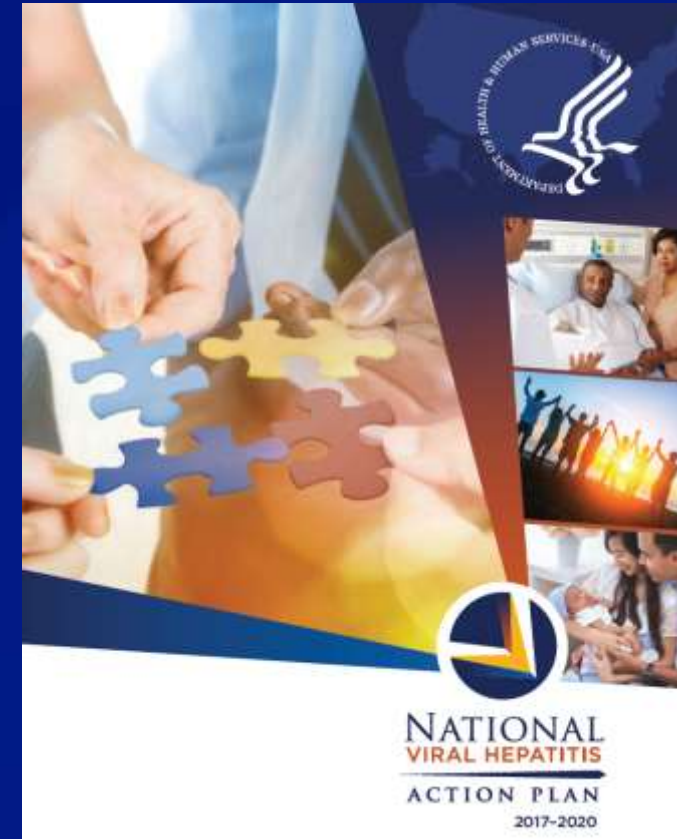
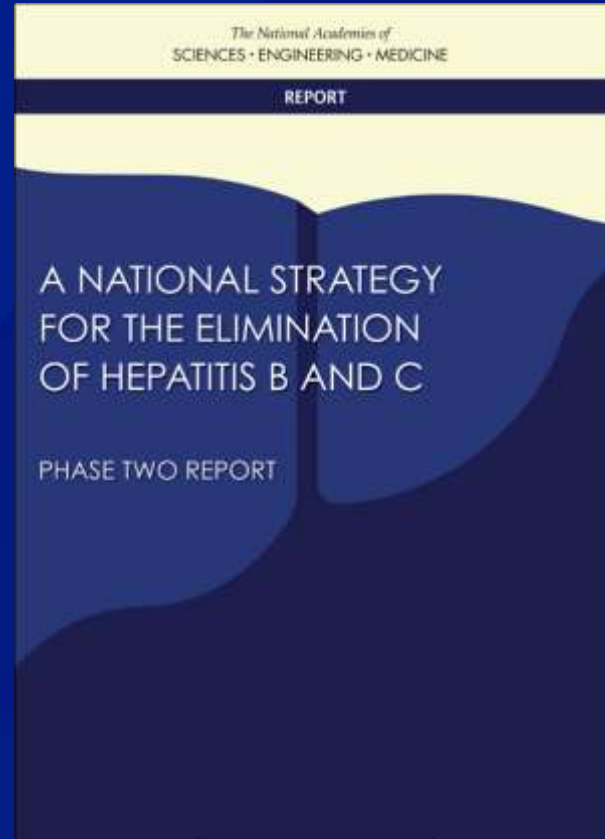
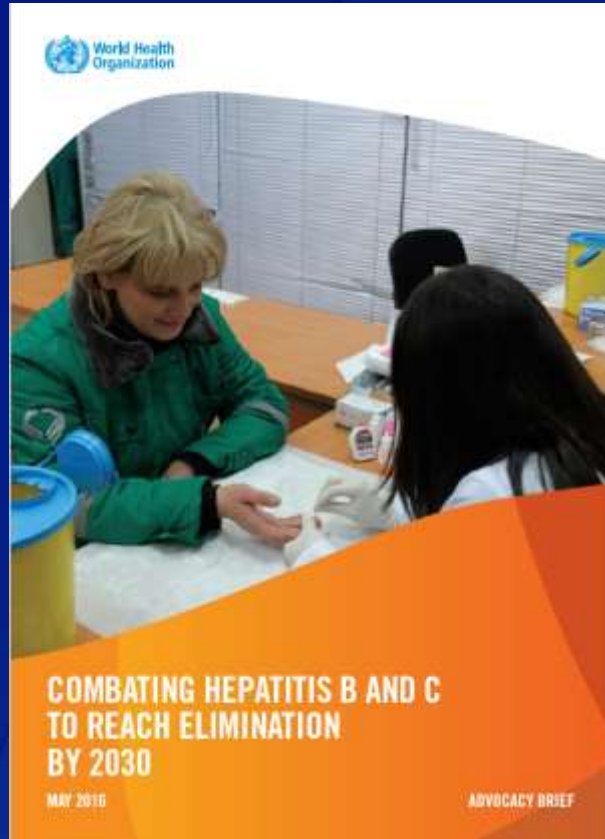


# Randomized Trial for HCV Treatment Strategies in Methadone Maintenance Treatment Clinics



# Elimination Strategies

# Elimination of Hepatitis B and C



[www.who.int/hepatitis/publications/hep-elimination-by-2030-brief/en/](http://www.who.int/hepatitis/publications/hep-elimination-by-2030-brief/en/)

<http://www.nationalacademies.org/hmd/reports/2017/national-strategy-for-the-elimination-of-hepatitis-b-and-c.aspx>

[www.hhs.gov/sites/default/files/National%20Viral%20Hepatitis%20Action%20Plan%202017-2020.pdf](http://www.hhs.gov/sites/default/files/National%20Viral%20Hepatitis%20Action%20Plan%202017-2020.pdf)

# Selected HCV Indicators, National Viral Hepatitis Action Plan, 2017 - 2020


Indicator	Baseline: 2014	2020 Goal
Decrease new HCV infections by 60%; estimated (reported)	30,500 (2,194)	10,889 (783)
Reduce HCV-related deaths by 25%	18,659	14,744
Decrease new HCV infections among persons 20-39 years by 60%	1,561	624

# National Viral Hepatitis Action Plan, 2017 – 2020, Selected Strategies Addressing Injection Drug Use

- 1. Screen for substance use disorder and offer:**
  - HAV and HBV vaccination
  - HBV and HCV testing
  - Assessment for viral hepatitis treatment if infected
  - Referral to MAT, SSPs
- 2. Ensure PWID have access to evidence-based treatment services**
- 3. Expand access/delivery of hepatitis prevention and treatment services in correctional settings**



## Recommendations for Screening and Treatment of HCV Infection in People Who Inject Drugs (PWID)

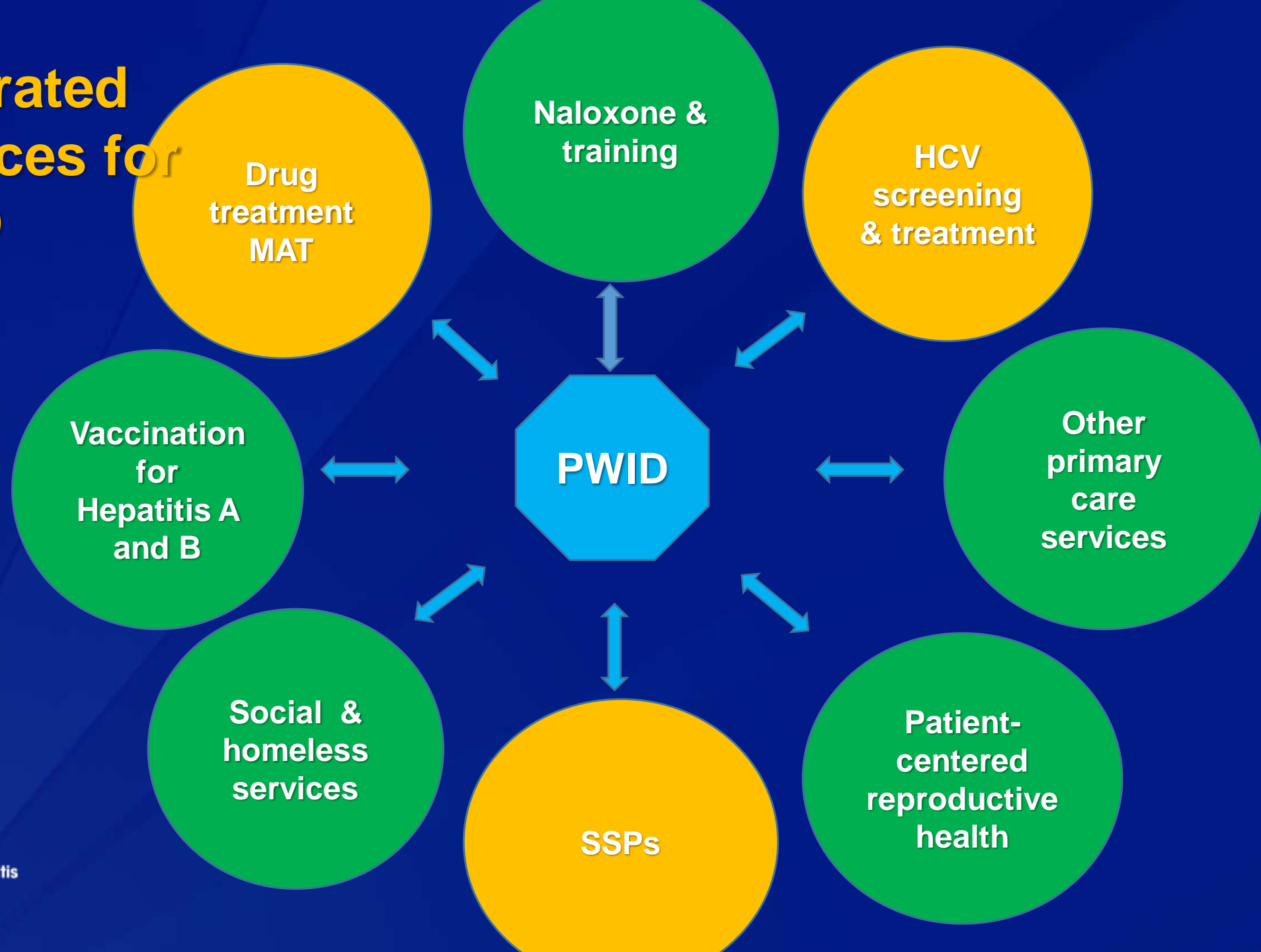
RECOMMENDED	RATING 
Annual HCV testing is recommended for PWID with no prior testing, or past negative testing and subsequent injection drug use. Depending on the level of risk, more frequent testing may be indicated.	IIa, C
Substance use disorder treatment programs and needle/syringe exchange programs should offer routine, opt-out HCV-antibody testing with reflexive or immediate confirmatory HCV-RNA testing and linkage to care for those who are infected.	IIa, C
PWID should be counseled about measures to reduce the risk of HCV transmission to others.	I, C
PWID should be offered linkage to harm reduction services when available, including needle/syringe service programs and substance use disorder treatment programs.	I, B
Active or recent drug use or a concern for reinfection is not a contraindication to HCV treatment.	IIa, B

# IDSA / AASLD Recommendations for PWID

- ❑ Annual testing for HCV
- ❑ Routine, opt-out HCV testing and linkage to care:
  - SUD treatment facilities
  - SSPs
- ❑ Counsel about measures to reduce risk
- ❑ Offer linkage to:
  - SSPs
  - SUD treatment
- ❑ Active or recent drug use or concern for reinfection is not a contraindication to HCV treatment.



# Integrated Services for PWID





# Thank you

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# Extra Slides

# “Call to action”

Action Step 1: Implement screening for OUD in all relevant health care settings.

Action Step 2: For patients with positive screening results, immediately prescribe effective medication for OUD and/or opioid withdrawal symptoms.

Action Step 3: Develop hospital-based protocols that facilitate OUD treatment initiation and linkage to community-based treatment upon discharge.

Action Step 4: Hospitals, medical schools, physician assistant schools, nursing schools, and residency programs should increase training to identify and treat OUD.

Action Step 5: Increase access to addiction care and funding to states to provide effective medications to treat OUD.

Myth	Reality	Possible Policy Response
Buprenorphine treatment is more dangerous than other chronic disease management.	Buprenorphine treatment is simpler than many other routine treatments in primary care, such as titrating insulin or starting anticoagulation. But physicians receive little training in it.	Amend federal buprenorphine-treatment eligibility requirements to include training completed during medical school and require training during medical school or residency. Add competency questions to U.S. Medical Licensing Examination and other licensing exams.
Use of buprenorphine is simply a “replacement” addiction.	Addiction is defined as compulsively using a drug despite harm. Taking a prescribed medication to manage a chronic illness does not meet that definition.	Public health campaign to reduce stigma associated with addiction treatment, similar to past campaigns (e.g., HIV) that provided education and challenged common myths.
Detoxification for opioid use disorder is effective.	There are no data showing that detoxification programs are effective at treating opioid use disorder. In fact, these interventions may increase the likelihood of overdose death by eliminating tolerance.	Advocacy from professional physician organizations to educate federal and state agencies and policymakers about evidence-based treatment and the lack of evidence for short-term “detoxification” treatment.
Prescribing buprenorphine is time consuming and burdensome.	Treating patients with buprenorphine can be uniquely rewarding. In-office inductions and intensive behavioral therapy are not required for effective treatment.	Develop and disseminate protocols for primary care settings that emphasize out-of-office induction and treatment.
Reducing opioid prescribing alone will reduce overdose deaths.	Despite decreasing opioid prescribing, overdose mortality has increased. Patients with opioid use disorder may shift to the illicit drug market, where the risk of overdose is higher.	Develop a national system of virtual consultation for physicians to reach addiction and pain specialists who can support treatment of patients with suspected opioid use disorder.



## Class

<b>I</b>	Evidence and/or general agreement that a given diagnostic evaluation, procedure, or treatment is beneficial, useful, and effective.
<b>II</b>	Conflicting evidence and/or a divergence of opinion about the usefulness and efficacy of a diagnostic evaluation, procedure, or treatment.
<b>IIa</b>	Weight of evidence and/or opinion is in favor of usefulness and efficacy.
<b>IIb</b>	Usefulness and efficacy are less well established by evidence and/or opinion.
<b>III</b>	Conditions for which there is evidence and/or general agreement that a diagnostic evaluation, procedure, or treatment is not useful and effective or if it in some cases may be harmful.

## Level

<b>A</b>	Data derived from multiple randomized clinical trials, meta-analyses, or equivalent.
<b>B</b>	Data derived from a single randomized trial, nonrandomized studies, or equivalent.
<b>C</b>	Consensus opinion of experts, case studies, or standard of care.

# Injection Drug Use Associations

- Hepatitis A
- Hepatitis B
- Hepatitis C
- HIV
- MRSA and other bacterial infections
- Perinatal infection – HBV, HCV, HIV



# HCV Seroprevalence in Emergency Departments

Study	Year	Location	Population	Anti-HCV	HCV RNA
Cornett, OFID 5(4): ofy065.	2018	Rutgers, NJ	Boomers	6.6%	2.4%
Hsieh, CID 62:1059	2016	Baltimore	All patients with blood draws	13.8%	--
Lyons, CID 62:1066	2016	Cincinnati	18-64	13.9%	11.1%
Franco, OFID3(4): ofw211	2016	Birmingham	Boomers	11%	7.6%
White, Ann Emerg Med 67: 119	2016	Oakland, CA	Boomers, PWID	10.3%	8.9%

# Anti-HCV and HCV RNA Prevalence in Corrections

Study	Year	Location	Population	Setting	Anti-HCV	HCV RNA
De la Flor Public Health Rep 132:617	2017	Dallas	Universal, opt-out	jail	16.4%	--
Akiyama, Public Health Rep 132: 41	2017	New York City	Boomers, risk	jail	20.6%	--
Hawks, J Viral Hepat 23:473	2016	Bronx, NY	Not specified	Post-release	33%	20.6%
Mahowald, J Correct Health Care 22: 41	2016	Pennsylvania	> 9 years	State system	18.1%	5.2%
Schoenbachler, Public Health Rep 131 Suppl 2: 98	2016	North Carolina South Carolina	All At risk / all	jails	13.2% 8.0%	9.8% 4.0%
Stockman, Public Health Rep 131: 544	2016	Wisconsin	≥ 18 years	prison	12.5%	8.9%