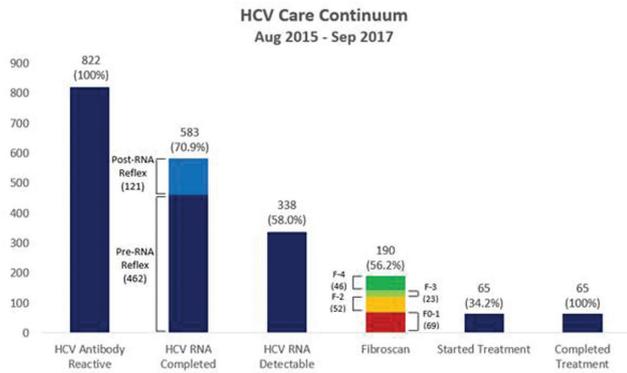


Figure 1. HCV Care Continuum



Conclusion. The HCV care continuum illustrates the stages at which barriers to accessing HCV medical care attenuate successful treatment of patients. The barriers and (mitigating solutions) are as follows: policy-level (e.g., insurance coverage), institutional-level (e.g., HCV RNA reflex testing), provider-level (e.g., EMR prompts), and patient-level (e.g., provision of support services).

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2214. Chronic Hepatitis C: Closing the Gap Towards Eradication—Screening Young Adults vs. Baby Boomers

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Background. Increasing rates of hepatitis C virus (HCV) infection are directly linked to the opioid and intravenous drug (IVD) epidemic. White and rural young adults have been affected disproportionately and most are unaware of their status. However, the CDC recommends HCV screening in persons born between 1945 and 1965 (baby boomers) with screening on others only based on exposures, behaviors, or comorbid conditions. Increased identification of affected individuals is the first step toward eradication of HCV infection

Methods. A prospective, observational study design was employed. We evaluated data collected between May 2016 to December 2017 from adults seen in the primary care, hospital, and emergency department settings at a large urban-based healthcare organization, located in an area with a high prevalence of intravenous (IV) drug use. Descriptive analyses followed by multivariable logistic regression to identify risk factors associations amongst age groups (1. general adult population, ages 18–52 years; 2. baby boomers ages 53–73 years; and 3. elderly age >74 years) were performed.

Results. A total of 59,563 patients were evaluated with a screening antibody. Unadjusted, the general adult population was more likely to have an AB positive screen (7.2% vs. 3.5% and 3.6% respective, $P < 0.001$), be RNA positive (4.9% vs. 1.7% and 1.5% respective, $P < 0.001$), and be Hispanic (3.3% vs. 1.1% and 0.8% respective, $P < 0.001$), while less likely to be a male (16.2% vs. 43.2% and 47.4%, $P < 0.001$). Adjusted (for pregnancy, gender, race and ethnicity) the general adult population is at increased odds of having an RNA positive test (OR = 4.4, 95% CI 3.7–5.0, $P < 0.001$) and an AB positive (OR = 2.9, 95% CI 2.2–3.9, $P < 0.001$), when compared with baby boomers

Conclusion. Efforts should be targeted to increase screening in younger cohorts as HCV is more prevalent in that group age. In areas affected by the opioid epidemic, revision of policies will decrease the gap toward elimination of HCV and universal screening will help to de-stigmatize this infection. Further, cost-efficiency studies will help inform policy makers of the best strategies to reduce transmission and increase linkage to care as next steps toward closing the gap in elimination of HCV infection

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2215. Polymerase Chain Reaction (PCR) for Detection of Vertically Acquired Hepatitis C Virus (HCV) Infection in Early Infancy

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Background. Many children born to HCV-infected mothers in the U.S. never receive recommended anti-HCV antibody (Ab) screening at age ≥ 18 months. Earlier testing by HCV-RNA PCR might facilitate increased screening, though prior studies using older PCR assays reported unacceptably low sensitivity of one-time PCR testing in infants. We hypothesized that testing at age 2–6 months using modern blood HCV-RNA PCR platforms with enhanced analytical sensitivity and reliability will adequately detect infected infants.

Methods. Medical records of vertically exposed infants tested for HCV-RNA at age 2–6 months at Nationwide Children's Hospital from January 1, 2008 to December 31, 2017 were reviewed. HCV-RNA tests included qualitative (in-house) and quantitative (ARUP reference lab) Cobas Taqman RT-PCR assays (Roche) with lower limits of detection of 1.2–1.9 \log_{10} IU/mL. Diagnostic performance of early PCR screening was determined using a composite gold standard: (1) infected children had ≥ 2 positive PCRs or persistently positive Ab after age 24 months; (2) uninfected children lacked these criteria and required documentation of a negative Ab at a point after age 18 months.

Results. During the study period, 639 vertically exposed infants underwent HCV-RNA testing at age 2–6 months. Of these, 24 (3.8%) tested positive, consistent with prior estimates of the vertical transmission rate. Blood HCV-RNA levels were high at screening (median 6.7 \log_{10} IU/mL, range 5.2–7.8 \log_{10} IU/mL), and confirmatory PCR tests were positive in all who had repeat testing ($n = 22$). Among 615 infants with negative PCR screening, 444 had reached age ≥ 18 months, of whom 144 had undergone Ab testing. Ab tests were negative in 142, while two children had low positive Ab results at 18 months. In both cases, repeat PCR and repeat Ab after age 24 months were negative, suggesting waning maternal Ab rather than true infection. Using the composite gold standard there were 22 true positive, 0 false-positive, 144 true negative, and 0 false negative cases, yielding a sensitivity of 100% (95% CI: 85–100% [Wilson-Brown]).

Conclusion. These findings demonstrate that modern blood HCV-RNA PCR assays have excellent sensitivity for detecting vertically infected infants as early as 2–6 months of age and may improve HCV surveillance given the substantial number of children lost to follow-up prior to 18 months Ab screening.

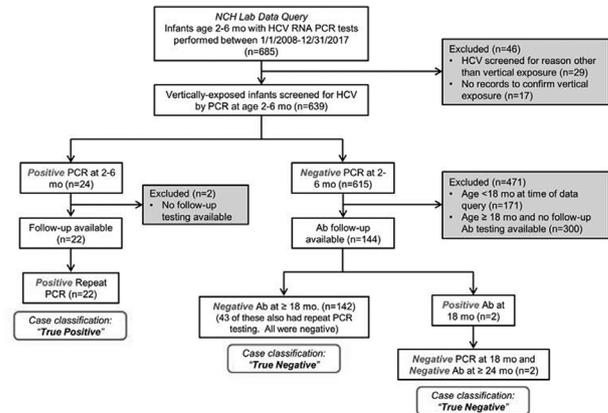


Figure 1. Follow-up testing among infants screened for HCV-RNA at age 2-6 months.

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2216. Hepatitis C Treatment Wanted Yet Not Received: Barriers to Receiving HCV Treatment Among People Who Inject Drugs

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Background. To expand hepatitis C (HCV) treatment for people who inject drugs (PWID), programs need to overcome barriers to initiating treatment. We asked HCV-infected PWID about past experiences with HCV care.

Methods. These data are collected from the first 44 participants enrolled in an ongoing study of HCV care for PWID delivered at a syringe services program in New York City. Eligible participants were HCV RNA positive and had injected drugs in the past 90 days. We used a structured interview to ask about prior linkage to HCV treatment and the reasons for not obtaining treatment.

Results. Among the 44 participants, mean age is 40 years; 73% are males; 48% Hispanic, 38% non-Hispanic white; 7% non-Hispanic black and 7% mixed-race or other. Almost all (96%) had health insurance, with 86% having public insurance (Medicaid). Most participants (91%) were aware of their HCV diagnosis before enrollment. All wanted to be treated for HCV, and 88% wanted treatment to prevent infecting others. 48% had previously been referred for HCV treatment, only 21% had been offered treatment, and none had started. When asked about barriers to treatment, 56% participants felt that they would need to stop using drugs to get HCV treatment, 61% felt that HCV treatment had many side effects and 20% reported insurance coverage barriers.

Conclusion. Among PWID enrolled at a syringe services program, all wanted HCV treatment; most to prevent infecting others. Despite high rates of insurance coverage and desire to be treated, most participants have neither been referred to HCV care nor offered treatment. Many participants also had misconceptions about HCV treatment eligibility and side effects. Providing HCV care and education in a low-threshold model, such as walk-in visits at community sites, may help alleviate these barriers.

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2217. Demographic Trends and Health Care Utilization Among Children With Hepatitis C Virus Infection

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Background. Hepatitis C virus (HCV) infection has received significant attention in recent years due to the ability for near universal cure, the price of therapy, and increasing incidence due to injection drug use. While the discussion largely focuses on HCV infection in adults, children with HCV are a consistent minority of patients with long-term adverse outcomes of HCV. Few studies have defined the healthcare utilization of HCV-infected children.

Objective: To define trends in pediatric HCV cases and healthcare utilization using a national administrative database.

Methods. The Pediatric Health Information Systems (PHIS) database contains inpatient encounter-level data from tertiary care pediatric hospitals in the United States. We identified pediatric HCV cases using validated ICD-9/ICD-10 diagnosis codes (070.41, 070.44, 070.51, 070.54, 070.70, 070.71, V0262, B18.2). We evaluated total cases identified, year of presentation, patient age, geographic location by state, aggregate cost of providing care and HIV-coinfection (ICD-9 code 042/ICD-10 code B20).

Results. Since 1992, there were 2,175 unique pediatric patients identified with HCV infection. Case rates were highest in patients 15–17 years with a peak of 24 cases/10,000 admissions that fell to 10 cases /10,000 in 2,000 and a low of 1 case/10,000 in 2015. Alarmingly, the rate in this group was back over two cases/10,000 in 2016 and 2017. HCV case rates in children 11–14 were the second highest with more sustained peak from 1992 to 2006 and no precipitous decline. There were 49 patients with HIV co-infection, with rates highest prior to 1998 (range of 6.5–18%), but since 2002 have been <2% until 2017 (2.5%). For inpatient costs, 10% of HCV infected children accounted for 75% of the total cost of care. In 2004–2006, total charges for 329 HCV-infected children were just over \$23 million, compared with 2015–2017 when total charges for 247 HCV-infected children were \$21.8 million. Comparing these two eras and adjusting for inflation, there was a 3% decline in charges per patient.

Conclusion. While the burden of inpatient HCV in children has declined since the peak in the early 1990s, there are worrisome increases detected in the last few years. A small minority of patients represent a disproportional amount of the total care provided. Early treatment of children would still likely prove cost-effective.

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2218. Low Hepatitis C Treatment Rates Among Patients Screened as Inpatients at a Rural Academic Medical Center

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Background. The rise in injection drug use in the rural United States has led to an increase in admissions for injection-related conditions. Hepatitis C (HCV) infection is prevalent amongst people who inject drugs and might be diagnosed during such episodes of acute care. Linkage to care and initiation of treatment for hepatitis C in this group has been difficult, especially in rural settings lacking comprehensive care for people with substance use disorder (SUD).

Methods. We reviewed the charts of patients admitted to an inpatient service at Dartmouth-Hitchcock Medical Center (DHMC) who had positive HCV serology in 2016. We determined the proportion of patients who had follow-up testing for HCV RNA, were referred, followed up and initiated treatment for HCV by the end of 2017.

Results. In 2016, 504 inpatients at DHMC were screened with an HCV antibody test, of which 65 (13%) were positive. Of these, 50 (77%) had follow-up HCV RNA testing, resulting in 38 (76%) patients with detectable viremia. Of the 53 patients with detected (38) or unknown viremia (15), five died on the index admission, one was discharged to a hospice, 16 were referred to the DHMC hepatology (GI) clinic and 11 to the DHMC infectious disease (ID) clinic, but 20 received no referral. Thirty-two (60%) patients had an active SUD, and 7 (13%) were in remission.

Through December 31, 2017, 15 (31%) of the surviving 48 patients had no further follow-up in the Dartmouth-Hitchcock Health System. Fourteen (29%) patients followed up in the GI clinic, 11 (23%) followed up in the ID clinic and 8 (17%) had subsequent encounters in clinics for conditions other than HCV. Only 5 (10%) patients were treated for HCV and achieved sustained virologic response (SVR), all of which had followed up in the GI clinic. The odds of follow-up or treatment were independent of a history of SUD. Providers frequently deferred treatment due to ongoing substance use or a focus on more urgent medical issues. Insurance coverage for direct-acting antivirals was evolving during the study period, preventing treatment in some patients.

Conclusion. Only 10% of patients screened positive for HCV during an inpatient admission to a rural academic medical center received treatment for HCV in the year following their diagnosis. Linkage to care, patient engagement and provider perceptions have to improve to achieve elimination of HCV.

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2219. Treatment Uptake for Hepatitis C Virus Infection in the Veterans Affairs Healthcare System in the Era of Directly Acting Antiviral Agents: An ERCHIVES Study

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Background. Knowledge about HCV treatment uptake, regimens and providers in the era of all-oral directly acting antiviral agents is critical for patients, providers, payers and policy makers. Our objective was to determine the number of persons initiated on HCV treatment over time, and trends in providers who initiate treatment

Methods. Among all HCV+ persons in ERCHIVES from 2001 to 2017, we identified all persons who initiated HCV treatment and medical specialty of the provider initiating treatment. Results were tabulated by VA fiscal year.

Results. A total of 108,133 persons were initiated on treatment (Figure 1). Sofosbuvir-based regimens were the most commonly used regimens, accounting for nearly two-thirds of all DAA regimens. Gastroenterologists/hepatologist were the most common initiators of treatment in the pre-DAA era accounting for 26.7% of all prescriptions in 2001–2011 but only 10.3% in 2017 (Figure 2). Allied health professionals accounted for only 7.2% of treatment initiations in the 2001–2011 period but were the most frequent prescribers in 2017 (22.2%). Ratio of persons initiated on treatment to new HCV diagnoses reversed in 2013 for HCV mono-infected persons and in 2014 for HCV/HIV co-infected persons, with new treatment initiations far outnumbering new infections.

Conclusion. There has been a dramatic increase in HCV treatment uptake in the VA healthcare system with the approval of newer all-oral DAA regimens. Treatment paradigm appears to be shifting toward lesser gastroenterologists/hepatologists and more allied health professionals treating HCV.

Figure 1. New hepatitis C virus infection diagnoses and treatments initiated per month for Veterans with hepatitis C virus infection.

