

Characteristics of Persons Treated for Hepatitis C Using National Pharmacy Claims Data, United States, 2014–2020

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Using national pharmacy claims data for 2014–2020, 843 329 persons were treated for hepatitis C at least once. The proportion treated increased annually among persons aged <40 years, insured by Medicaid, and treated by primary care providers. Monitoring hepatitis C treatment is essential to identify barriers to treatment access.

Keywords. hepatitis C; HCV; direct-acting antivirals; IQVIA.

In the United States, hepatitis C virus (HCV) infection is a leading cause of chronic liver disease, liver cirrhosis, and liver cancer. An estimated 2.4 million persons were living with chronic HCV infection during 2013–2016 [1]. Beginning in 2013, highly effective, well-tolerated, all-oral, direct-acting antiviral agents (DAAs) became available to treat hepatitis C. Treatment with DAAs reduces hepatitis C–related morbidity and mortality and also benefits public health by interrupting HCV transmission [2, 3]. Treatment is recommended for nearly all HCV-infected persons [4]. However, there remains a huge disparity in access to treatment among HCV-infected persons [5]. In 2016, the World Health Organization (WHO) proposed a global health sector strategy to eliminate hepatitis C as a public health threat by 2030 and developed an action plan to facilitate this goal. In response to the WHO action plan, the National Academies of Science, Engineering, and Medicine (NASEM) developed a US strategy for the elimination of hepatitis C [6]. A key element of the elimination plan includes expanded treatment access. In the United States, the characteristics of persons treated for HCV infection are not well described. Monitoring hepatitis C treatment is essential to measure progress toward elimination, to ensure access to treatment among different population groups, and to identify barriers and facilitators to treatment access. We sought

to describe the characteristics of persons treated for hepatitis C using national pharmacy claims data.

METHODS

Data on DAAs prescribed during 2014–2020 were obtained from IMS Health & Quintiles (IQVIA), which is a longitudinal prescription claims database that captured hepatitis C DAA prescriptions from an average of 93% of retail pharmacies, 69% of mail order pharmacies, and 76% of long-term care pharmacies in the United States over this time period. Data from “atypical” pharmacies, including hospital pharmacies, clinic pharmacies, correctional facilities, dispensing physicians, closed-wall health maintenance organizations, and home healthcare, are included in the IQVIA dataset; however, hepatitis C treatment data from the Veteran’s Affairs health system are not included.

For each DAA prescription in the database, IQVIA includes type of DAA prescribed, prescriber, payer information, and demographic characteristics of the prescription recipient. IQVIA acquired medical claims and race/ethnicity data from various sources, including ambulatory, hospital, and consumer databases, and linked these data to persons in the prescription database. More detailed information about the dataset is provided by IQVIA Inc (Powering Healthcare with Connected Intelligence—IQVIA). We determined the number of persons prescribed DAAs during 2014–2020 and describe the characteristics of payers, prescribers, and recipients of HCV DAAs. Only characteristics of the initial treatment course were included in this analysis; an HCV DAA prescription filled >6 months after a prior prescription was considered a subsequent treatment course. Analysis was performed using SAS 9.4 (SAS Institute, Cary, NC).

RESULTS

During 2014–2020, 843 329 persons received DAAs for treatment of hepatitis C in national pharmacy claims data (Supplementary Material, Figure 1), with the highest number of DAAs recorded in 2015. Among recipients, 59.6% were male, 39.2% were female, and 64.6% were “baby boomers” (persons born during 1945–1965). Approximately 27 800 (3.3%) were treated more than once. The proportion of all treated persons in the baby boomer cohort decreased from 73.6% in 2014 to 46.3% in 2020; whereas the proportion of all treated persons born after 1965 increased from 17.4% to 51.3% over this same period. Commercial insurers, Medicare, and Medicaid paid the claims for 42.1%, 33.0%, and 21.1% of treated persons during 2014–2020, respectively. From 2014 to 2020, the proportion of persons whose claim was paid for by Medicaid increased from

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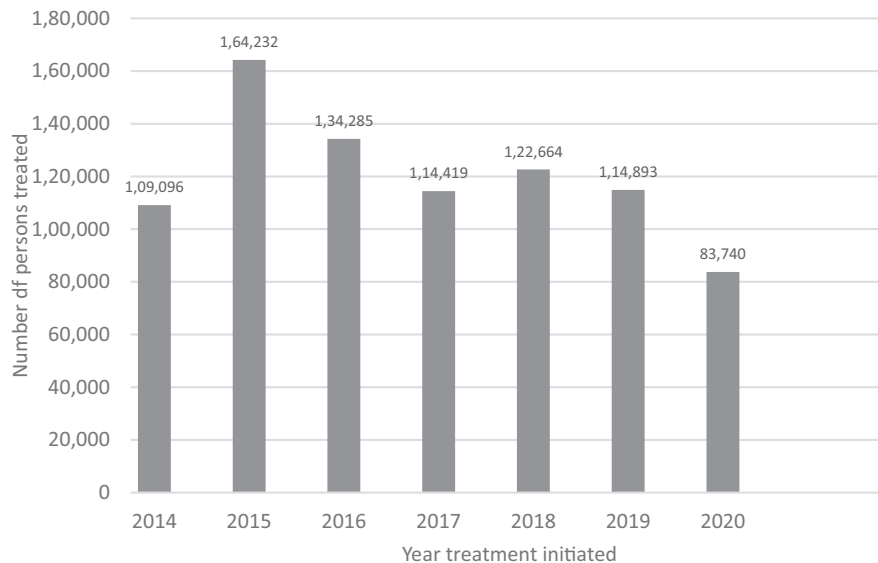


Figure 1. Number of persons treated for hepatitis C with direct-acting antiviral agents by year, United States, 2014–2020. Data from IMS Health & Quintiles longitudinal prescription claims database.

9.7% to 34.1%, while claims paid by Medicare decreased from 31.3% to 25.8%. Race/ethnicity information was missing for 66.8% of treated persons; for those with information on race/ethnicity available ($n = 279\,985$), 68.2% were White, 19.3% were Black, 10.3% were Hispanic, and 2.2% were Asian (data not shown).

Overall, 59.8% of prescribers were specialists (eg, gastroenterologists, hepatologists, and infectious diseases specialists; Supplementary Material). The proportion of persons treated by specialists decreased from 67.9% in 2014 to 46.5% in 2020. During the same period, the proportion of prescriptions written by nurse practitioners increased from 13.7% to 25.8% and the proportion treated by primary care providers increased from 7.1% to 16.4%. Among census regions, 38.7% of treated persons resided in the Southern region, whereas 16.8% resided in the Midwest region of the United States.

DISCUSSION

Using national pharmacy claims, we found that 843 329 people were treated for hepatitis C during 2014–2020. The annual number of persons treated was highest in 2015, soon after DAAs became widely available; the number was substantially lower in 2020 during the coronavirus disease 2019 pandemic. Although IQVIA provides a comprehensive picture of HCV DAA prescribing patterns nationally, estimates for prescription coverage of HCV DAAs by channel type varied over the study period as follows: retail pharmacies (range, 91%–95%), mail order pharmacies (range, 66%–76%), and long-term care pharmacies (range, 73%–86%). When adjusting for nonparticipating pharmacies using prescribing patterns observed in the IQVIA data, we estimate that 1.08 million persons were treated during this

period. When accounting for approximately 110 000 persons treated by the Veteran’s Health Administration [6], we estimate 1.2 million persons were treated, which equates to an average of 171 000 patients prescribed HCV DAAs annually. This number is far below the goal set by the NASEM, that is, that 260 000 patients be treated annually to eliminate hepatitis C as a public health threat by 2030 [7].

In the United States during 2013–2018, an estimated 61% of people with hepatitis C were aware of their infection. Lack of awareness of HCV infection status is a significant barrier for linking patients to care, which is necessary for access to DAA treatment. To accomplish the national goal of eliminating hepatitis C, it is imperative that both awareness of HCV infection status and linkage to care for HCV-infected persons are improved. To this end, in 2020, the Centers for Disease Control and Prevention (CDC) issued new testing guidelines that recommend that all adults get tested for hepatitis C at least once in their lifetime and that all persons with risk factors for hepatitis C get tested periodically while risk factors persist [8].

Similar to other studies, our study found that 65% of persons treated with DAAs during 2014–2020 were baby boomers [5]. This could partly be explained by the fact that following the 2012 CDC testing recommendations, most testing and treatment programs followed the recommendations targeting this population. Following a peak in 2015, the number and proportion of persons treated who were baby boomers have been steadily declining. In the United States, most new HCV infections are among persons aged 18–40 years and is associated with injection drug use. It is important that we use treatment data to assess the ability for these populations to access care and receive treatment [9]. This study found that the number and proportion of persons treated who

were aged <40 years has increased in recent years. Improving access to treatment for young persons will not only reduce hepatitis C–related morbidity and mortality but also prevent ongoing transmission.

Pharmacy claims data are an important tool to evaluate programs and policies to improve access to treatment. The NASEM recommends several important policy considerations to improve access to DAAs, including removing restrictions (eg, sobriety and stage of liver fibrosis) for Medicaid coverage and removing the requirements for specialist prescribers [7]. The proportion of treated persons covered by Medicaid increased nearly 4-fold over the study period. These are encouraging signs of improving access to DAA treatment, likely reflective of the incremental lifting of state Medicaid policy restrictions. There is growing evidence that HCV treatment administered by non-specialist providers is as effective as that provided by specialists [10]. Our data show that while the majority of DAA prescriptions were prescribed by specialists in 2014, the proportion prescribed by specialists decreased throughout the study period, while the proportion prescribed by primary care providers increased.

Our analysis has some limitations. Data on race and ethnicity were missing for more than two-thirds of participants. There is no data to allow us to confirm that the filled prescription medication indicate that it was used as prescribed; however, studies have shown that adherence to HCV DAA treatment is high, even among persons at risk for poor adherence (eg, people who inject drugs) [11]. Last, although treatment with DAAs is associated with a high sustained virologic response, there is no virologic data available for this study population.

The availability of highly effective, all-oral DAAs has presented the world with an important public health opportunity, making the “idea” of hepatitis C elimination within reach. However, for the elimination goals to be fully realized, these initial gains need to be met with a rapid scale-up in testing and treatment. The CDC’s new expanded testing recommendations must be adopted in order to increase awareness of HCV infection status and prompt immediate linkage to curative HCV therapy. In addition, policies need to be enacted to improve access to hepatitis C treatment, particularly for medically

underserved populations that are disproportionately affected by this disease.

Supplementary Data

Supplementary materials are available at *Clinical Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

Notes

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Disclaimer. The findings and conclusions presented here are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Potential conflict of interest. The authors: No reported conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

References

1. Hofmeister MG, Rosenthal EM, Barker LK, et al. Estimating prevalence of hepatitis C virus infection in the United States, 2013–2016. *Hepatology* **2019**; 69:1020–31.
2. Carrat F, Fontaine H, Dorival C, et al. Clinical outcomes in patients with chronic hepatitis C after direct-acting antiviral treatment: a prospective cohort study. *Lancet* **2019**; 393:1453–64.
3. Hellard M, McBryde E, Sacks Davis R, et al. Hepatitis C transmission and treatment as prevention—the role of the injecting network. *Int J Drug Policy* **2015**; 26:958–62.
4. Ghany MG, Morgan TR, AASLD-IDSAs Hepatitis C Guidance Panel. Hepatitis C guidance 2019 update: American Association for the Study of Liver Diseases-Infectious Diseases Society of America Recommendations for Testing, Managing, and Treating Hepatitis C Virus Infection. *Hepatology* **2020**; 71:686–721. doi:10.1002/hep.31060
5. Spradling PR, Xing J, Rupp LB, et al. Low uptake of direct-acting antiviral therapy among hepatitis C patients with advanced liver disease and access to care, 2014–2017. *J Clin Gastroenterol* **2021**; 55:77–83.
6. US Department of Veteran Affairs, Office of Public and Intergovernmental Affairs. VA on path to cure 100,000 veterans of hepatitis C. Available at: <https://www.va.gov/opa/pressrel/pressrelease.cfm?id=5219>. Accessed 16 August 2019.
7. A National Strategy for the Elimination of Hepatitis B and Phase Two Report. **2017**. Washington, DC: The National Academies Press. doi:10.17226/24731
8. Schillie S, Wester C, Osborne M, Wesolowski L, Ryerson AB. CDC recommendations for hepatitis C screening among adults—United States, 2020. *MMWR Recomm Rep* **2020**; 69:1–17.
9. Centers for Disease Control and Prevention. 2019 Viral Hepatitis Surveillance Report. <https://www.cdc.gov/hepatitis/statistics/SurveillanceRpts.htm>. Published July 2021. Accessed 14 May 2021.
10. Kattakuzhy S, Gross C, Emmanuel B, et al. Expansion of treatment for hepatitis C virus infection by task shifting to community-based nonspecialist providers: a non-randomized clinical trial. *Ann Intern Med* **2017**; 167:311–8.
11. Cunningham EB, Amin J, Feld JJ, Bruneau J, et al. Adherence to sofosbuvir and velpatasvir among people with chronic HCV infection and recent injection drug use: the SIMPLIFY study. *Int J Drug Policy* **2018**; 62:14–23.