Restrictions for Medicaid Reimbursement of Sofosbuvir for the Treatment of Hepatitis C Virus Infection in the United States

Soumitri Barua; Robert Greenwald, JD; Jason Grebely, PhD; Gregory J. Dore, MBBS, PhD; Tracy Swan; and Lynn E. Taylor, MD

The aim of this study was to systematically evaluate state Medicaid policies for the treatment of hepatitis C virus (HCV) infection with sofosbuvir in the United States. Medicaid reimbursement criteria for sofosbuvir were evaluated in all 50 states and the District of Columbia. The authors searched state Medicaid Web sites between 23 June and 7 December 2014 and extracted data in duplicate. Any differences were resolved by consensus. Data extracted were whether sofosbuvir was covered and criteria for coverage based on the following categories: liver disease stage, HIV co-infection, prescriber type, and drug or alcohol use. Of the 42 states with known Medicaid reimbursement criteria for sofosbuvir, 74% limit sofosbuvir access to persons with advanced fibrosis (Meta-Analysis of Histologic Data in Viral Hepatitis [META-VIR] fibrosis stage F3) or cirrhosis (F4). One quarter of states require persons co-infected with HCV and HIV to be receiving antiretroviral therapy or to have suppressed HIV RNA levels. Two thirds of states have restrictions based on prescriber type, and 88% include drug or alcohol use in their sofosbuvir eligibility criteria, with 50% requiring a period of abstinence and 64% requiring urine drug screening. Heterogeneity is present in Medicaid reimbursement criteria for sofosbuvir with respect to liver disease staging, HIV co-infection, prescriber type, and drug or alcohol use across the United States. Restrictions do not seem to conform with recommendations from professional organizations, such as the Infectious Diseases Society of America and the American Association for the Study of Liver Diseases. Current restrictions seem to violate federal Medicaid law, which requires states to cover drugs consistent with their U.S. Food and Drug Administration labels.

Ann Intern Med. doi:10.7326/M15-0406

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This article was published online first at www.annals.org on 30 June 2015.
provides health insurance for low-income persons meeting the program’s eligibility criteria. Each state has wide discretion in administering its own Medicaid program. Although this creates unique Medicaid programs in each state, states must follow some federal standards (16). These include covering all FDA-approved drugs, consistent with FDA labeling, whose manufacturers participate in Medicaid’s prescription drug rebate program (19), and not discriminating in drug coverage—a state “may not arbitrarily deny or reduce the amount, duration, or scope of a required service . . . to an otherwise eligible beneficiary solely because of the diagnosis, type of illness, or condition” (20).

In 2014, the American Association for the Study of Liver Disease and the Infectious Diseases Society of America (AASLD/IDSA) issued recommendations (21) for testing, managing, and treating HCV (which are updated regularly). Little is known about the consistency in applying these guidelines by state Medicaid committees to reimbursement criteria for sofosbuvir. The aim of this study was to systematically evaluate state Medicaid policies for the reimbursement of sofosbuvir for HCV treatment in the United States.

**Methods**

We evaluated Medicaid reimbursement criteria for sofosbuvir for all 50 states and the District of Columbia. We searched state Medicaid Web sites between 23 June and 7 December 2014. Locating criteria for coverage was difficult. Each state has different means of organizing Medicaid information online, no consistent word search was able to locate each policy, and each state required a different process to find the appropriate policies or forms. As such, this search was confined to online information. When state policy was unclear, and when states did not operate a fee-for-service pharmacy program, we indicated that the state criteria and policies were unknown. Only states with fee-for-service programs were included.

Data were extracted by 2 coauthors in duplicate and entered into a standardized spreadsheet; 2 different coauthors crosschecked the extracted data. Any differences were resolved by consensus. Each entry was double-checked by another coauthor to ascertain accuracy. For each state, the following data were extracted from Medicaid reimbursement criteria: whether sofosbuvir was covered (paid for by Medicaid) and the criteria for coverage. Most Medicaid programs require preapproval of certain medications before a patient may receive them, and providers must complete this prior authorization. For each state, Medicaid prior authorization criteria for sofosbuvir were also extracted, where available. The date of the state Medicaid reimbursement publication and uniform resource locators of the prior authorization and the preferred drug list were recorded and entered into a database (Microsoft Excel, version 14.4.4 [Microsoft]).

CITERA for sofosbuvir coverage based on the following categories were recorded: liver disease stage, HIV co-infection, prescriber type, and drug or alcohol use. For criteria about liver disease staging, data were collected on the level of fibrosis required for reimbursement (either none indicated, Meta-Analysis of Histologic Data in Viral Hepatitis [METAVIR] fibrosis stage F2 or higher, or F3 or F4), eligibility for persons with decompensated cirrhosis, and whether a liver biopsy was mandatory to provide evidence of advanced fibrosis. For criteria about HIV co-infection, data were collected on whether HIV status needed to be documented, and if positive, whether the patient had to be receiving antiretroviral therapy (ART) or have suppressed HIV RNA levels. For prescriber type, data were collected on whether the prescriber had to be a specialist (gastroenterology, hepatology, infectious diseases, or liver transplantation) or whether treatment decisions needed to be made in consultation with a specialist. For criteria about drug or alcohol use, data were collected on whether there were any substance-related access criteria, and if so, whether drug or alcohol counseling was required, whether patients had to be evaluated for drug and/or alcohol dependence, whether a period of abstinence was required (1, 3, 6, or 12 months) before sofosbuvir therapy, and whether drug or alcohol testing and/or treatment was required before sofosbuvir therapy.

**Results**

Overall, 42 states (82%), including the District of Columbia, had publicly available information about Medicaid reimbursement criteria for sofosbuvir (Tables 1 and 2 and Figures 1 and 2). Nevada is the only state that does not require prior authorization for sofosbuvir. Nine states have unknown criteria, with neither the prior authorization nor eligibility information publicly available.

Of the 42 states, including the District of Columbia, with known Medicaid reimbursement criteria for sofosbuvir, 81% (n = 34) restrict sofosbuvir reimbursement on the basis of liver disease stage (Table 1). In 4 states (10%), reimbursement is restricted to only persons with cirrhosis (F4). In two thirds of states (n = 27), sofosbuvir reimbursement is restricted to persons with advanced fibrosis (F3) or cirrhosis (F4). In 2 states (5%) and 1 state (2%), reimbursement is also provided for those with moderate (F2) and mild (F1) fibrosis, respectively. In the remaining states, no reimbursement criteria are based on disease stage (n = 8 [19%]). Sofosbuvir use is restricted in persons with decompensated cirrhosis in 7 states (17%). Colorado is the only state that explicitly includes persons with decompensated cirrhosis. Liver biopsy staging is required for demonstrating cirrhosis in 5 states (12%), although Arkansas also requires a liver biopsy for evidence of bridging fibrosis (F3). In Tennessee, a liver biopsy or transient elastography are the only options allowed to demonstrate cirrhosis.

Nineteen states (45%) require information about HIV status. Ten (24%) require that patients be receiving ART or have evidence of HIV virologic suppression.

Twenty-nine states (69%) have restrictions based on prescriber type. In 14 states (33%), the prescriber...
has to be a specialist (gastroenterology, hepatology, infectious diseases, or liver transplantation), whereas in 15 states (36%), treatment decisions can be made by a nonspecialist after consultation with a specialist.

Of the 42 states, including the District of Columbia, with known Medicaid reimbursement criteria for sofosbuvir, 88% of states \((n = 37)\) include drug or alcohol use in their eligibility criteria for sofosbuvir reimbursement. Eight states (19%) require that all patients be evaluated for substance use disorder or alcohol dependence, and 50% of states \((n = 21)\) require a period of abstinence from drugs or alcohol use or abuse for all patients (Table 2). An additional 9 states (21%) require abstinence only for patients with a history of substance abuse.

### Table 1. U.S. State Eligibility/Ineligibility Criteria for Sofosbuvir Approval*

<table>
<thead>
<tr>
<th>Requirement</th>
<th>States, (n)</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibrosis†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None indicated</td>
<td>8</td>
<td>Alabama, Massachusetts, Minnesota, Mississippi, North Carolina, Nevada,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Utah, and Wyoming</td>
</tr>
<tr>
<td>Minimum stage F2</td>
<td>3</td>
<td>Maryland, Maine, and Oklahoma</td>
</tr>
<tr>
<td>Minimum stage F3–F4</td>
<td>31</td>
<td>Alaska; Arkansas; Arizona; California; Colorado; Connecticut;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Washington, DC; Delaware; Florida; Iowa; Idaho; Illinois; Indiana;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kentucky; Louisiana; Missouri; Nebraska; New Hampshire; New York;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ohio; Oregon; Pennsylvania; Rhode Island; South Dakota;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tennessee; Virginia; Vermont; Washington; Wisconsin; and West Virginia</td>
</tr>
<tr>
<td>Decompensated cirrhosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ineligible</td>
<td>7</td>
<td>Alaska; Washington, DC; Idaho; Kentucky; Oklahoma; Tennessee; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Washington</td>
</tr>
<tr>
<td>Eligible</td>
<td>1</td>
<td>Colorado</td>
</tr>
<tr>
<td>Mandatory liver biopsy to prove cirrhosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver biopsy</td>
<td>5</td>
<td>Alabama**, Arkansas, Iowa, Louisiana††, and Nebraska</td>
</tr>
<tr>
<td>Liver biopsy or elastography</td>
<td>1</td>
<td>Tennessee††</td>
</tr>
<tr>
<td>HIV co-infection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requests documentation of HIV status</td>
<td>19</td>
<td>Alaska; Alabama; Arizona; California; Washington, DC; Delaware;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Florida; Louisiana; Massachusetts; Maryland; Nebraska; New Hampshire;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New York; Ohio; Oregon; South Carolina; Vermont; Wisconsin; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>West Virginia</td>
</tr>
<tr>
<td>If HIV co-infection, the patient must be receiving ART or have a controlled viral load</td>
<td>10</td>
<td>Alaska§§; Alabama§§; Arizona§§; California§§; Washington, DC;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delaware§§; Florida§§; Maryland§§; New York; and West Virginia§§</td>
</tr>
<tr>
<td>Prescriber limitations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Must be a hepatologist, gastroenterologist, or infectious diseases or liver transplantation physician</td>
<td>14</td>
<td>Florida, Iowa, Indiana, Louisiana, Maryland, Maine, New Hampshire,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Wisconsin, and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Washington***</td>
</tr>
<tr>
<td>By or in consultation with one of these physicians</td>
<td>15</td>
<td>Arizona; California; Colorado; Connecticut; Washington, DC; Idaho;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Illinois††; Kentucky; Mississippi; Montana; Oklahoma; Oregon; South</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dakota; Virginia; and West Virginia</td>
</tr>
<tr>
<td>None indicated</td>
<td>13</td>
<td>Alabama, Alaska, Arkansas, Delaware, Iowa, Massachusetts, Missouri,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nebraska, North Carolina, Minnesota, Utah, and Wyoming</td>
</tr>
<tr>
<td>Prior authorization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown information on prior authorization</td>
<td>9</td>
<td>Georgia, Hawaii, Kansas, Michigan, New Jersey, North Dakota, New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico, South Carolina, and Texas</td>
</tr>
<tr>
<td>State without this requirement</td>
<td>1</td>
<td>Nevada</td>
</tr>
</tbody>
</table>

ART = antiretroviral therapy.
* When states are not included in a category, it is not certain whether they are providing or denying access to sofosbuvir on the basis of that limitation, only that there is not a written rule in their publicly reported policy.
† Meta-analysis of Histologic Data in Viral Hepatitis (METAVIR) fibrosis stage (F0–F4).
‡ Defined as a Child–Pugh score >6 (class B or C).
§ Must be F4.
∥ Must have state Medicaid provider identification.
** For F3.
†† Only two options given for proving cirrhosis.
§§ Requires either HIV viral load (copies/mL) or CD4+ cell count \((×10^9\) cells/L).
¶¶ Must have state Medicaid provider identification.
*** State Medicaid provider identification or prescriber is participating in and/or consults with Project Extension for Community Healthcare Outcomes (22).
††† Only first prescription needs consultation.
restrictions based only on drug or alcohol use criteria, based only on advanced liver disease, 19\% (\(n=3\)) had no restrictions on advanced liver disease nor drug or alcohol use criteria.

### Discussion

Considerable heterogeneity is present in Medicaid reimbursement criteria for sofosbuvir across the United States. Restrictions based on liver disease severity are common, with three quarters of states restricting sofos-
buvir to persons with advanced fibrosis (F3) or cirrhosis (F4). One quarter of states require that persons living with HIV be receiving ART or have suppressed HIV RNA levels, whereas two thirds restrict sofosbuvir on the basis of prescriber type. Drug or alcohol use is included in the eligibility criteria of 88% of state Medicaid committees, with half requiring a period of abstinence and two thirds requiring urine drug screening. The restrictions are not consistent with the FDA-approved labeling for sofosbuvir or evidence-based recommendations and should be reconsidered (23).

Most states restrict sofosbuvir reimbursement to persons with advanced fibrosis (F3) or cirrhosis (F4), which is inconsistent with recent AASLD/IDSA recommendations (20). These recommendations state that HCV treatment is indicated for all patients with chronic HCV (regardless of disease stage) because HCV therapy is curative; improves quality of life; slows liver disease progression; and reduces the risk for cirrhosis, end-stage liver disease, HCC, and all-cause mortality (21). The recommendations state that patients at highest priority for immediate treatment include those with advanced fibrosis (F3) or compensated cirrhosis (F4) because of the higher risk for severe complications (for example, hepatic decompensation or HCC). Patients with fibrosis (F2) are listed in the next priority group for treatment because of their high risk for complications (21). However, most states do not include persons with fibrosis (F2) in their Medicaid reimbursement criteria. Note that persons with advanced fibrosis remain at risk for HCC even after achieving sustained virologic response (SVR) and must have long-term surveillance (24). In contrast, once HCV is cured in persons with mild to moderate liver disease, liver disease progression is rare. Requiring liver biopsy may pose the highest risk for death in HCV care with all-oral regimens.

The requirement that HIV-infected persons be receiving ART or have suppressed HIV RNA levels is also inconsistent with AASLD/IDSA recommendations indicating that persons co-infected with HIV and HCV are also at high priority for treatment because of their high risk for complications (21). HIV accelerates the HCV disease course, with faster progression to cirrhosis, liver failure, and increased HCV-related mortality (25–27). The safety and efficacy of sofosbuvir-based, interferon-free combination therapy for co-infected persons is similar to results among those with HCV monoinfection (21, 28, 29). Reasons are varied about why co-infected persons may not be receiving ART (for example, normal CD4+ T-cell counts and low HIV RNA levels) or have suppressed HIV RNA levels (for example, drug-resistant HIV). Physicians who treat such co-infected persons...
may prefer to commence and complete HCV treatment first, before ART initiation, because HCV therapy is brief; further, DAA therapy often limits what antiretrovirals can be used concomitantly because of drug–drug interactions.

Two thirds of states have restrictions based on physician type, which is inconsistent with current practice whereby internists, other primary care physicians, HIV physicians not trained as infectious diseases specialists, nurse practitioners, and physician assistants treat HCV with pegylated interferon and ribavirin. The availability of sofosbuvir-based, interferon-free regimens simplifies therapy and reduces treatment-associated toxicities, which offers an opportunity for an expanded provider base for HCV treatment in patients without advanced cirrhosis (30).

The overwhelming majority of states restrict access to sofosbuvir for persons who inject drugs (PWID), those receiving treatment for drug dependency (for example, opioid substitution therapy), and those drinking alcohol. Most new and existing cases of HCV in the United States exist among current or former PWID (31). Since 2002, the National Institutes of Health HCV guidelines support HCV treatment regardless of injection drug use (32), and the AASLD/IDSA, European Association for the Study of the Liver, International Network on Hepatitis in Substance Users, and World Health Organization all advocate for inclusion of persons who use drugs in HCV treatment (21, 33-35). A growing body of evidence shows that there is no justification for systematically withholding HCV treatment from PWID (21, 33, 36). The SVR rates are similar in PWID with or without opiate replacement therapy (21, 33, 36-39). Drug use in the 6 months preceding HCV therapy initiation is not necessarily associated with poorer response to HCV therapy (40-42). Reported rates of reinfection after SVR among PWID are low—generally a 1% to 5% risk per year, although concerns about reinfection rates in other subpopulations, such as surgeons, do not garner similar attention (33, 43). Rather than recommending the exclusion of PWID, AASLD/IDSA guidelines include PWID with earlier liver disease stages among a second-order priority group because of the prevention benefit of potential treatment; HCV treatment among PWID may decrease HCV transmission (21). In addition, evidence shows that HCV treatment of current and former PWID is cost-effective, particularly when the prevention benefits are consid-

![Figure 2. Medicaid reimbursement criteria for sofosbuvir based on the required period of abstinence from drug and alcohol use.](http://annals.org/annals/article-abstract/2431910/2431910)
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Evidence-based Medicaid criteria will permit greater access to DAAs. As the HCV standard of care changes over time, it will be inefficient and costly to have differing treatment access protocols in the 51 fee-for-service programs and many more Medicaid managed care plans, with all of them being revised over time. More consistency is needed across the system so that where a Medicaid patient lives does not dictate what treatment she or he receives. Although this study examined sofosbuvir in particular, the first FDA-approved DAA as part of an interferon-free regimen, Medicaid may be setting a precedent as new DAAs are approved. Medicaid policies should be responsive to changes in standards of care and new treatment developments. State Medicaid pharmacy and therapeutics committees (or their equivalent) are generally responsible for implementing these policy changes and should be expected to act as expeditiously as possible to ensure that significant clinical changes are addressed in state Medicaid programs. These data suggest that state Medicaid policies for access to new DAAs should be reviewed and revised in line with national clinical recommendations.

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Note: Dr. Taylor and Mr. Greenwald had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Dr. Taylor affirms that she has listed everyone who contributed significantly to the work. There was no involvement of any pharmaceutical company or commercial entity in the preparation of this work.

Disclaimer: The views expressed in this publication do not necessarily represent the position of the Australian government. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Allergy and Infectious Diseases or the National Institutes of Health.

Acknowledgment: The authors thank Evan Cunningham (The Kirby Institute, University of New South Wales, Sydney, Australia) for his assistance with preparing the figures for this manuscript; Amy Rosenberg (Center for Health Law and Policy Innovation, Harvard Law School, Cambridge, Massachusetts) for her suggested edits; and Kellen Wittkop and Sam Hammond (Center for Health Law and Policy Innovation, Harvard Law School, Cambridge, Massachusetts) for assistance with data collection.

Financial Support: The Kirby Institute is funded by the Australian Government Department of Health and Ageing. Dr. Gribely is supported by a National Health and Medical Research Council Career Development Fellowship. Mr. Greenwald is supported by Harvard Law School. Dr. Taylor is supported by a Rhode Island Innovation Fellowship from the Rhode Island Foundation for her “Rhode Island Defeats Hep C” project and the Lifespan/Tufts/Brown Center for AIDS Research (grant P30AI042853 from the National Institute of Allergy and Infectious Diseases). Ms. Barua was supported by the Lifespan/Tufts/Brown Center for AIDS Research Summer Student Internship program (grant P30AI042853).
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Obtaining of funding: S. Barua, L.E. Taylor.
Administrative, technical, or logistic support: S. Barua, J. Grebely, L.E. Taylor.
Collection and assembly of data: S. Barua, R. Greenwald, J. Grebely, L.E. Taylor.