Hepatitis C treatment uptake in WA



Uptake of antiviral treatment for chronic hepatitis C, October 2019 to March 2020

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# Contributors/Editors

Kellie Mitchell, Donna Mak, Lisa Bastian, Carolien Giele and Jude Bevan

Immunisation, Surveillance and Disease Control Program Communicable Disease Control Directorate Department of Health, Western Australia PO Box 8172 Perth Business Centre Western Australia 6849

Telephone: (08) 9222 0255

Facsimile: (08) 9222 0254

Web: ww2.health.wa.gov.au

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Every endeavour has been made to ensure that the information provided in this document was accurate at the time of writing. However, infectious disease testing and notifications data are continuously updated and subject to change. As no formal statistical testing has been conducted, some caution should be taken in interpreting differences and trends in this report.

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# Key points

* On 1 March 2016, new direct acting antiviral (DAA) oral regimens were listed on the Pharmaceutical Benefits Scheme (PBS) for the treatment of chronic hepatitis C virus infection (HCV).
* This report describes the number of WA residents who initiated DAA treatment for chronic HCV in the current reporting period (October 2019 to March 2020) and compares these trends to those found in the first reporting period (March 2016 to September 2016).
* A total of 7,820 residents, representing 41.9% of residents living with chronic HCV in WA, have initiated the new DAA treatment since it was introduced in March 2016.
* The highest initiation rate was among males and those aged 40 to 59 years.
* In most regions, high DAA treatment initiation rates were associated with historically high HCV notification rates.
* Sofosbuvir + velpatasvir and glecaprevir + pibrentasvir were the most commonly prescribed DAA treatment regimens, following their listing on the PBS in August 2017 and August 2018, respectively.
* There was an increase in the proportion of residents prescribed DAA treatment by a GP.
* There was an increase in the proportion of residents who were dispensed treatment through the PBS General Schedule (‘Section 85’) and from community pharmacies.
* There was a 26% increase in the number of unique prescribers for DAA treatment in WA.
* The majority of prescribers treated only one patient, but a higher proportion of specialists compared to GPs, treated ten or more patients.

# Executive summary

On 1 March 2016, new direct acting antiviral (DAA) oral regimens were listed on the Pharmaceutical Benefits Scheme (PBS) for the treatment of chronic hepatitis C infection (HCV). The aim of this report is to describe the number of people in Western Australia (WA) who initiated DAA treatment for chronic HCV in the current reporting period from October 2019 to March 2020 by patient demographics, regimen, dispensing and prescriber characteristics, and to compare trends from this period to those found in the first reporting period from March 2016 to September 2016.

A total of 7,820 residents, representing 41.9% of residents living with chronic HCV in WA, have initiated the new DAA treatment since it was introduced in March 2016. Based on the total population rather than the population living with chronic HCV, the highest initiation rate in both reporting periods was among males and those aged 40 to 59 years. The proportion of WA residents initiating treatment who were aged less than 50 years increased from 37% in the first reporting period to 66% in the current reporting period. In both reporting periods, approximately equal proportions of residents were categorised as Concession and General patients. In the current reporting period, the highest initiation rate was among residents in the Great Southern which was the only region with a significantly higher initiation rate than the state as a whole.

The most commonly prescribed DAA treatment regimens in the current reporting period were sofosbuvir + velpatasvir and glecaprevir + pibrentasvir, following their listing on the PBS in August 2017 and August 2018, respectively. The proportion of residents who were dispensed DAA treatment through the PBS General Schedule (‘Section 85’) and from community pharmacies increased from the first reporting period to the current reporting period. In the first reporting period, only residents in the Kimberley and Pilbara regions were predominately dispensed treatment through the Section 100 (S100) Highly Specialised Drugs (HSD) Program. In the current reporting period, only the Great Southern and Midwest regions had an increase in the proportion of residents who were dispensed treatment through the S100 HSD Public Program.

While approximately equal proportions of WA residents in the first reporting period were prescribed DAA treatment by a GP or a specialist, the majority of residents in the current reporting period were prescribed treatment by a GP. An increasing proportion of residents have been prescribed treatment by authorised nurse practitioners since the expansion of the prescriber criterion. In the first reporting period, only residents in the Goldfields and Pilbara regions were predominately prescribed treatment by a GP. In the current reporting period, the Kimberley was the only region in which the majority of residents were prescribed treatment by a specialist. There was a 26% increase in the number of unique prescribers for DAA treatment in WA from the first reporting period to the current reporting period. The majority of prescribers were GPs, and from the first reporting period to the current reporting period, the proportion of prescribers who were specialists decreased. While prescribers most frequently treated only one patient, a higher proportion of specialists compared to GPs, treated ten or more patients. In the current reporting period, the proportionate patient caseload among prescribing GPs only increased in the Great Southern region, and among prescribing specialists it did not increase in any regions.

# Abbreviations

|  |  |
| --- | --- |
| AAR | Age-adjusted rate expressed per 100,000 population |
| ABS | Australian Bureau of Statistics |
| DAA | Direct acting antiviral |
| DoH | Department of Health, Western Australia |
| DVA | Department of Veterans’ Affairs |
| ERP | Estimated residential population |
| GP | General practitioner |
| HCV | Hepatitis C virus |
| HSD | Highly Specialised Drugs |
| PBS | Pharmaceutical Benefits Scheme |
| r | Correlation coefficient |
| S100 | Section 100 |
| SA2 | Statistical Area Level 2 |
| WA | Western Australia |

# Introduction and aims

On 1 March 2016, new direct acting antiviral (DAA) oral regimens were listed on the Pharmaceutical Benefits Scheme (PBS) for the treatment of chronic hepatitis C infection (HCV). In addition, GPs and other medical practitioners experienced in the treatment of HCV became eligible to independently prescribe DAA treatment for chronic HCV under the PBS without consulting an infectious diseases physician, hepatologist or gastroenterologist. More recently, this criterion has been expanded to include authorised nurse practitioners experienced in the treatment of chronic HCV infection.

The aim of this report is to describe the number of people in Western Australia (WA) who initiated DAA treatment for chronic HCV from March 2016 to March 2020 by reporting period, patient demographics, regimen, dispensing and prescriber characteristics.

## Methods

#### Pharmaceutical Benefits Scheme (PBS) data

The Department of Health, WA (DoH) received a de-identified extract of PBS data on the number of prescriptions for HCV treatment supplied to WA residents from 1 March 2016 to 31 March 2020. The data were extracted by selected drugs used for treating HCV or by selected PBS item codes or indications, where necessary. The indication was identified from the Authority Code or Streamlined Authority Code where available. WA residents were identified from the patient postcode as recorded on the Medicare Enrolment file at the date of supply. The patient postcode to state mapping was updated based on Australia Post’s ranges for each state and territory.

The data were analysed using the following PBS variables: patient identification number confidentialised, patient date of birth, patient sex, patient postcode, patient category, pharmacy type, prescriber ID confidentialised, prescriber derived major speciality, date of prescribing, date of supply, PBS item code, drug name, program code, streamlined authority code and authority code. Data on the patient’s Aboriginality were not made available.

#### Regional boundaries and population estimates

WA is divided into ten health administrative regions: three in the Perth metropolitan area (East, North and South), four in the Northern and Remote area (Goldfields, Kimberley, Midwest and Pilbara) and three in the Southern area (Great Southern, South West and Wheatbelt).

Population estimates used as denominators in the analyses were based on the mid-year population provided by the Australian Bureau of Statistics (ABS). The ABS calculates estimated residential populations (ERPs) at the Statistical Area Level 2 (SA2). Based on these population estimates, the Epidemiology Branch of the DoH derived postcode level population estimates. These postcodes are then grouped to defined health region boundaries. The population of each health region are then based on the sum of each postcode within that health region1.

#### Interpreting the results

In this report, initiation of treatment is expressed as the number, proportion and rate of WA residents who initiated DAA treatment for chronic HCV. Age-adjusted rates (AARs) are calculated to take account of differences in age composition when rates for different populations are compared. Age-specific rates were based on the specified age groups and calculated by dividing the number of initiations by the population of the same sex and age group. As no reliable estimates of the number of WA residents living with chronic HCV infection in each health region were available, initiation rates are based on the total population rather than the population living with chronic HCV and are annualised to allow for comparison over time. AARs and age-specific rates are expressed per 100,000 population. The 2001 Australian standard resident population from the ABS was used as the reference population for standardisation.

Error bars were used to display the 95% confidence intervals around the rates for each region. If the error bars for the two regions to be compared do not overlap, there is a statistically significant difference in AARs for those two regions. If the error bars for the two regions do overlap, there is no statistically significant difference in AARs for the two regions. The AARs by year can be compared in the similar manner as regional comparisons.

Where applicable, the data are presented in six-monthly reporting periods: the first from March to September 2016; the second from October 2016 to March 2017; the third from April to September 2017; the fourth from October 2017 to March 2018; the fifth from April to September 2018; the sixth from October 2018 to March 2019; the seventh from April 2019 to September 2019; and the current reporting period from October 2019 to March 2020.

# Results

## DAA treatment uptake by patient demographics

At the start of 2016, an estimated 18,646 WA residents were living with chronic HCV infection2. From March 2016 to March 2020, a total of 7,820 residents, representing 41.9% of residents living with chronic HCV in WA, initiated the new DAA treatment. The initial increase and subsequent decline in treatment uptake was consistent with a “warehouse” effect, with a large number of patients in specialist clinics awaiting DAA treatment access initiating treatment in the early months (Figure 1). While the trend in DAA initiations fluctuated by reporting period, there was an overall decrease over time. It should be noted that the decrease in the current reporting period may be have been partly due to COVID-19 lockdown that occurred in the first half of 2020 (Figure 2).

Figure 1. Number of WA residents initiating DAA treatment by month, March 2016 to March 2020



Figure 2. Number and rate of WA residents initiating DAA treatment by reporting period, March 2016 to March 2020



The majority of WA residents who initiated the new DAA treatment between March 2016 and March 2020 were male (68%). Based on the total population rather than the population living with chronic HCV, the highest initiation rates were also among males. There were different trends in the initiation rate among males and females over the reporting periods (Figure 3).

Figure 3. Rate of WA residents initiating DAA treatment by sex and reporting period, March 2016 to March 2020



Note: 95% CI = lower and upper confidence limits

Of the WA residents who initiated the new DAA treatment between March 2016 and March 2020, 54% were aged 40 to 59 years and the proportion who were aged less than 50 years increased from 37% in the first reporting period to 66% in the current reporting period (Figure 4). Based on the total population rather than the population living with chronic HCV, the highest initiation rates were generally among those aged 40 to 49 years (Table 1).

Figure 4. Proportion of WA residents initiating DAA treatment by age group and reporting period, March 2016 to March 2020



Table 1. Number, proportion and rate of WA residents initiating DAA treatment by age group and reporting period, March 2016 to September 2018 and October 2019 to March 2020



Note: Rate = Annualised age-specific rate per 100,000 population. The rates for the Totals are annualised crude rates.

In each reporting period from March 2016 to March 2020, approximately equal proportions of residents were categorised as Concession and General patients (Figure 5).

Figure 5. Proportion of WA residents initiating DAA treatment by beneficiary status and reporting period, March 2016 to March 2020



Note: The level of subsidy under the PBS depends on the patient’s beneficiary status. Concessional status is for people who are eligible to receive government entitlements, including pensioners and low-income earners. Eligible veterans and their dependents holding a Department of Veteran’s Affairs (DVA) health card are also entitled to medicines and additional pharmaceutical items at concessional rates under the Repatriation PBS. All other individuals are considered general beneficiaries and have a higher co-payment threshold. In the period from March 2016 to March 2020, a total of eight residents were Repatriation PBS patients, and these have been excluded from this figure.

In the first reporting period, the highest initiation rates were among residents in the Great Southern, Midwest and Kimberley regions. In the current reporting period, the rate could not be reliably calculated for the Kimberley, Midwest, Pilbara and Wheatbelt regions due to low numbers, and the highest initiation rates were among residents in the Great Southern and Goldfields regions (Figure 6 and Figure 7).

Figure 6. Number and rate of WA residents initiating DAA treatment by health region of residence, March 2016 to September 2016



Figure 7. Number and rate of WA residents initiating DAA treatment by health region of residence, October 2019 to March 2020



Note: Rate could not be calculated for the Kimberley, Midwest, Pilbara and Wheatbelt regions in the October 2019 to March 2020 period due to low numbers. 95% CI = lower and upper confidence limits.

In the first reporting period, the initiation rate in most regions was significantly higher than the rate for the state as a whole; the Goldfields and Pilbara were the only regions with a significantly lower initiation rate. In the current reporting period, the initiation rate in most regions was comparable to the rate for the state as a whole; the North Metropolitan was the only region with a significantly lower initiation rate and the Great Southern was the only region with a significantly higher initiation rate (Figure 8).

Figure 8. Rate of WA residents initiating DAA treatment by health region of residence, March 2016 to September 2016 and October 2019 to March 2020



Note: Rate could not be calculated for the he Kimberley, Midwest, Pilbara and Wheatbelt regions in the October 2019 to March 2020 period due to low numbers. 95% CI = lower and upper confidence limits.

In both reporting periods, high DAA treatment initiation rates were associated with historically high HCV notification rates (March 2016 to September 2016: r=0.78, n=10, p=0.008; October 2019 to March 2020: r=0.96, n=6, p=0.003) (Figure 9).

Figure 9. Rate of WA residents initiating DAA treatment by rate of hepatitis C notifications and health region of residence, March 2016 to September 2016 and October 2019 to March 2020



Note: Rate = Annualised age-adjusted rate per 100,000 population. March 2016 to September 2016 period notification rate = Average age-adjusted notification rate per 100,000 population from 2013 to 2015. October 2019 to March 2020 period notification rate = Average age-adjusted notification rate per 100,000 population from 2017 to 2019. Initiation rates could not be calculated for the Kimberley, Midwest, Pilbara and Wheatbelt regions in the October 2019 to March 2020 period due to low numbers.

## DAA treatment initiations by regimen and dispensing characteristics

In the first reporting period, sofosbuvir + ledipasvir and sofosbuvir + daclatasvir were the two most commonly prescribed DAA treatment regimens in WA (Figure 10). Sofosbuvir + velpatasvir was the first pan-genotypic drug regimen to be listed on the PBS in August 2017, followed by glecaprevir + pibrentasvir in August 2018 and sofosbuvir + velpatasvir + voxilaprevir in April 2019. In the current reporting period, sofosbuvir + velpatasvir and glecaprevir + pibrentasvir were the most commonly prescribed DAA treatment regimens in WA (Figure 11).

Figure 10. Proportion of WA residents initiating DAA treatment by regimen, March 2016 to September 2016



Figure 11. Proportion of WA residents initiating DAA treatment by regimen, October 2019 to March 2020

These treatment regimens were available through both the PBS General Schedule (‘S85’) and the Section 100 (S100) Highly Specialised Drugs (HSD) Program to enable dispensing through community pharmacies as well as public hospital and private hospital pharmacies.

While approximately equal proportions of WA residents were dispensed DAA treatment through the General Schedule and the S100 HSD Public Program in the first reporting period, the majority of residents in the current reporting period were dispensed treatment through the General Schedule (Figure 12). Similarly, while approximately equal proportions of residents were dispensed treatment from community and public hospital pharmacies in the first reporting period, the majority of residents in the current reporting period were dispensed treatment from community pharmacies (Figure 13).

Figure 12. Proportion of WA residents initiating DAA treatment by program code and reporting period, March 2016 to March 2020



Figure 13. Proportion of WA residents initiating DAA treatment by pharmacy type and reporting period, March 2016 to March 2020



Note: Others include private hospitals and friendly societies.

In the first reporting period, only residents in the Kimberley and Pilbara regions were predominately dispensed treatment through the S100 HSD Public Program (Figure 14). In the current reporting period, only the Great Southern and Midwest regions had an increase in the proportion of residents who were dispensed treatment through the S100 HSD Public Program (Figure 15).

Figure 14. Proportion of WA residents initiating DAA treatment by health region of residence and program code, March 2016 to September 2016



Figure 15. Proportion of WA residents initiating DAA treatment by health region of residence and program code, October 2019 to March 2020



Figure 14 and Figure 15 note: there were 17 and six WA residents who were dispensed DAA treatment through the s100 HSD Private code in the March to September 2016 and October 2019 to March 2020 periods, respectively. These have been excluded from these figures.

## DAA treatment initiations by prescriber characteristics

While approximately equal proportions of WA residents in the first reporting period were prescribed DAA treatment by a GP or a specialist, the majority of residents in the current reporting period were prescribed treatment by a GP (Figure 16). An increasing proportion of residents have been prescribed treatment by authorised nurse practitioners since the expansion of the prescriber criterion in April 2020.

Figure 16. Proportion of WA residents initiating DAA treatment by prescriber type and reporting period, March 2016 to March 2020



Note: The prescriber type is based on the prescriber's registered specialties and Medicare services. The prescriber type was recorded as unknown for a total of 334 residents in the March 2016 to March 2020 period. These have been excluded from this figure. The criteria for prescribing DAA treatments through the S100 HSD Public Program was expanded to include authorised nurse practitioners in April 2020.

In the first reporting period, only residents in the Goldfields and Pilbara regions were predominately prescribed treatment by a GP (Figure 17). In the current reporting period, the Kimberley was the only region in which the majority of residents were prescribed treatment by a specialist. The South West region had the highest proportion of residents prescribed treatment by a nurse practitioner in the current reporting period (Figure 18).

Figure 17. Proportion of WA residents initiating DAA treatment by health region of residence and prescriber type, March to September 2016



Figure 18. Proportion of WA residents initiating DAA treatment by health region of residence and prescriber type, October 2019 to March 2020



Figure 17 and Figure 18 note: The health region of the patient residence was used as provider type address was unknown at the time of reporting. The prescriber type is based on the prescriber's registered specialties and Medicare services. The prescriber type was recorded as unknown for one resident in the March to September 2016 period and 136 residents in the October 2019 to March 2020 period, and these have been excluded from these figures. The criteria for prescribing DAA treatments through the S100 HSD Public Program was expanded to include authorised nurse practitioners in April 2020 and therefore do not appear for the period from March to September 2016.

The number of unique prescribers for DAA treatment in WA increased by 26% from the first to the current reporting period. The majority of prescribers were GPs, and from the first to the current reporting period, the proportion of prescribers who were specialists decreased (Table 2).

Table 2. Number and proportion of prescribers of DAA treatment by prescriber type and reporting period, March 2016 to September 2018 and October 2019 to March 2020



Note: The prescriber type is based on the prescriber's registered specialties and Medicare services. As a result, a prescriber can appear in more than one category over time. The criteria for prescribing DAA treatments through the S100 HSD Public Program was expanded to include authorised nurse practitioners in April 2020 and therefore do not appear for the period from March to September 2016.

The majority of specialists in both the first and current reporting periods were gastroenterologists or hepatologists (Figure 19 and Figure 20).

Figure 19. Proportion of prescribers of DAA treatment by prescriber speciality, March 2016 to September 2016



Figure 20. Proportion of prescribers of DAA treatment by prescriber speciality, October 2019 to March 2020



While prescribers most frequently treated only one patient, specialists tended to have a higher patient caseload compared to GPs. From the first to the current reporting period, there was a marked decrease in the proportion of prescribers who treated ten or more patients (Table 3).

Table 3. Caseload of prescribers of DAA treatment by prescriber type, March 2016 to September 2016 and October 2019 to March 2020





Note: The prescriber type is based on the prescriber's registered specialties and Medicare services. As a result, a prescriber can appear in more than one category over time. Counts less than 5 have been suppressed to protect privacy and data confidentiality.

In the first reporting period, the highest proportionate patient caseload among prescribing GPs was reported in the Kimberley region. In the current reporting period, the proportionate patient caseload among prescribing GPs only increased in the Great Southern region (Figure 21 and Figure 22).

In the first reporting period, the highest proportionate patient caseload among prescribing specialists was reported in the Great Southern and Wheatbelt regions. In the current reporting period, the proportionate patient caseload among prescribing specialists did not increase in any regions (Figure 23 and Figure 24).

Figure 21. Proportion of GPs treating 1, 2 to 9 and 10 or more WA residents with DAA treatment by health region of residence, March 2016 to September 2016



Figure 22. Proportion of GPs treating 1, 2 to 9 and 10 or more WA residents with DAA treatment by health region of residence, October 2019 to March 2020



Figure 23. Proportion of Specialists treating 1, 2 to 9 and 10 or more patients WA residents with DAA treatment by health region of residence, March 2016 to September 2016



Figure 24. Proportion of Specialists treating 1, 2 to 9 and 10 or more patients WA residents with DAA treatment by health region of residence, October 2018 to March 2019



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