Monitoring hepatitis C treatment uptake in Australia

Issue #5 September 2016[1]

Reimbursements for new treatment for chronic hepatitis C during March to July 2016

An estimated 18,581 patient PBS initial prescriptions for hepatitis C direct acting antiviral (DAA) were processed for reimbursement during March to July 2016. Based on extrapolation of wholesale data to PBS reimbursement data, to account for the time lag in reporting, an estimated 26,360 individuals initiated DAA treatment during March to July 2016, including 7,240 individuals in March, 7,390 individuals in April, 3,250 individuals in May, 4,590 individuals in June, and 3,890 individuals in July. It is estimated that 12% of total individuals living with chronic hepatitis C in Australia have initiated DAA treatment during March to July 2016. Most individuals (77%) were prescribed under the General Schedule (S85). The most commonly prescribed regimen was sofosbuvir/ledipasvir for 58%, followed by sofosbuvir/daclatasvir for 37%. It is estimated that 60% of individuals with hepatitis C-related cirrhosis have initiated DAA treatment from 2014 to July 2016, through early access and PBS programs.

New treatments for chronic hepatitis C virus (HCV) infection, named direct acting antiviral (DAA) therapy, were listed on the Pharmaceutical Benefits Scheme (PBS): sofosbuvir/ledipasvir (Harvoni®), sofosbuvir/daclatasvir (Sovaldi®/Daklinza®), sofosbuvir/ribavirin (Sovaldi®/Ibavyr®), and sofosbuvir/pegylated interferon-alfa-2a/ribavirin (Sovaldi®/Pegasys®/ribavirin) in March 2016, and paritaprevir/ritonavir/ombitasvir/dasabuvir (Viekira PAK®) in May 2016.

1. The Kirby Institute. Monitoring hepatitis C treatment uptake in Australia (Issue 5). The Kirby Institute, UNSW Australia, Sydney, Austral6ia, September 2016 (available online at: http://kirby.unsw.edu.au/research-programs/vhcrp-newsletters).
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Issue #5 newsletter provides data on:

- Estimated number of individuals initiating HCV DAA treatment during March to July 2016, by month and jurisdiction
- Estimated proportion of individuals living with chronic HCV who initiated DAA treatment during March to July 2016, by jurisdiction
- Number of PBS reimbursement-based DAA prescriptions during March to July 2016, by jurisdiction, regimen, and PBS schedule.
- Estimated number of individuals with HCV-related cirrhosis initiating DAA treatment from 2014 to July 2016.

Estimated hepatitis C DAA treatment initiations

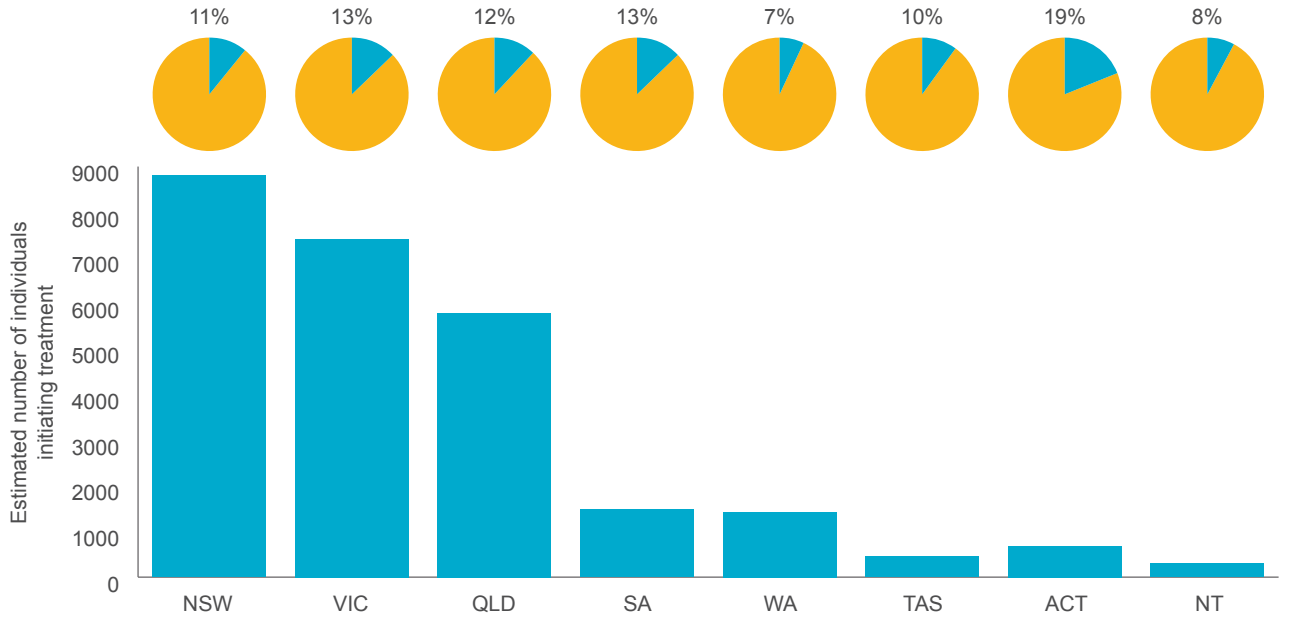
Based on extrapolation of wholesale data to PBS reimbursement data to account for the time lag in reporting and other adjustments (details provided in the Methodology section), an estimated 26,360 (range: 22,304 – 30,415) individuals initiated chronic HCV DAA treatment during March to July 2016 in Australia, including 8,800 in New South Wales, 7,410 in Victoria, 5,790 in Queensland, 1,490 in South Australia, 1,430 in Western Australia, 460 in Tasmania, 680 in Australian Capital Territory, and 300 in Northern Territory (Figure 1).[2]

Estimated monthly numbers of individuals initiating DAA treatment was 7,240 in March, 7,390 in April, 3,250 in May, 4,590 in June, and 3,890 in July (Figure 2).

Estimated proportion of individuals living with chronic HCV who initiated DAA treatment

In 2015, an estimated 227,306 individuals were living with chronic HCV in Australia, including, 80,700 individuals in New South Wales, 55,261 individuals in Victoria, 47,356 individuals in Queensland, 11,682 in South Australia, 20,549 in Western Australia, 4,561 in Tasmania, 3,591 in Australian Capital Territory, and 3,606 in Northern Territory.[3] Therefore it is estimated that 12% (range 10 - 13%) of total individuals living with chronic HCV in Australia have initiated DAA treatment during March to July 2016, including 11% in New South Wales, 13% in Victoria, 12% in Queensland, 13% in South Australia, 7% in Western Australia, 10% in Tasmania, 19% in Australian Capital Territory, and 8% in Northern Territory (Figure 1).

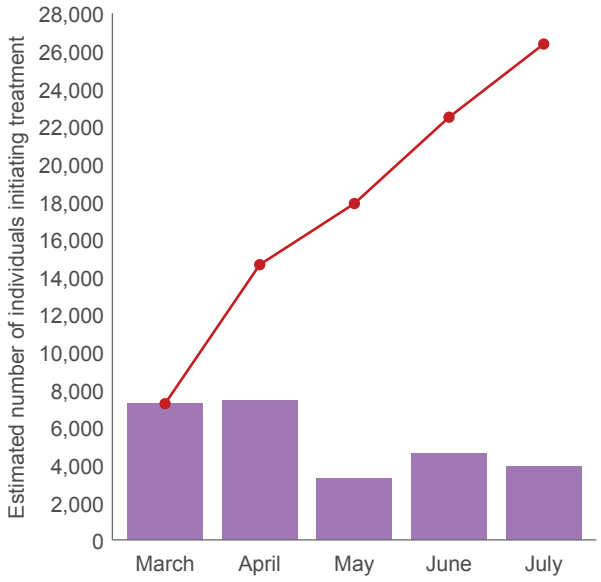
Figure 1: The estimated number of individuals initiating HCV DAA treatment (bar charts) and the proportion of individuals living with chronic HCV who initiated DAA treatment (pie charts) during March to July 2016, by jurisdiction[2]



NSW: New South Wales; VIC: Victoria; QLD: Queensland; SA: South Australia; WA: Western Australia; ATC: Australian Capital Territory; TAS: Tasmania; NT: Northern Territory

2. The data of Victoria and Northern Territory should be interpreted conservatively. The number of prescriptions in July reported by PBS was substantially lower than that in the previous month in these two jurisdictions (more details in the methodology section).
3. The Kirby Institute. Hepatitis B and C in Australia Annual Surveillance Report Supplement 2016. The Kirby Institute, UNSW Australia, Sydney NSW 2052

Figure 2: The estimated number of individuals initiating HCV DAA treatment in each month (bars) during March to July 2016. The red line represents the cumulative treatment initiation numbers.



Hepatitis C DAA prescriptions processed by the PBS by jurisdiction, PBS scheme, and regimen

A total of 18,581 individuals had chronic HCV DAA initial prescriptions processed by the PBS during March to July 2016, including 34% (n=6,322) in New South Wales, 24% (n=4,460) in Victoria, 23% (n=4,279) in Queensland, and 19% (n=3,520) in the other jurisdictions. Further information for individual jurisdictions is provided in Table 1.

Most individuals (77%) were prescribed under the General Schedule (S85), 23% under S100 HSD Public and <1% under S100 HSD Private (Figure 3). The proportion of S100 HSD Public scheme in PBS data is highly variable across jurisdictions: New South Wales (34%), Victoria (11%), Queensland (6%), South Australia (18%), Western Australia (52%), Tasmania (10%), Australian Capital Territory (64%), and Northern Territory (82%). The S100 percent in PBS data has been gradually increased from 9% in March to 17% in April, 21% in May and June, and 23% in July. It may represent a longer lag for S100 versus S85 scheme reimbursement reporting, rather than an actual increase in S100 prescribing.

Figure 3: Distribution of PBS schedule of chronic HCV DAA prescriptions during March to July 2016 in Australia

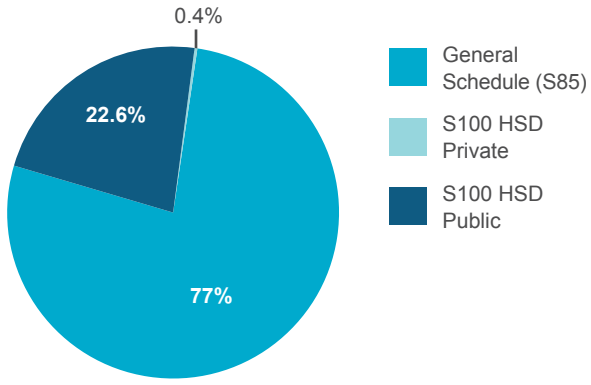


Table 1

	NSW	VIC	QLD	SA	WA	TAS	ACT	NT	Total
General Schedule	4,149	3,957	3,993	1,145	578	297	167	19	**14,305**
S100 HSD Private	35	17	10	8	8	0	0	0	**78**
S100 HSD Public	2,138	486	276	256	632	32	292	86	**4,198**
Total	**6,322**	**4,460**	**4,279**	**1,409**	**1,218**	**329**	**459**	**105**	**18,581**

NSW: New South Wales; VIC: Victoria; QLD: Queensland; SA: South Australia; WA: Western Australia; ATC: Australian Capital Territory; TAS: Tasmania; NT: Northern Territory

The most commonly prescribed regimen was sofosbuvir/ledipasvir, for 58% (n=10, 739), followed by sofosbuvir/daclatasvir for 37% (n=6,974), and sofosbuvir/other agents for 4% (n=704) and paritaprevir/ritonavir/ombitasvir/dasabuvir for 1% (n=164; Figure 4). Other agents used in combination with sofosbuvir include ribavirin, or pegylated interferon-alfa-2a/ribavirin.

Of individuals initiated on sofosbuvir/ledipasvir, 11% (n=1,232) were prescribed an 8-week course, 74% (n=7,902) a 12-week course, and 15% (n=1,605) a 24-week course.

Of individuals initiated on sofosbuvir/daclatasvir, 60% (n=4,167) were prescribed a 12-week course, and 40% (n=2,807) a 24-week course.

Of individuals initiated on sofosbuvir/other agents, 94% (n=662) were prescribed a 12-week course, and 6% (n=42) a 24-week course.

Of individuals initiated on paritaprevir/ritonavir/ombitasvir/dasabuvir ± ribavirin, 90% (n=147) were prescribed a 12-week course, and 10% (n=17) a 24-week course (Figure 5 and Figure 6). Forty-eight individuals were prescribed paritaprevir/ritonavir/ombitasvir/dasabuvir + ribavirin for 12 weeks (n=31) or 24 weeks (n=17).

The vast majority of 2,807 individuals prescribed sofosbuvir/daclatasvir for 24 weeks will be individuals with genotype 3 and cirrhosis. Those prescribed sofosbuvir/ledipasvir for 24 weeks (n=1,605) or paritaprevir/ritonavir/ombitasvir/dasabuvir + ribavirin for 24 weeks (n=17) should represent individuals with genotype 1, prior treatment and cirrhosis.

Figure 4: Distribution of chronic HCV DAA regimens prescribed during March to July 2016 in Australia

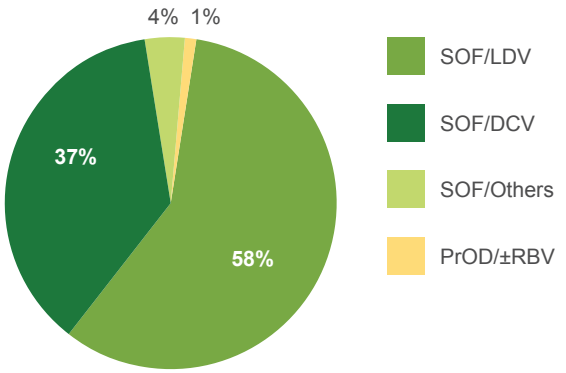
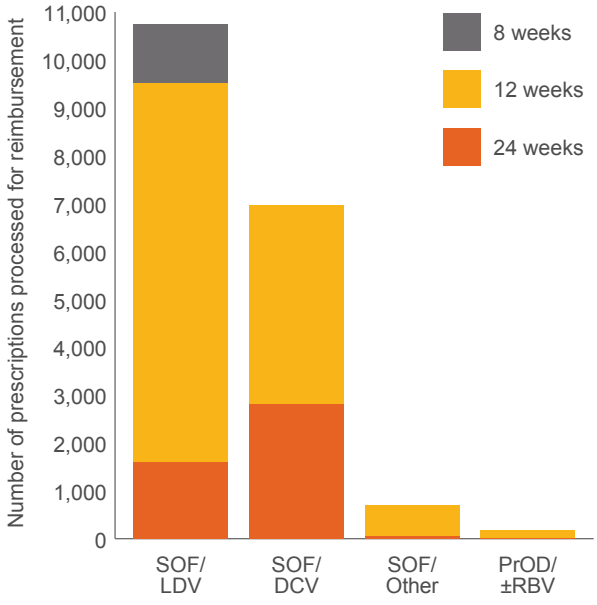
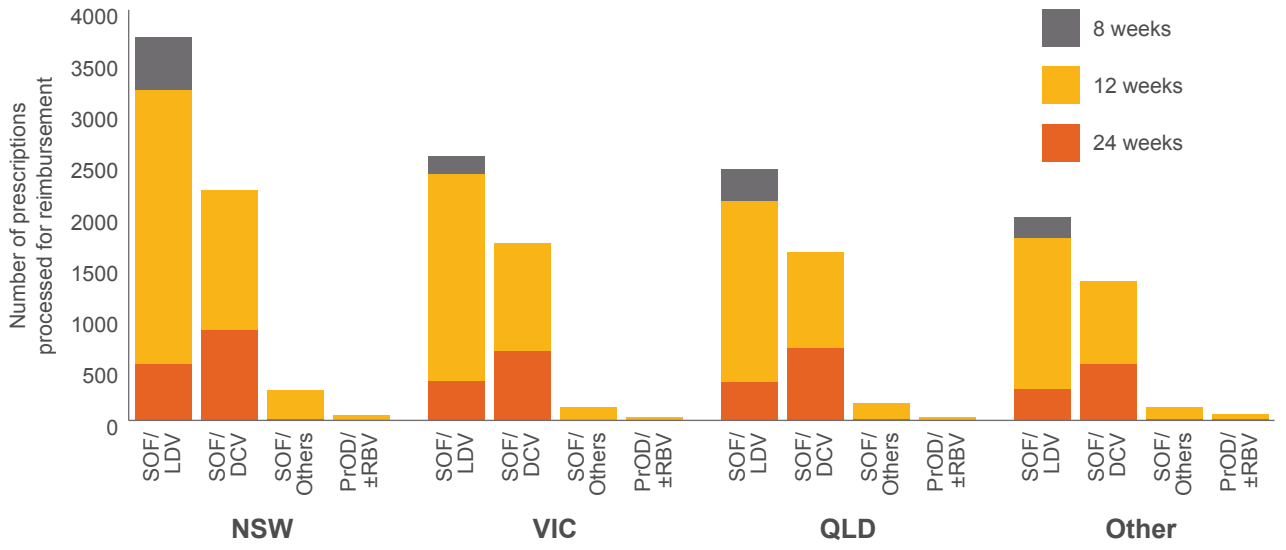


Figure 5: Distribution of chronic HCV DAA prescriptions during March to July 2016 in Australia, by treatment regimen and treatment course duration



*SOF: Sofosbuvir; LDV: Ledipasvir; DCV: Daclatasvir; PrOD: Parataprevir/ritonavir/Ombitasvir/Dasabuvie; RBV: Ribavirin

Figure 6: Distribution of chronic HCV DAA prescriptions during March to July 2016 in Australia, by treatment regimen, treatment course duration and jurisdiction



*SOF: Sofosbuvir; LDV: Ledipasvir; DCV: Daclatasvir; PrOD: Parataprevir/ritonavir/Ombitasvir/Dasabuvie; RBV: Ribavirin; NSW: New South Wales; VIC: Victoria; QLD: Queensland

Estimated number of individuals with HCV-related cirrhosis who initiated DAA treatment

A total of 274 and 1,314 individuals received DAA treatment through early access program in 2014 and 2015, respectively. The vast majority of them had cirrhosis. Among individuals receiving DAA treatment through PBS (March to July 2016), an estimated 40% had cirrhosis, equating 10,610 individuals. Thus, a total of 12,198 individuals with cirrhosis received DAA treatment during 2014 up to July 2016.

An estimated 20,183 Australians were living with HCV-related cirrhosis, including compensated cirrhosis, decompensated cirrhosis, and hepatocellular carcinoma, in 2015[4], 12,198 of whom received DAA. Thus, an estimated 60% of individuals with HCV-related cirrhosis initiated DAA treatments from 2014 to July 2016 in Australia.

Methodology

Two data sources were used for analysing DAA uptake during March to July 2016: PBS monthly reports of prescriptions processed for reimbursement; and wholesale expenditure data.

PBS reports the number of prescriptions processed for reimbursement on a monthly basis. Pharmacies submit prescriptions for reimbursement 2-12 weeks (generally 2-4 weeks) after dispensing. Therefore, PBS reports of the number of prescriptions are subject to a time lag between drug dispensing and reimbursement submissions. This lag may also vary by pharmacy type, with potentially longer lags for public hospital-based pharmacies (S100 scheme) compared to community-based pharmacies (S85 scheme).

4. The Kirby Institute. Hepatitis B and C in Australia Annual Surveillance Report Supplement 2016. The Kirby Institute, UNSW Australia, Sydney NSW 2052

The wholesale price expenditure on chronic HCV DAA drugs during March to June has been reported at 1.33 times wholesale price equivalent for PBS reimbursements reported for the same period.[5] It has been assumed that this ratio was 1.30 for March to July. For the estimate of the number of individuals initiated on HCV treatment during March to July 2016, we have used 1.30 as the adjustment factor with a range of 1.10-1.50 given inherent uncertainties within this methodology. In the jurisdiction level, the proportion of cumulative PBS prescription number from March to July in each jurisdiction to the total was applied to the total estimated number of individuals initiating HCV treatment. Cumulative PBS prescription number (instead of July number) was used given that the July reported number was lower than the previous months in some jurisdictions. This difference was substantial, particularly for Victoria and Northern Territory where the July numbers were 36% and 77% less than June numbers, respectively. Therefore, the estimated number for these two jurisdictions should be considered conservatively until the accuracy of reported PBS data is confirmed.

PBS provided aggregated monthly data, rather than individual patient data. Then the following assumptions have been made in reporting of the PBS reimbursement data, and in extrapolation:

1. All individuals who initiated a 24-week DAA treatment course in March have continued treatment in July.
2. All individuals who initiated a 12-week or 24-week DAA treatment in May have continued treatment in July.
3. The time lag is similar for individuals initiated in March, April, May, June, and July.

Therefore, the aggregated numbers reported for the month of July for each regimen, duration, and scheme will represent all individuals initiated in March, April, May, June, and July, except for March and April initiations on an 8-week or 12-week treatment course and May initiations on an 8-week treatment course given that these treatment courses have been completed before July. Then the numbers of 8-week treatment courses initiated in March, April, and May as well as 12-week treatment courses initiated in March and April were added to the total number reported in July.

It is also assumed that 5% of patients who were initially authorised for 12 weeks treatment with sofosbuvir/ledipasvir, stopped treatment after 8 weeks due to the clinician's decision after re-evaluating the patient's situation. Then a 5% drop-out was added to the number of individuals initiated on a 12-week sofosbuvir/ledipasvir course.

Treatment courses in the prescriptions are by week while PBS reports are monthly. Then a 4-week prescription (28 days) is reported in monthly PBS reports (30 days). For the time period of five months (March to July), it causes a discrepancy between 140 days prescription versus 150 days PBS reports. Then the PBS reported prescription number was adjusted by adding 7% as a conversion of 28 days prescription to 30 days of a month.

The number of individuals receiving DAA treatment through the early access program in 2014 and 2015 were collected from pharmaceutical companies.

To estimate the number of individuals with cirrhosis receiving DAA treatment through PBS, the proportion of individuals initiating on a 24-week sofosbuvir/daclatasvir to the total sofosbuvir/daclatasvir initiations was extrapolated to the total DAA initiations. Some individuals with pre-cirrhosis (particularly those with severe fibrosis (F3) may have been prescribed a 24-week duration therapy, potentially leading to an overestimation of individuals with cirrhosis treated with DAA therapy. On the other hand, individuals with cirrhosis who have received DAA therapy through clinical trials or generic supply are not included in this estimate, potentially leading to an underestimation.

5. Official PBS data catching up. PharmaDispatch, 26 July 2016