Monitoring hepatitis C treatment uptake in Australia

Issue #9 July 2018[1]

Initiations of new treatment for chronic hepatitis C from March 2016 to March 2018

An estimated 58,280 individuals initiated direct acting antiviral (DAA) treatment for chronic hepatitis C virus (HCV) infection through Pharmaceutical Benefits Scheme (PBS) between March 2016 and March 2018, equating to 26% of the people living with chronic HCV infection in Australia. Of individuals initiating DAA treatment in this period, 67% were men, and 51% were >50 years old.

The most commonly prescribed regimen was sofosbuvir/ledipasvir for 45%, followed by sofosbuvir+daclatasvir for 32%, and sofosbuvir/velpatasvir for 14%. Since sofosbuvir/velpatasvir was listed in August 2017, it has been the most commonly prescribed regimen with 64% of individuals initiating DAA treatment from August 2017 to March 2018 prescribed sofosbuvir/velpatasvir. Of individuals initiated on sofosbuvir/velpatasvir, 40% were prescribed treatment by a specialist while 60% were prescribed treatment by non-specialists (30% by GPs).

Overall, 52% of individuals have been prescribed DAA treatment by specialists (42% by gastroenterologist, 7% by infectious diseases physicians, and 4% by other specialist), while 27% of individuals were prescribed DAA treatment by general practitioners (GPs). The proportion of individuals prescribed DAA treatment by GPs increased from 8% in March 2016 to 40% in May 2017, followed by a relatively constant trend since then. During the first three months of 2018 (January to March), 38% of individuals initiating DAA treatment were prescribed treatment by GPs.

1. The Kirby Institute. Monitoring hepatitis C treatment uptake in Australia (Issue 9). The Kirby Institute, UNSW Sydney, Sydney, NSW, Australia, July 2018 (available online at: https://kirby.unsw.edu.au/report/monitoring-hepatitis-c-treatment-uptake-australia-issue-9-july-2018). For more information, contact Professor Greg Dore (gdore@kirby.unsw.edu.au) or Dr Behzad Hajari (bhajarizadeh@kirby.unsw.edu.au).

New treatments for chronic hepatitis C virus (HCV) infection, named direct acting antiviral (DAA) treatment, were listed on the Pharmaceutical Benefits Scheme (PBS):

- March 2016: Sofosbuvir/ledipasvir (Harvoni®), sofosbuvir+daclatasvir (Sovaldi®+Daklinza®), sofosbuvir+ribavirin (Sovaldi®+Ibavyr®), and sofosbuvir+pegylated interferon-alfa-2a+ribavirin (Sovaldi®+Pegasys®+ribavirin)
- May 2016: Paritaprevir/ritonavir/ombitasvir+dasabuvir (Viekira PAK®)
- January 2017: Elbasvir/grazoprevir (Zepatier®)
- August 2017: Sofosbuvir/velpatasvir (Epclusa®)

Issue #9 newsletter provides data on:

- Monthly uptake of DAA treatment through PBS-listing between March 2016 and March 2018 by jurisdiction, patients' gender and age, treatment regimen, and prescriber type
- Proportion of individuals living with chronic HCV infection initiating DAA treatment through PBS-listing (2016-18) and early DAA access avenues (2014-15).

DAA treatment uptake

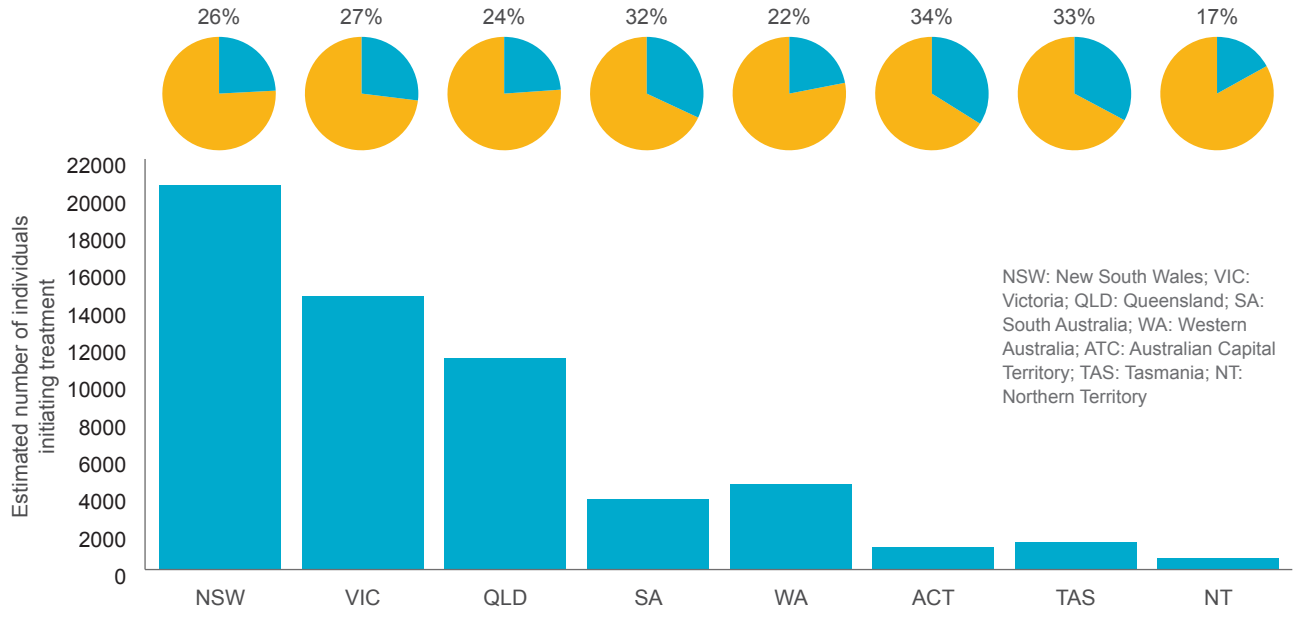
An estimated 58,280 individuals initiated DAA treatment through the PBS between March 2016 and March 2018 in Australia, including 20,600 in New South Wales, 14,670 in Victoria, 11,340 in Queensland, 3,790 in South Australia, 4,560 in Western Australia, 1,220 in Australian Capital Territory, 1,500 in Tasmania, and 610 in Northern Territory (Figure 1).[2]

In 2015, an estimated 227,310 individuals were living with chronic HCV infection in Australia,[3] among whom 26% initiated DAA treatment between March 2016 and March 2018. This proportion varied between 17% and 34% across jurisdictions (Figure 1).

In 2014 and 2015, prior to DAA regimens being listed on PBS, an estimated 4,340 individuals received DAA treatment through early DAA access avenues, including clinical trials, pharmaceutical company compassionate access programs, and generic importation. Considering this number, an overall estimated number of 62,620 individuals, equating to 28% of the people living with chronic HCV infection in Australia, received DAA treatment from 2014 to March 2018.

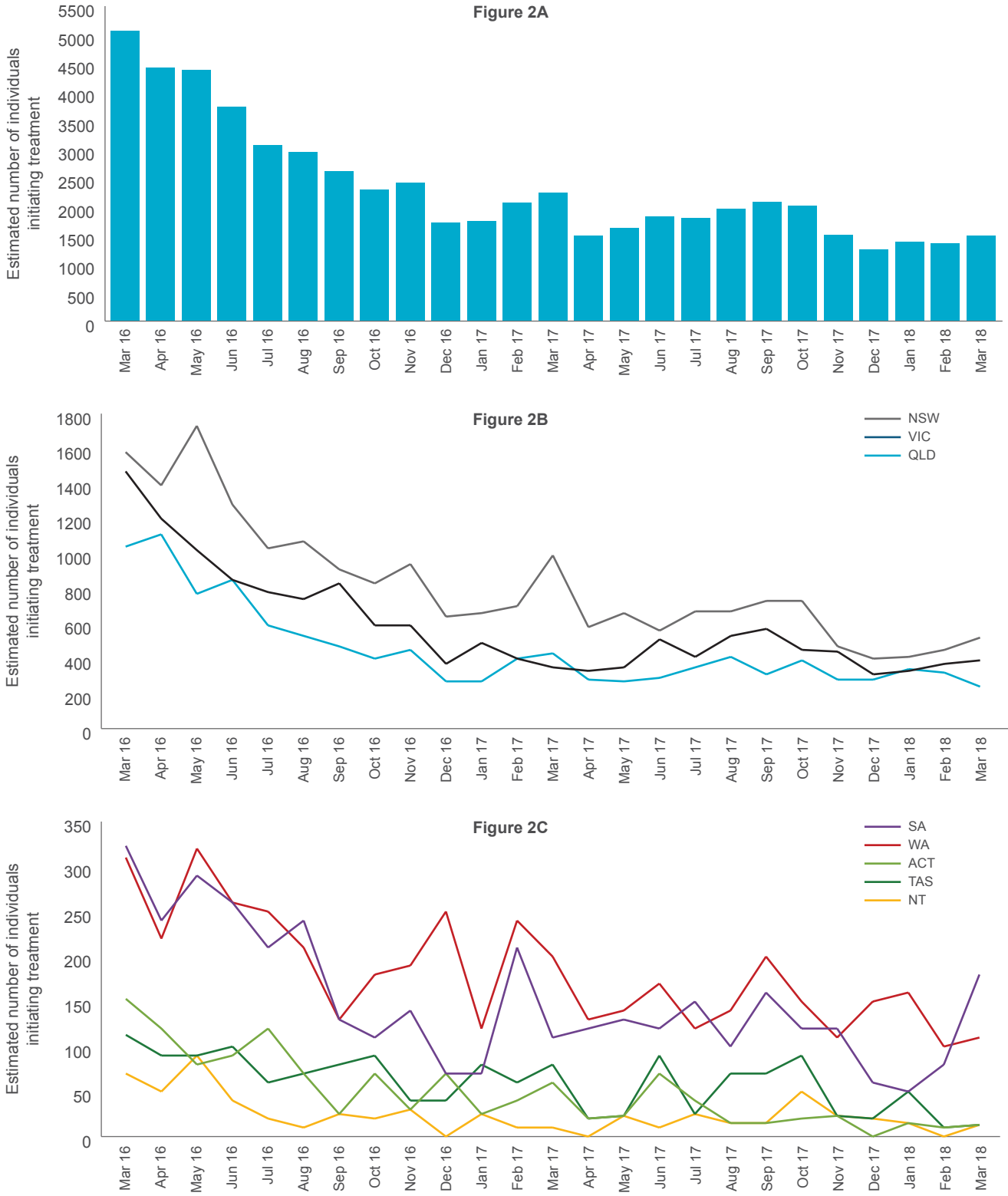
The monthly trends of DAA treatment uptake in Australia and in each jurisdiction are illustrated in Figure 2. After an initial decreasing trend, the monthly number of DAA initiation reached a relatively steady pattern from December 2016 through October 2017. There have been further declines in DAA initiations in 2018, with the monthly number during January to March 2018 less than 1,500 (about 600 initiations per month less than the equivalent period in 2017).

Figure 1: The estimated number of individuals initiating DAA treatment (bar charts) and the proportion of individuals living with chronic HCV infection who initiated DAA treatment (pie charts) between March 2016 and March 2018, by jurisdiction



2. For an estimated 10 individuals, more than one jurisdiction were recorded.
3. The Kirby Institute. Hepatitis B and C in Australia Annual Surveillance Report Supplement 2016. The Kirby Institute, UNSW Sydney, Sydney NSW 2052

Figure 2: Estimated number of individuals initiating DAA treatment in each month during March 2016 to March 2018 in Australia (A), and by Jurisdiction (B and C)



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

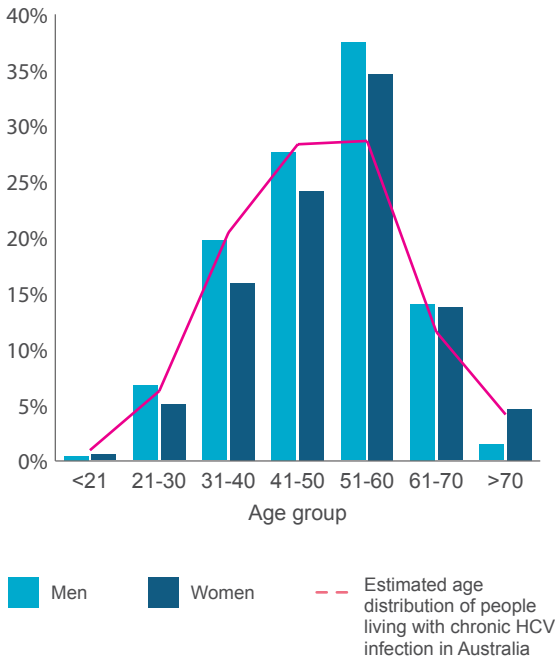
Gender and age distribution of individuals initiating DAA treatment

Of individuals initiating DAA treatment between March 2016 and March 2018, 67% were men and 33% were women.

Age distribution of individuals initiating DAA treatment was similar between men and women (Figure 3). The highest proportion of total individuals were 51-60 years old (35%), followed by 41-50 years old (25%). Compared to the age distribution of the total population living with chronic HCV infection in Australia, a shift towards older age groups was observed among those initiating DAA treatment (Figure 3).

The age distribution of individuals initiating DAA treatment in each month is illustrated in Figure 4. A trend towards younger age groups is observed from March to December 2016, with 28% in March compared to 61% in December being ≤50 years old. A relatively constant pattern in age distribution has been observed since January 2017. During the first three months of 2018 (January to March), 62% of individuals initiating DAA treatment were ≤50 years old.

Figure 3: Age distribution of individuals living with chronic HCV infection in 2015[4] (dotted line) and those initiating DAA treatment during March 2016 to March 2018 (bars)



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

Figure 4: Absolute frequency (A) and relative frequency (B) of age groups of individuals initiating DAA treatment in each month during March 2016 to March 2018

Figure 4A

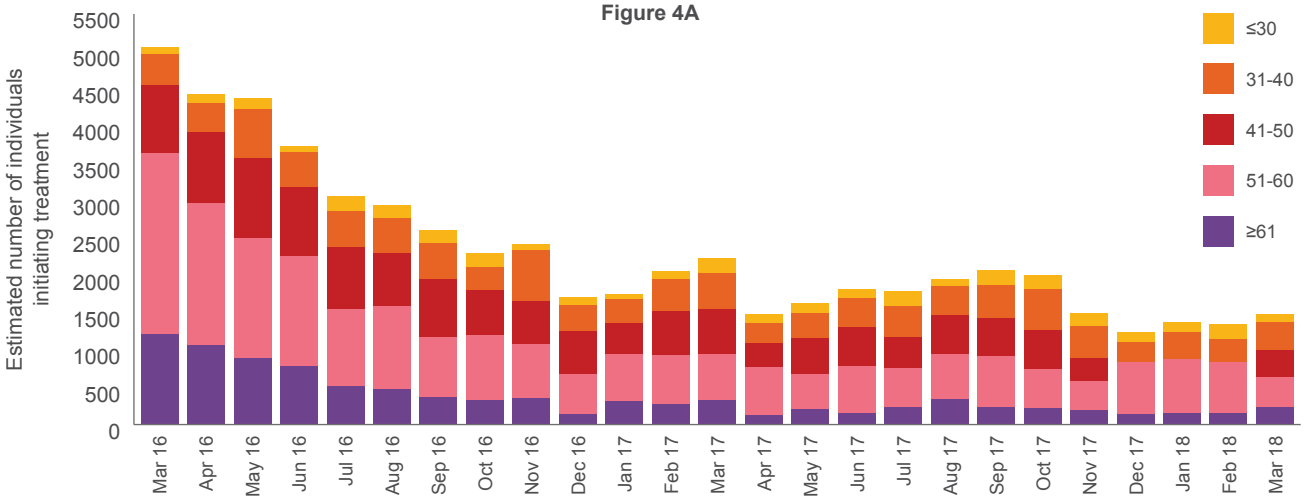
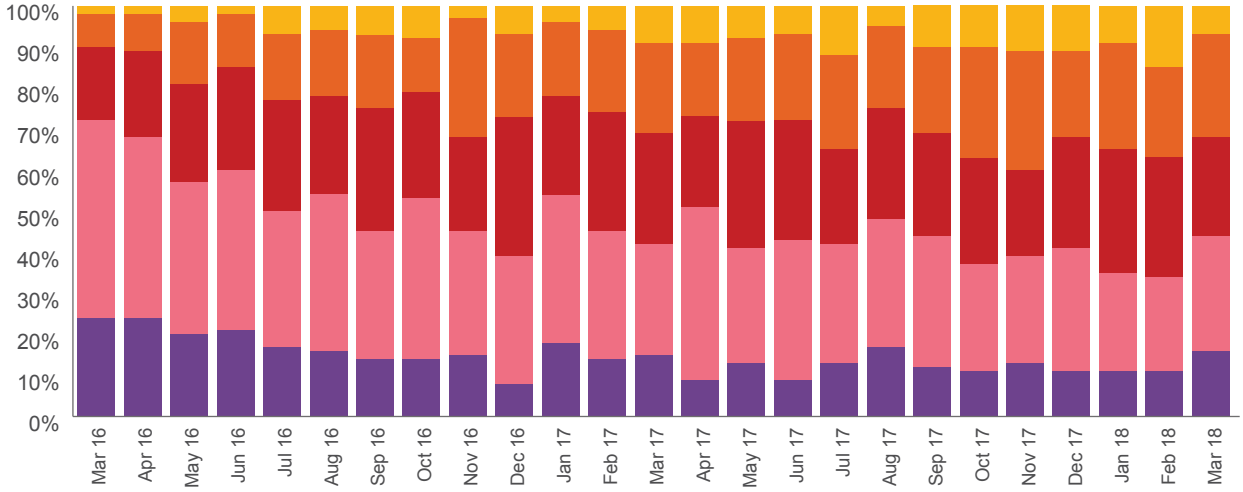


Figure 4B

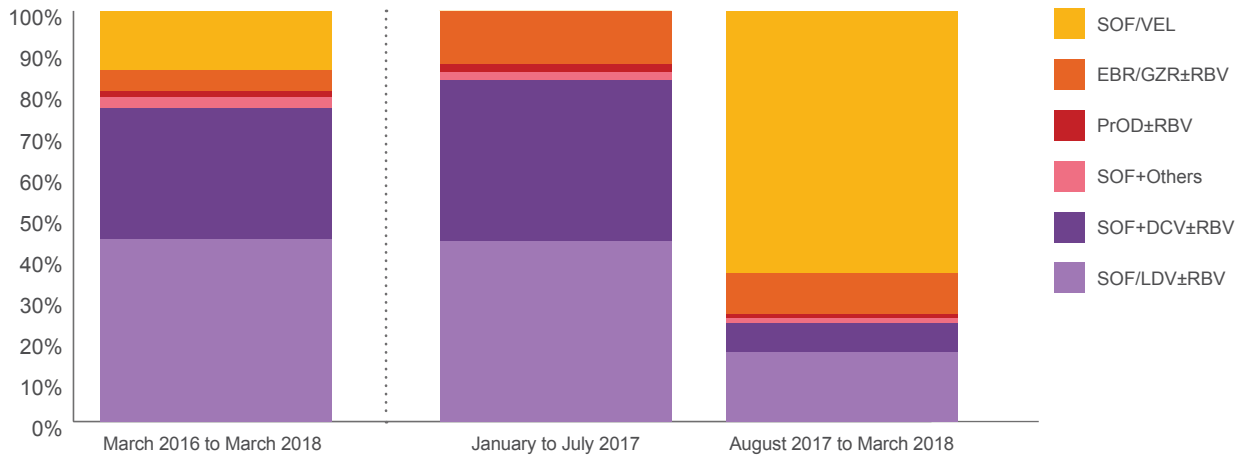


Distribution of regimens prescribed for individuals initiating DAA treatment

Overall, the most commonly prescribed regimen was sofosbuvir/ledipasvir±ribavirin for 45%, followed by sofosbuvir+daclatasvir±ribavirin for 32%, and sofosbuvir/velpatasvir for 14%. Since August 2017, when sofosbuvir/velpatasvir was PBS listed, this regimen has been the most commonly prescribed regimen, with 64% of 13,090 individuals initiating DAA since August 2017 prescribed sofosbuvir/velpatasvir (Figure 5). This regimen has been the most commonly prescribed regimen in every month since August 2018 (Figure 6). Availability of sofosbuvir/velpatasvir has had a limited impact on prescribing of elbasvir/grazoprevir given this regimen was prescribed for 13% of individuals during January-July 2017 compared to 10% during August 2017-March 2018 (Figure 5).

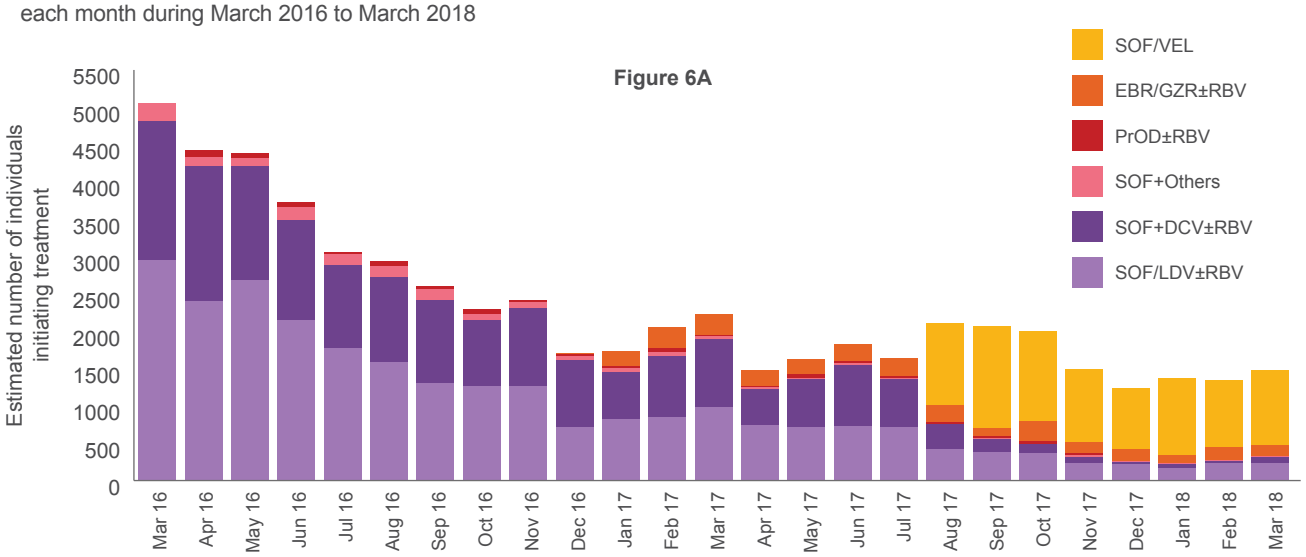
The breakdown of treatment initiation numbers by treatment regimen and treatment course duration is shown in Figure 7. Of individuals initiated on sofosbuvir/ledipasvir±ribavirin (n=25,970), 17% were prescribed an 8-week course, 74% a 12-week course, and 9% a 24-week course. Of individuals initiated on sofosbuvir+daclatasvir±ribavirin (n=18,470), 69% were prescribed a 12-week course, and 31% a 24-week course. Of individuals initiated on elbasvir/grazoprevir±ribavirin (n=3,020), 97% were prescribed a 12-week course, and 3% a 16-week course. Of individuals initiated on paritaprevir/ritonavir/ombitasvir+dasabuvir±ribavirin (n=790), 86% were prescribed a 12-week course, and 14% a 24-week course.

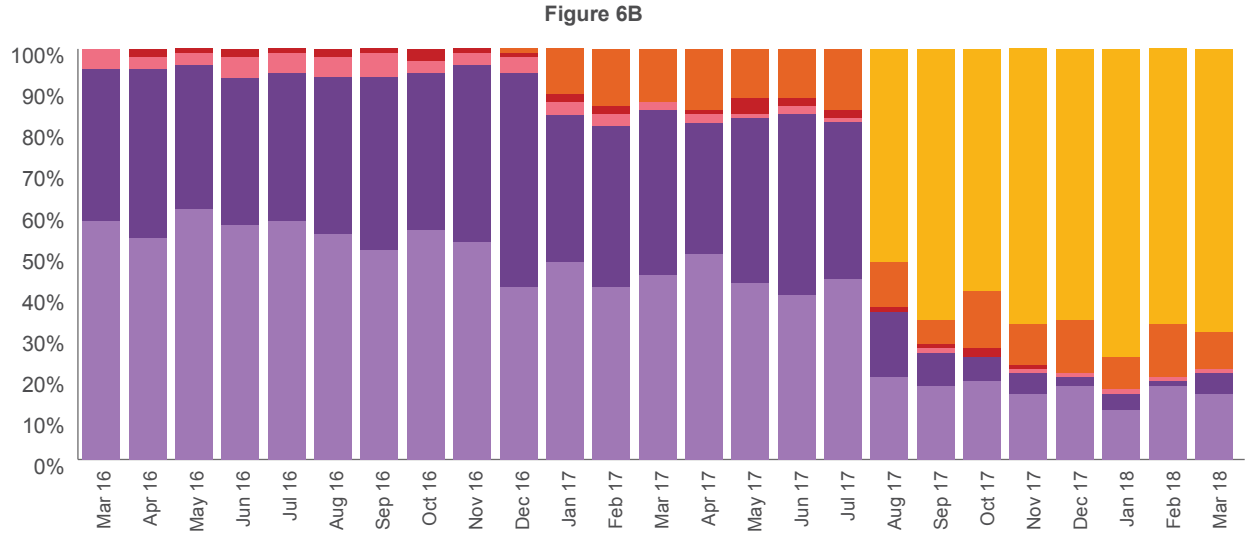
Figure 5: Distribution of DAA regimens prescribed during March 2016 to March 2018 (overall), January to July 2017 (seven months prior to SOF/VEL being PBS listed), and August 2017 to March 2018 (seven months from SOF/VEL being PBS listed)



SOF: Sofosbuvir; LDV: Ledipasvir; DCV: Daclatasvir; EBR: Elbasvir; GZR: Grazoprevir; PrOD: Paritaprevir/ritonavir/Ombitasvir+Dasabuvir; VEL: Velpatasvir; RBV: Ribavirin

Figure 6: Absolute frequency (A) and relative frequency (B) of DAA regimens prescribed for individuals initiating DAA treatment in each month during March 2016 to March 2018



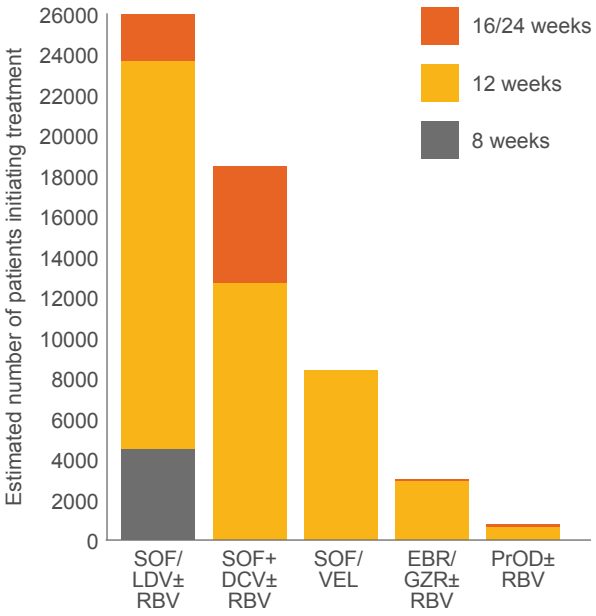


Distribution of health care providers prescribing for individuals initiating DAA treatment

Most individuals initiating DAA treatment received their prescriptions from gastroenterologists (42%), followed by general practitioners (GPs; 27%), infectious diseases physicians (7%), and other specialists (3%). Twenty-one percent of individuals received their prescriptions from other physicians (Figure 8). Overall, 52% of individuals received their prescriptions from specialists.

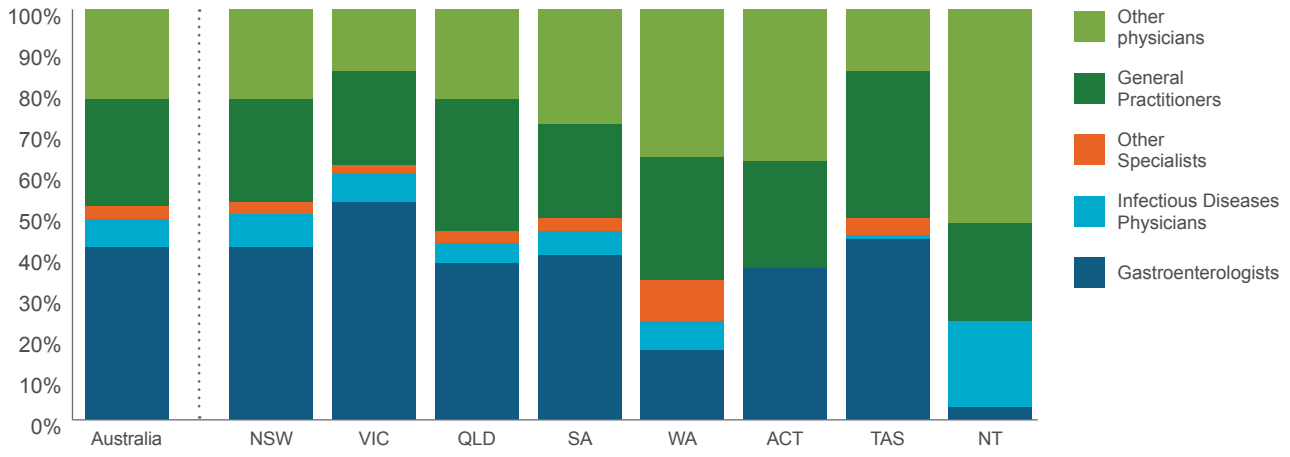
Distribution of prescriber types varied across jurisdictions (Figure 8). Gastroenterologists were the prominent prescriber in most jurisdictions. In Northern Territory, 24% of individuals were prescribed DAA treatment by GPs and 21% by infectious disease physicians, compared to 4% by gastroenterologists. In Western Australia, 30% of individuals were prescribed DAA treatment by GPs, compared to 17% by gastroenterologists. Across jurisdictions, the proportion of individuals prescribed DAA treatment by GPs was highest in Tasmania (36%), Queensland (32%), and Western Australia (30%).

Figure 7: Distribution of DAA regimens prescribed during March 2016 to March 2018, by treatment regimen and treatment course duration (16 weeks treatment exclusively applies to EBR/GZR+RBV)



SOF: Sofosbuvir; LDV: Ledipasvir; DCV: Daclatasvir; EBR: Elbasvir; GZR: Grazoprevir; PrOD: Paritaprevir/ritonavir/Ombitasvir+Dasabuvir; VEL: Velpatasvir; RBV: Ribavirin

Figure 8: Distribution of prescriber types for individuals initiating DAA treatment during March 2016 to March 2018, in Australia and by jurisdiction



Other physicians included supervised medical officers (e.g., interns, resident medical officers, and registrars), public health physicians, temporary resident doctors, other/unclassified non-specialist and undefined.

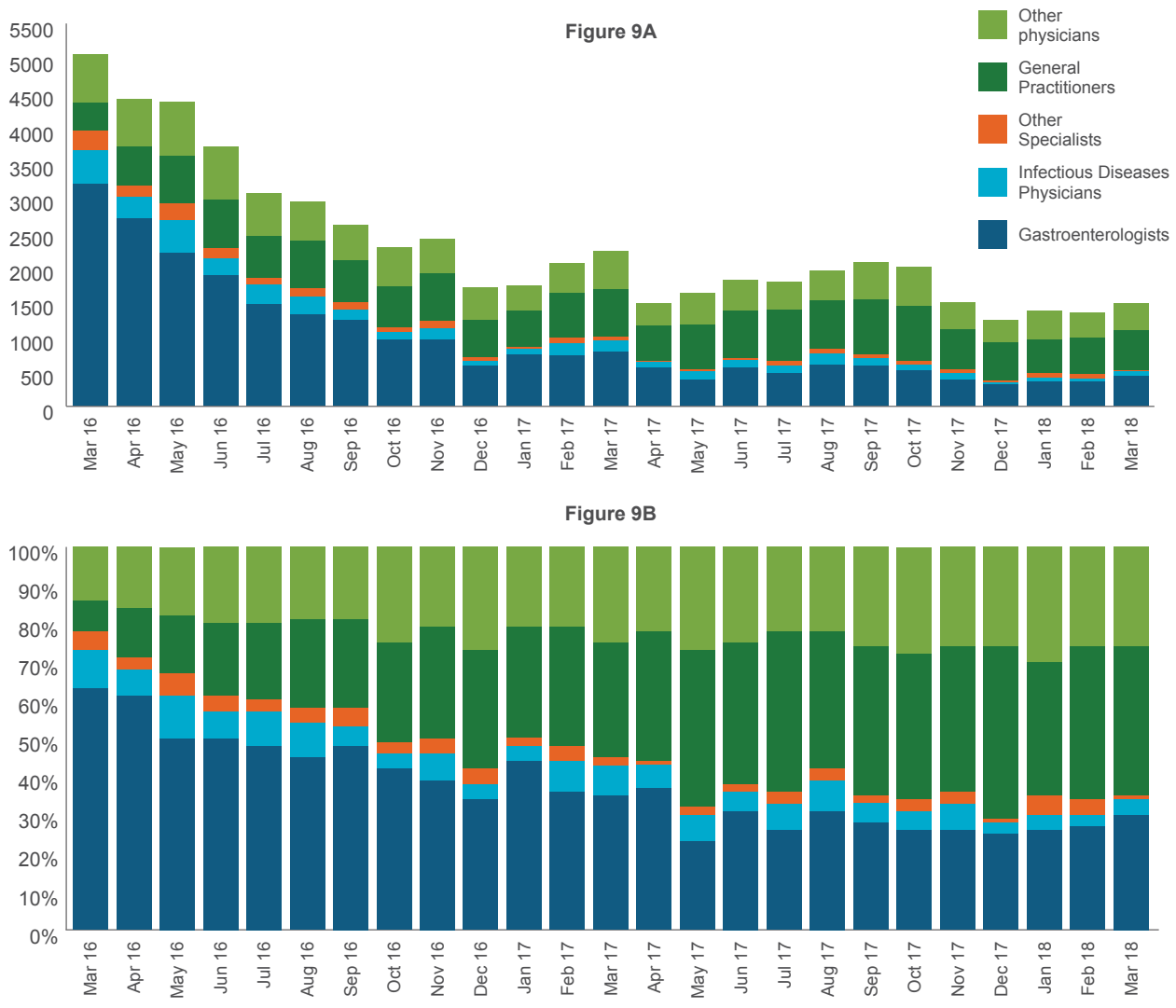
The distribution of prescriber types in each month is shown in Figure 9. The proportion of individuals prescribed DAA treatment by GPs increased from 8% in March 2016 to 40% in May 2017, followed by a relatively constant trend since then. During the first three months of 2018 (January to March), 38% of individuals initiating DAA treatment were prescribed treatment by GPs (Figure 9B). Increasing contribution of GPs in DAA prescribing is also evident by increasing the absolute number of individuals initiated on DAA treatment by GPs, from 410 in March 2016 to 790 in October 2017. Since November 2017, an average of 540 individuals per month were initiated on DAA treatment by GPs (Figure 9A).

Distribution of prescribed DAA regimens by prescription type

The distribution of prescribed DAA regimens by prescriber type is shown in Figure 10. Across all prescriber types, the most commonly prescribed regimens included 12 weeks sofosbuvir/ledipasvir, followed by 12 weeks sofosbuvir+daclatasvir (Figure 10A).

Of prescriptions by specialists, an overall 18% included an extended duration regimen (24 weeks sofosbuvir/ledipasvir or sofosbuvir+daclatasvir and 16 weeks elbasvir/grazoprevir) compared to 6% of prescriptions by GPs (Figure 10A). Of the total number of prescriptions of extended duration regimen,

Figure 9: Absolute frequency (A) and relative frequency (B) of prescriber types in each month for individuals initiating DAA treatment during March 2016 to March 2018 in Australia



Other physicians included supervised medical officers (e.g., interns, resident medical officers, and registrars), public health physicians, temporary resident doctors, other/unclassified non-specialist and undefined.

69% was by specialists compared to 11% by GPs (Figure 10B). These regimens are primarily prescribed for patients with cirrhosis.[5]

Across all prescriber types, the highest proportion of 8 weeks sofosbuvir/ledipasvir regimen was observed in prescriptions by GPs (10%, Figure 10A). Of the total number of 8 weeks sofosbuvir/ledipasvir prescriptions, the majority was by GPs (35%, Figure 10B).

This regimen is prescribed for treatment-naïve patients with genotype 1, no cirrhosis, and pre-treatment HCV RNA<6 million IU/mL.[5]

Of the total number of sofosbuvir/velpatasvir prescriptions, the proportions by specialists and GPs were comparable with 40% prescribed by specialist (30% by Gastroenterologists), and 30% by GPs (Figure 10B).

Figure 10: Distribution of prescribed DAA regimens by prescriber types (A) and distribution of prescriber types by prescribed DAA regimens (B) for individuals initiating DAA treatment during March 2016 to March 2018 in Australia

Figure 10A

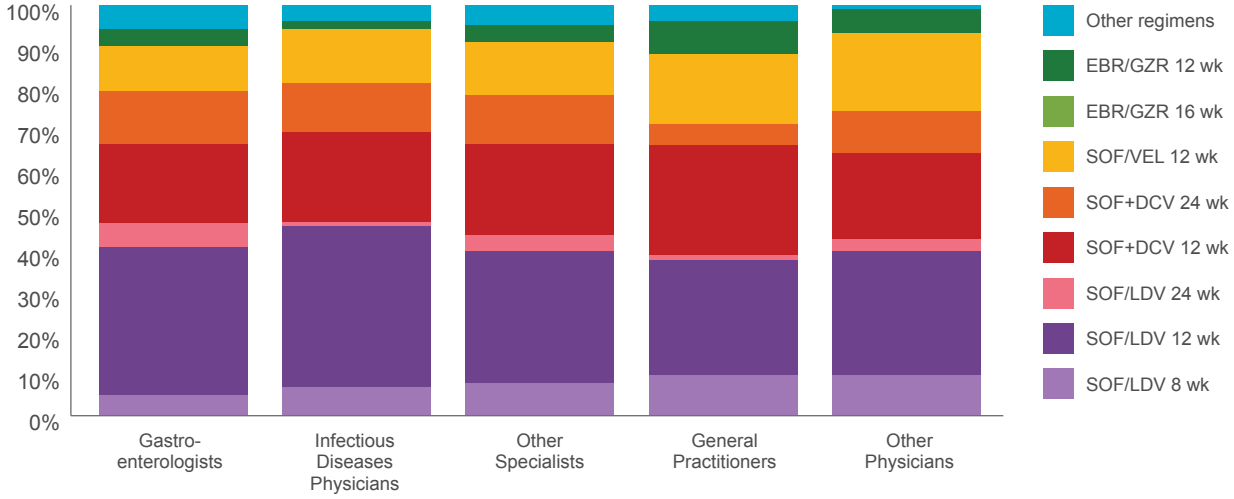
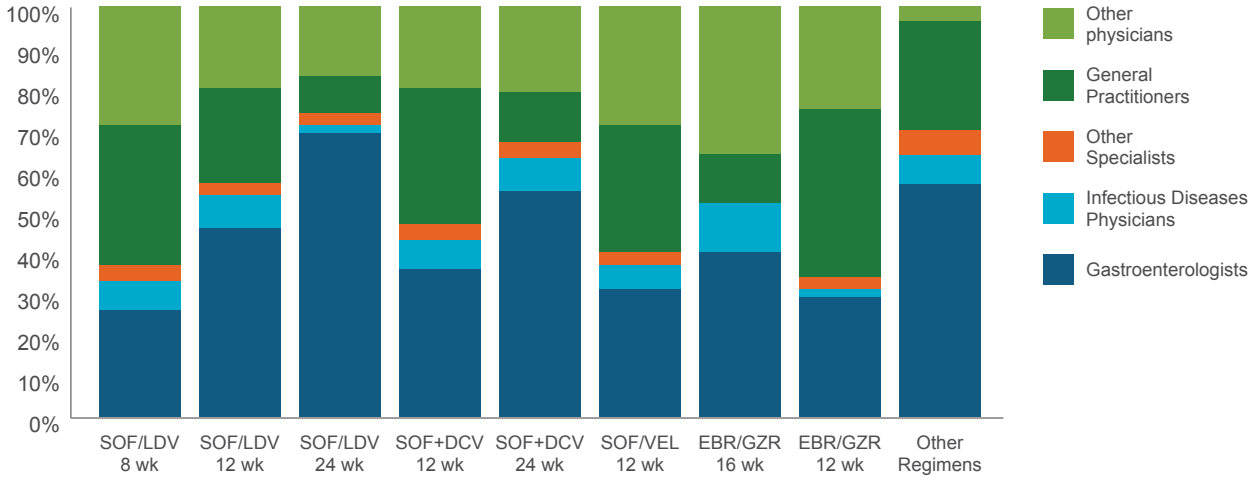


Figure 10B



Other physicians included supervised medical officers (e.g., interns, resident medical officers, and registrars), public health physicians, temporary resident doctors, other/unclassified non-specialist and undefined.
SOF: Sofosbuvir; LDV: Ledipasvir; DCV: Daclatasvir; EBR: Elbasvir; GZR: Grazoprevir; VEL: Velpatasvir

5. Hepatitis C Virus Infection Consensus Statement Working Group. Australian recommendations for the management of hepatitis C virus infection: a consensus statement (August 2017). Gastroenterological Society of Australia, Melbourne, Australia, 2017

Methodology

The methods for the estimations have been described in detail elsewhere.[6] In brief, the following data sources were used for analysis:

- The data of a longitudinal cohort of individuals, representing a 10% random sample of the PBS database were used to estimate the number of individuals initiating DAA between March 2016 and March 2018, and for all sub-group analyses of DAA treatment uptake.
- The estimated numbers of individuals living with chronic HCV infection in Australia and in each jurisdiction in 2015, and age distribution among individuals living with chronic HCV infection were extracted from a modelling study.[7]

There are some factors that should be considered in interpreting the results. Given that the results are extrapolated from 10% random sample of the PBS database, the results in subgroups with small numbers might be subject to uncertainties. This analysis provided data of treatment initiations. It does not reflect the number of individuals who completed their treatment course, although treatment discontinuation is expected to be low. The jurisdiction-specific treatment initiation estimates in this report are based on data of dispensing pharmacy location, and not patient's residence location while the estimated numbers of individuals living with chronic HCV are based in part on the number of HCV notifications which are reported based on residence. Thus cross-jurisdiction dynamics should be considered in interpreting the jurisdiction-specific data. It could have more impact on the estimates from smaller jurisdictions given their smaller population as the denominator.

6. Hajarizadeh B, Grebely J, Matthews GV, Martinello M, Dore GJ. Uptake of direct acting antiviral treatment for chronic hepatitis C in Australia. Journal of Viral Hepatitis 2018; 25(6): 640-8.
7. The Kirby Institute. Hepatitis B and C in Australia Annual Surveillance Report Supplement 2016. The Kirby Institute, UNSW Sydney, Sydney NSW 2052