

Monitoring hepatitis C treatment uptake in Australia

Issue #12 July 2022¹

Initiations of chronic hepatitis C treatment from 2016 to 2021

A total of 99,735 individuals have initiated direct acting antiviral (DAA) treatment for chronic hepatitis C virus (HCV) infection in Australia, including 95,395 individuals through Pharmaceutical Benefits Scheme (PBS) during 2016 to 2021, and an estimated 4,340 individuals through early DAA access avenues in 2014-15. An estimated 53% of the people living with chronic HCV infection in Australia in 2015 have initiated DAA treatment (29-60% across jurisdictions). Of 95,395 individuals receiving DAA treatment through the PBS, 6,808 individuals (7%) received at least one further treatment course (re-treatment).

Among individuals initiating DAA treatment during 2016 to 2021 (n=95,395), 68% were men, and median age was 48 years (quartiles 1-3: 39-57). Since August 2018 when both pan-genotypic regimens were available (i.e., sofosbuvir/velpatasvir and glecaprevir/pibrentasvir), 53% of individuals have been initiated on sofosbuvir/velpatasvir, 39% on glecaprevir/pibrentasvir, and 8% on other regimens.

Most individuals initiating DAA treatment received their prescriptions from gastroenterologists (40%), followed by general practitioners (GPs; 37%). Overall, 59% of individuals were initiated on treatment by specialists, and 39% by non-specialists (i.e., GPs and nurse practitioners). A total of 1,367 individuals were initiated on treatment by nurse practitioners, increasing from 80 in 2017 to 466 in 2021.

1. The Kirby Institute. Monitoring hepatitis C treatment uptake in Australia (Issue 12). The Kirby Institute, UNSW Sydney, NSW, Australia, July 2020 (available online at: <https://kirby.unsw.edu.au/report/monitoring-hepatitis-c-treatment-uptake-australia-issue-12-july-2022>). For more information, contact Dr Behzad Hajarizadeh (bhajarizadeh@kirby.unsw.edu.au) or Professor Greg Dore (gdore@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®)
- August 2018: Glecaprevir/pibrentasvir (Maviret®)
- April 2019: Sofosbuvir/velpatasvir/voxilaprevir (Vosevi®)

Issue #12 newsletter provides data on uptake of DAA treatment through PBS-listing between March 2016 and December 2021 by jurisdiction, patients' gender and age, treatment regimen, and prescriber type.

Methodology

The PBS data of DAA dispensation for all individuals who initiated treatment between March 2016 and December 2021 in Australia were used in the analysis. The data used for estimating the treatment uptake included the first DAA treatment course prescribed for each individual. The data of the second or further courses of treatment (for treatment failure or HCV reinfection) were only included for estimating re-treatment uptake. In instances where the first regimen prescribed was discontinued and the second regimen was initiated after less than four weeks, the second regimen was considered as the initiating treatment. Prescriber speciality was based on the prescriber derived major speciality codes recorded by PBS. In this coding system, medical trainees (i.e., registrars) are considered as specialists. Jurisdictions are based on the patient residence at the time of treatment prescription. More details of methodology were described previously.²

Longitudinal data of DAA treatment uptake were provided for 2019 and 2021 to enable a better evaluation of the recent trends in treatment uptake, including during COVID-19 related restrictions.

DAA treatment uptake

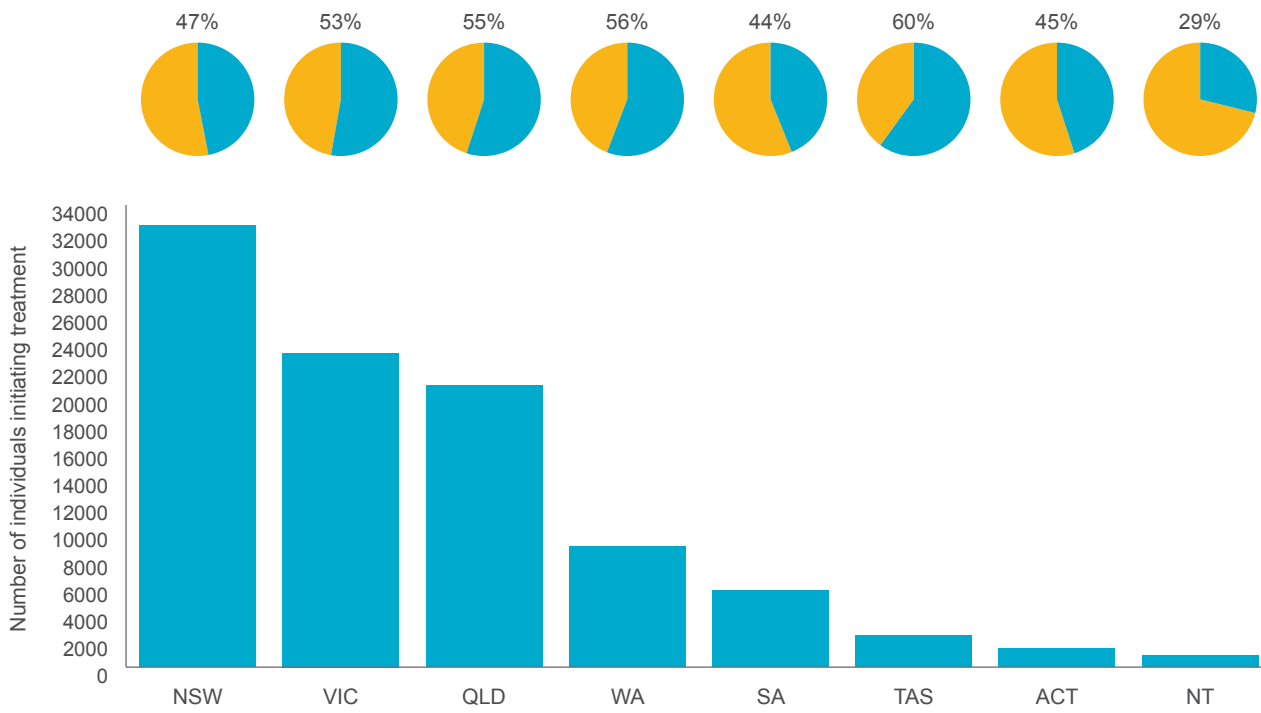
A total of 95,395 individuals initiated DAA treatment through the PBS between March 2016 and December 2021 in Australia. In 2014 and 2015, prior to DAA regimens being listed on PBS, an estimated 4,340 individuals received DAA treatment through early DAA access avenues, including clinical trials, pharmaceutical company compassionate access programs, and generic importation.³ Considering this number, an overall number of 99,735 individuals received DAA treatment from 2014 to 2021.

In 2015, an estimated 188,690 individuals were living with chronic HCV infection in Australia.⁴ Given the overall treatment initiation in 99,735 individuals, a maximum 53% of individuals living with chronic HCV infection in Australia, initiated DAA treatment until the end of 2021. This estimate does not encompass individuals with new infections from 2016, some of whom have been treated as well.

At jurisdictional level, the number of individuals initiating DAA treatment through the PBS between March 2016 and December 2021 included 32,478 in New South Wales, 23,104 in Victoria, 20,695 in Queensland, 8,878 in Western Australia, 5,650 in South Australia, 2,317 in Tasmania, 1,386 in Australian Capital Territory, and 871 in Northern Territory.⁵ The estimated proportion of individuals living with chronic HCV infection initiating DAA treatment in this period varied between 29% to 60% across jurisdictions (Figure 1).

2. Stafford F, Dore GJ, Clackett S, Martinello M, Matthews GV, Grebely J, Balcomb AC, Hajarizadeh B. Prescribing of direct-acting antiviral therapy by general practitioners for people with hepatitis C in an unrestricted treatment program. *Medical Journal of Australia* 2021; 215(7): 332-3.
3. 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
4. The Kirby Institute. National update on HIV, viral hepatitis and sexually transmissible infections in Australia: 2009–2018. The Kirby Institute, UNSW Sydney, Sydney NSW 2052
5. For a small number of individuals (n=16), data of jurisdiction of residence were not available.

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 2016 and 2021, by jurisdiction



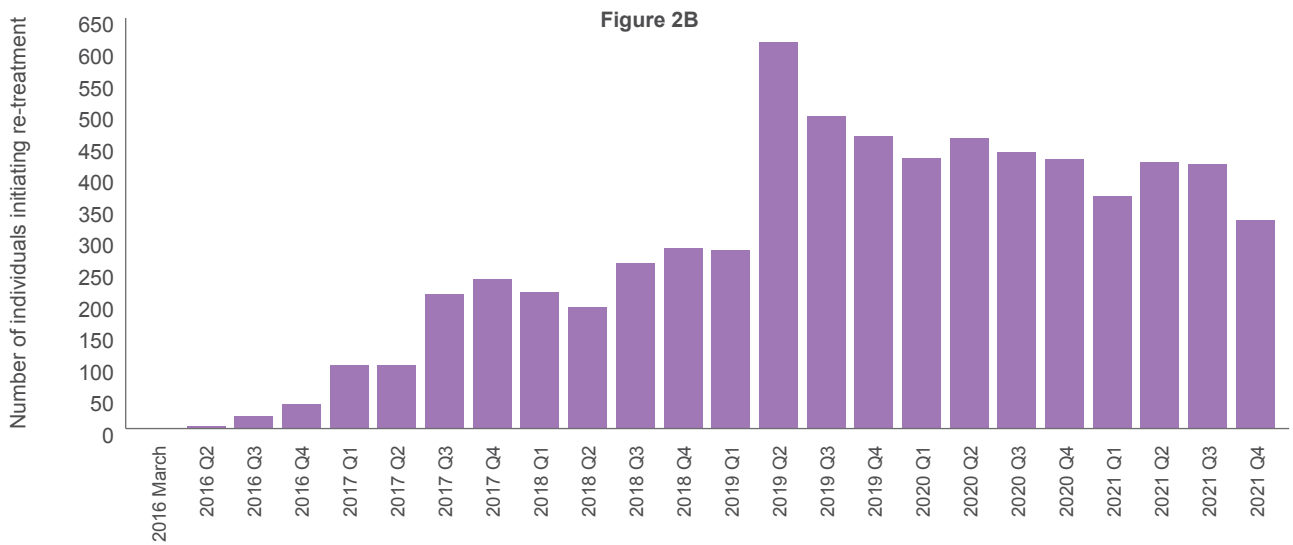
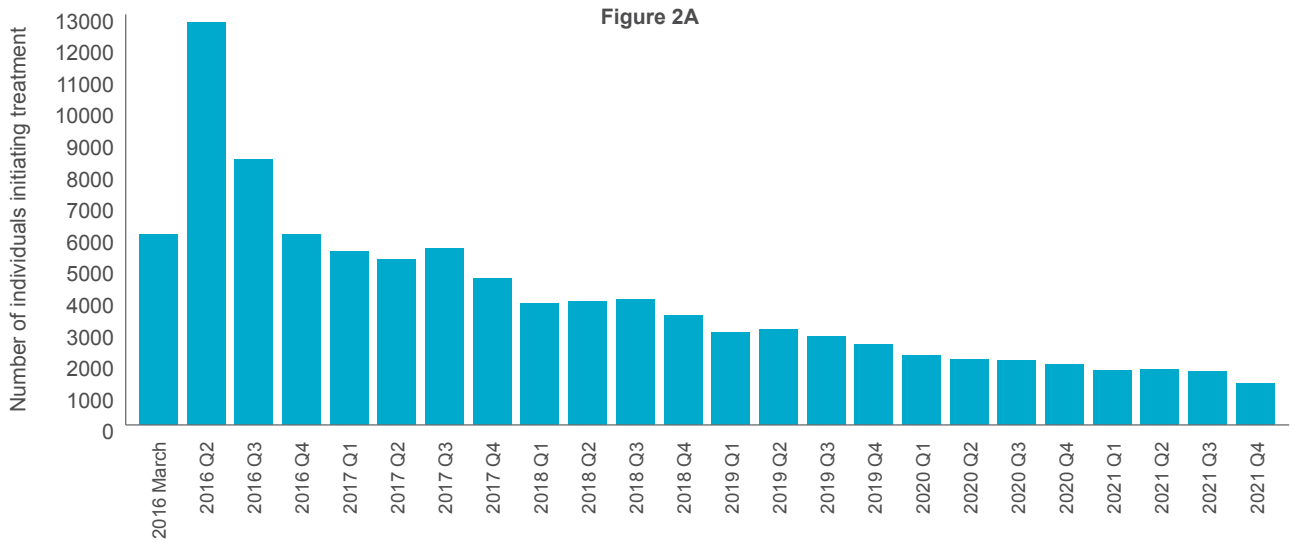
NSW: New South Wales; VIC: Victoria; QLD: Queensland; SA: South Australia; WA: Western Australia; ATC: Australian Capital Territory; TAS: Tasmania; NT: Northern Territory

The quarterly number of DAA treatment initiations in Australia is illustrated in Figure 2A. In 2021, number of individuals initiating treatment was 1,713, 1,766, 1,679, and 1,316 in each quarter, respectively. It should be noted that the number of treatment initiations in the last quarter may be underestimated given delay in reporting data from pharmacies to PBS. The annual number of individuals initiating DAA treatment included 33,201 in 2016, 20,969 in 2017, 15,209 in 2018, 11,314 in 2019, 8,228 in 2020, and 6,474 in 2021.

Of 95,395 individuals receiving DAA treatment through the PBS, 6,808 individuals (7%) received at least one further treatment course (number of re-treatment courses = 7,948), among whom an estimated 52% received re-treatment due to HCV reinfection and 48% due to virological failure (Figure 2B).⁶

6. Carson J, Barbieri S, Dore GJ, Matthews G, Hajarizadeh B. National direct acting antiviral utilisation for retreatment of hepatitis C virus due to reinfection or virological failure in Australia. Presented in the 13th Australasian Viral Hepatitis Conference, 29-31 May 2022, Brisbane.

Figure 2: Number of individuals initiating first course of DAA treatment (A) and any further courses of DAA treatment, i.e., retreatment (B) in each quarter during 2016 to 2021 in Australia

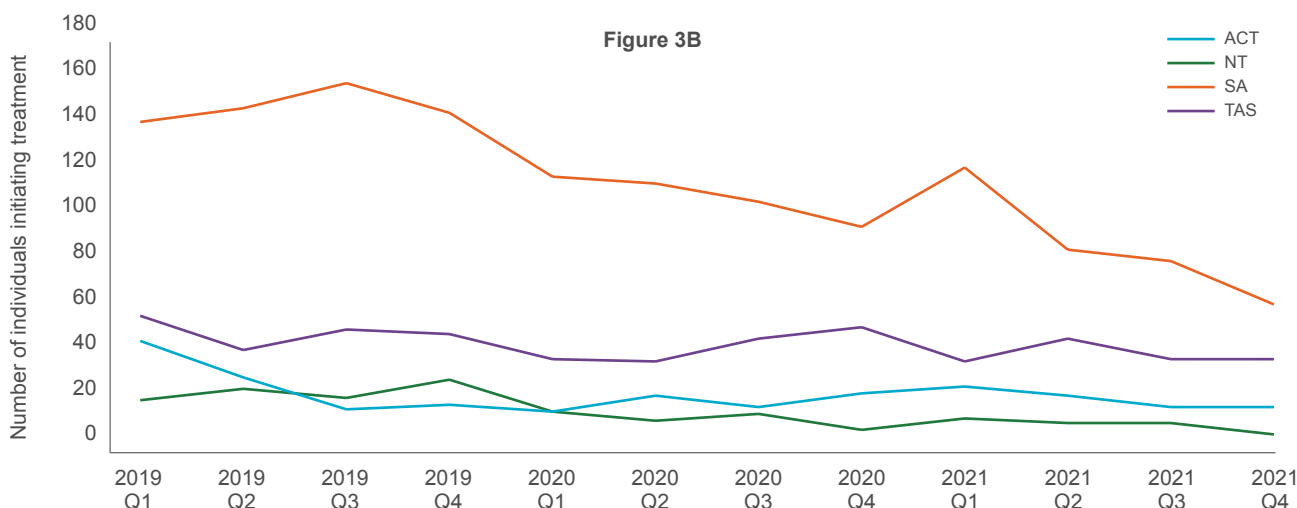
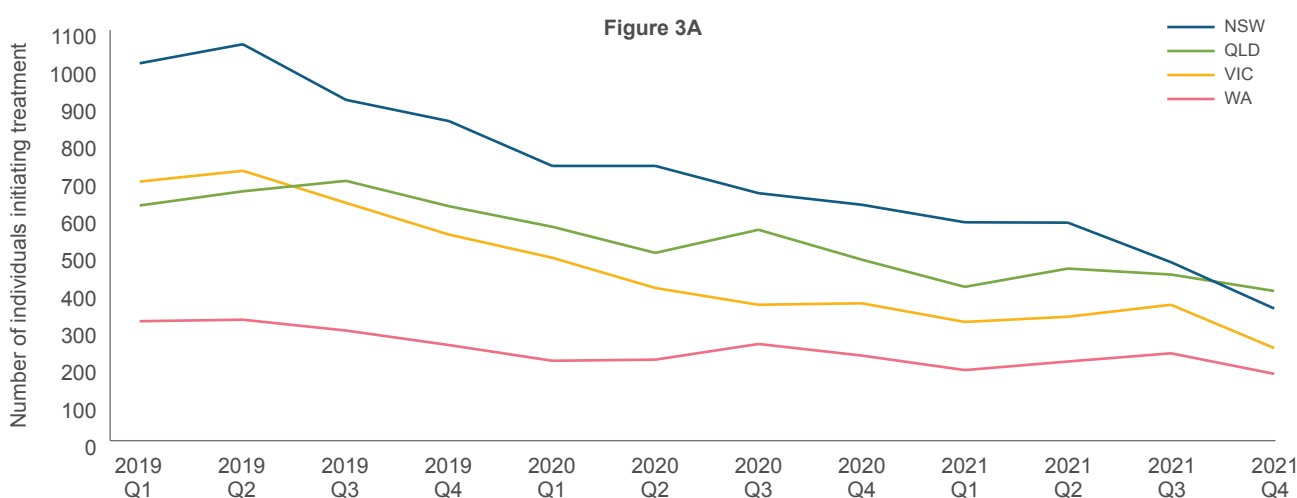


DAA treatment uptake by jurisdictions

The trends of DAA treatment uptake during 2019-21 by jurisdiction are illustrated in Figure 3. In the four jurisdictions with the largest number of treatment initiations, treatment uptake decreased between the first quarter of 2019 and the third

quarter of 2021, including 27% in Western Australia, 29% in Queensland, 48% in Victoria, and 53% in New South Wales (Figure 3A). Given the possible delay in full reporting of prescriptions dispensed in the last quarter of 2021, the data of the third quarter was used as comparison point.

Figure 3: Quarterly number of individuals initiating DAA treatment during 2019 to 2021 in Australian jurisdictions



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

Gender and age distribution of individuals initiating DAA treatment

Of individuals initiating DAA treatment between 2016 and 2021, 68% were men and 32% were women. Median age was 48 years (quartiles 1-3: 39-57) with similar age distribution between men and women (Figure 4).

The trend of DAA treatment uptake during 2019-21 by age is illustrated in Figure 5. Although decreasing trend was observed in all age groups, the magnitude of change varied. Between the first quarter of 2019 and the third quarter of 2021, the largest decrease in treatment initiation was observed among people 31-40 years old (50%), while it decreased the lowest among those older than 60 (27%). In other age groups, treatment uptake decreased by 38-46%.

Since 2016, there has been a trend towards higher proportion of treatment initiations in younger individuals, particularly with a relatively consistent increase in proportion of people 30 years old or younger (Figure 6).

Figure 4: Age distribution of individuals initiating DAA treatment during 2016 to 2021, by gender

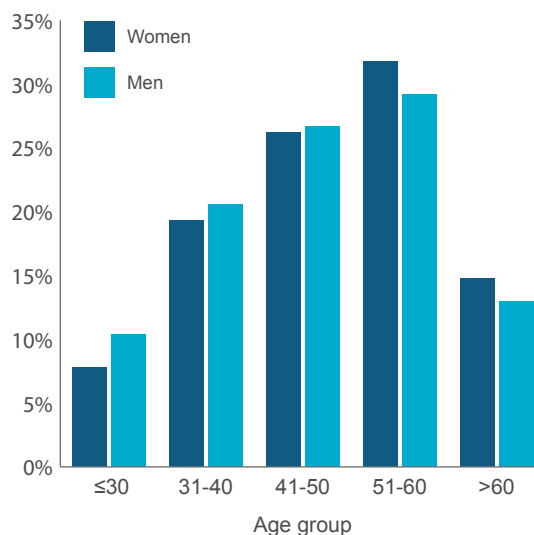


Figure 5: Quarterly number of individuals initiating DAA treatment during 2019 to 2021, by age group

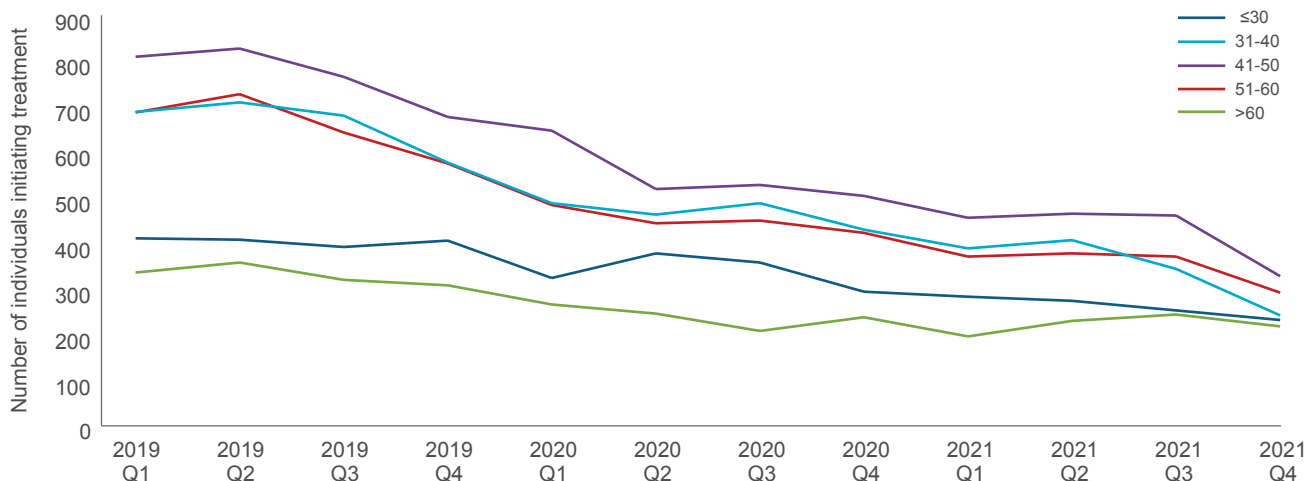
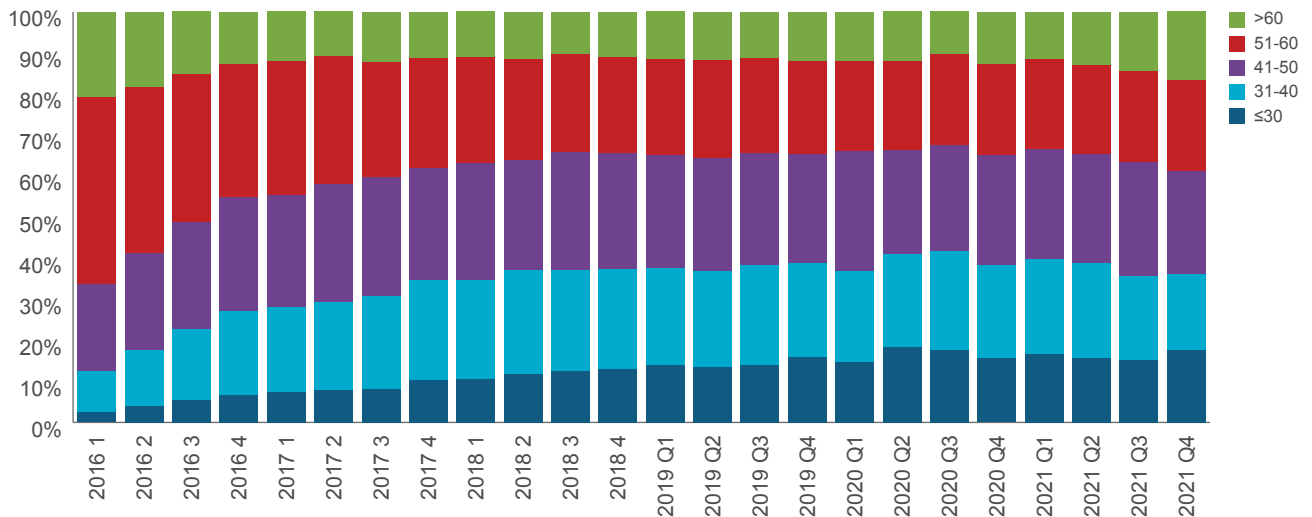


Figure 6: Quarterly proportion of individuals initiating DAA treatment during 2016 to 2021, by age group.

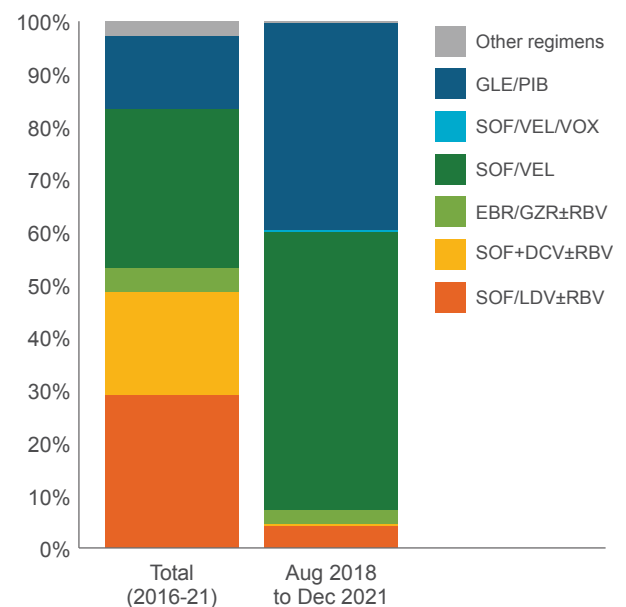


Distribution of DAA regimens prescribed for individuals initiating treatment

Overall, the most commonly prescribed regimens were sofosbuvir/velpatasvir for 30%, and sofosbuvir/ledipasvir±ribavirin for 29% of patients. Sofosbuvir/velpatasvir and glecaprevir/pibrentasvir were PBS listed in August 2017 and August 2018, respectively. Since August 2018 (when all regimens were available through PBS), 53% of individuals initiating DAA have been prescribed sofosbuvir/velpatasvir, and 39% have been prescribed glecaprevir/pibrentasvir (Figure 7).

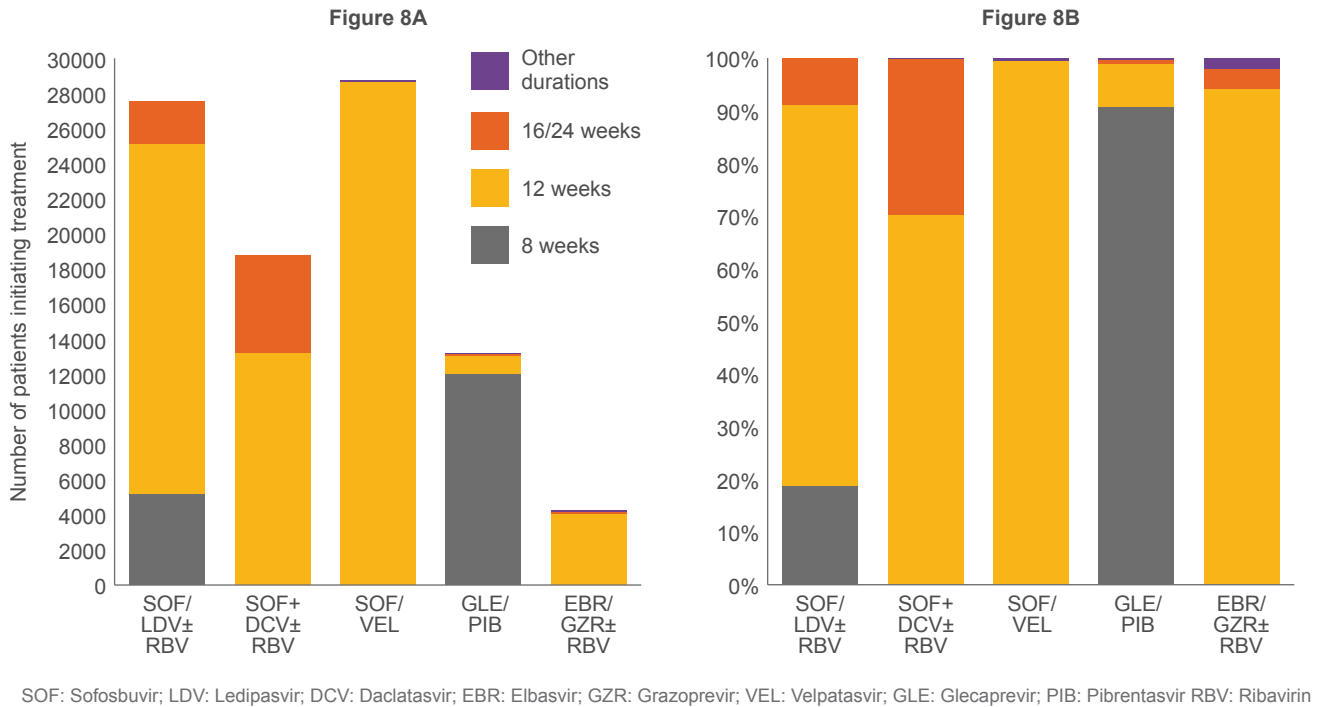
The breakdown of treatment initiation numbers by treatment regimen and treatment course duration is shown in Figure 8. Of individuals initiated on sofosbuvir/ledipasvir±ribavirin (n=27,585), 19% were prescribed an 8-week course, 72% a 12-week course, and 9% a 24-week course. Of individuals initiated on sofosbuvir+daclatasvir±ribavirin (n=18,820), 70% were prescribed a 12-week course, and 30% a 24-week course. Of individuals initiated on elbasvir/grazoprevir±ribavirin (n=4,265), 94% were prescribed a 12-week course, and 4% a 16-week course. Of individuals initiated on glecaprevir/pibrentasvir (n=13,191), 91% were prescribed an 8-week course, 9% a 12-week course, and 1% a 16-week course.

Figure 7: Distribution of DAA regimens prescribed during 2016 to 2021 (overall), and August 2018 to December 2021 (all regimens where PBS-listed)



SOF: Sofosbuvir; LDV: Ledipasvir; DCV: Daclatasvir; EBR: Elbasvir; GZR: Grazoprevir; VEL: Velpatasvir; VOX: Voxilaprevir; GLE: Glecaprevir; PIB: Pibrentasvir RBV: Ribavirin

Figure 8: Absolute frequency (A) and relative frequency (B) of DAA regimens prescribed during 2016 to 2021, by treatment regimen and treatment course duration

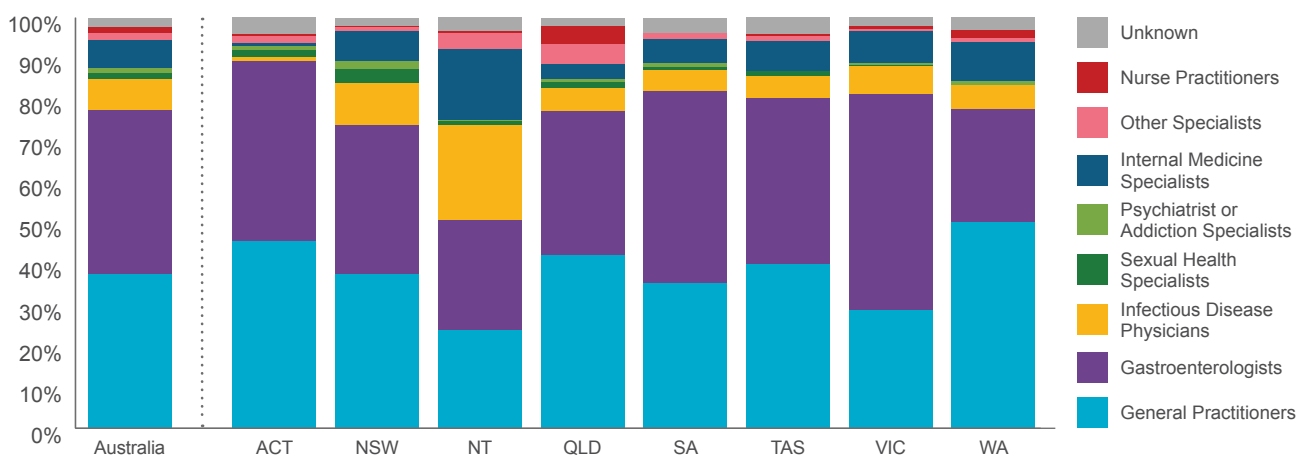


Distribution of health care providers prescribing for individuals initiating DAA treatment

Among individuals initiating DAA treatment during 2016 to 2021, the majority received their prescriptions from gastroenterologists (40%), followed by general practitioners (GPs; 37%). Overall, 59% of individuals were initiated on treatment by specialists, and 39% by non-specialists (i.e. GPs and nurse practitioners).

Distribution of prescriber types varied across jurisdictions (Figure 9). The proportion of individuals initiated on DAA treatment by GPs was highest in Western Australia (50%). The proportion of individuals initiated on treatment by specialists was highest in Northern Territory (72%). The largest number of individuals initiated on treatment by nurse practitioners was from Queensland (n=894, 4%).

Figure 9: Distribution of prescriber types for individuals initiating DAA treatment during 2016 to 2021, in Australia and by jurisdiction



The quarterly number of treatment initiation by prescriber types is shown in Figure 10. During 2019-21, the number of individuals initiated on DAA treatment by nurse practitioners increased while treatment initiation by GPs and specialists decreased. Nurse practitioners have been authorised to prescribe DAA since June 2017. A total of 1,367 individuals

were initiated on treatment by nurse practitioners, including 80 in 2017, 182 in 2018, 245 in 2019, 394 in 2020, and 466 in 2021. The proportion of treatment initiations by prescriber type during 2019-21 should be interpreted cautiously given increasing number of unidentified prescriber type in these years (Figure 10).

Figure 10: Quarterly distribution of prescriber types for individuals initiating DAA treatment during 2019 to 2021

