VIRAL HEPATITIS MAPPING PROJECT:
HEPATITIS C

Geographic diversity in chronic
hepatitis C prevalence and treatment

NATIONAL REPORT 2021–2023

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WHO Collaborating Centre
for Viral Hepatitis
VIDRL

Doherty Institute

THE UNIVERSITY OF MELBOURNE

The Royal Melbourne Hospital

A joint venture between The University of Melbourne and The Royal Melbourne Hospital

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PUBLISHING INFORMATION

CONTACT INFORMATION

WHO COLLABORATING CENTRE FOR VIRAL HEPATITIS

ACKNOWLEDGMENTS

ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
CHC	chronic hepatitis C
DAA	direct-acting antiviral
GP	general practitioner
HCV	hepatitis C virus
MBS	Medicare Benefits Schedule
NNDSS	National Notifiable Diseases Surveillance System
NSW	New South Wales
NP	nurse practitioner
NT	Northern Territory
PBS	Pharmaceutical Benefits Scheme
PHN	Primary Health Network
Qld	Queensland
SA	South Australia
SA2	Statistical Area 2 (geographic boundary)
Tas	Tasmania
Vic	Victoria
WA	Western Australia
WHO	World Health Organization

For data terms and definitions, see Section B: Data sources and methodology.

EXECUTIVE SUMMARY

SECTION A: HEPATITIS C

– Between March 2016 and October 2023, a total of 104,404 people received hepatitis C treatment through the Pharmaceutical Benefits Scheme (PBS).

– Estimated treatment uptake varied widely by Primary Health Network (PHN) and continued to be generally lower in remote and very remote regions, and regions of higher hepatitis C prevalence.

– Treatment numbers declined between 2016 and 2023, and this has occurred in all PHN regions. The largest declines in the number of people prescribed treatment occurred in **Northern Sydney**, **Central and Eastern Sydney**, **Eastern Melbourne**, **Australian Capital Territory**, **South Eastern Melbourne**, **Northern Territory** and **North Western Melbourne**.

– There were annual declines in the number of people treated each year from 2016 to 2022; however, the monthly average number of people treated stabilised nationally in 2023. This was driven by an increase in NSW and smaller-than-average declines or stable trends in most other states and territories.

– General practitioners (GPs) were the prescriber for 34.6% of people who received treatment during 2020–2023; non-GP specialists represented 39.9%, and nurse practitioners (NPs) 13.3%, with wide variation in the distribution of prescribers by PHN.

– There was an increase in prescribing by NPs and a decrease in prescribing by non-GP specialists between 2020 and 2023.

HEPATITIS B

– The equivalent report on hepatitis B, geographic diversity and trends in prevalence and treatment uptake and related methods, as well as liver cancer data, are presented in the Viral Hepatitis Mapping Project: Hepatitis B National Report 2022.

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INTRODUCTION

BACKGROUND

The Viral Hepatitis Mapping Project aims to assess geographic variations in the prevalence of hepatitis B and hepatitis C and disparities in access to care in order to identify priority areas for response. The most recent data regarding hepatitis B prevalence, care and treatment uptake, and overall viral hepatitis testing (for hepatitis B and C), are presented in the Viral Hepatitis Mapping Project: Hepatitis B National Report 2022 (published 2024).

This report presents the most recent available treatment data on hepatitis C through October 2023 and an assessment of ongoing trends from 2016, including the apparent health service impact of the ongoing COVID-19 pandemic and associated restrictions. The data enable readers to identify hepatitis C treatment uptake variation in local areas and to assess progress in delivering care to those affected. Improving access to care and treatment for hepatitis B and hepatitis C is needed to reduce the burden of attributable liver disease and cancer, the distribution of which is also geographically disparate.

This report is informed by the targets set out in the Fifth National Hepatitis C Strategy 2018–2022. Future versions of the report will assess progress towards new targets contained in the draft Sixth National Hepatitis C Strategy 2023–2030, which is due for release in 2024.

The authors acknowledge communities and individuals affected by hepatitis C. We thank all people with a living and lived experience of hepatitis C and/or injecting drug use, and acknowledge those who have lost their lives to hepatitis C.

This report highlights a range of disparities which must be addressed to meet Australia's 2030 elimination goals for hepatitis C, focusing on geographic inequities. These often reflect health disparities between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians. The findings in this report highlight the enduring traumatic legacy of colonisation and recognise the historical disadvantage perpetuated by institutional racism and systemic failures that collectively contribute to these disparities. This emphasises the urgent need for culturally appropriate care and programs led by Aboriginal and Torres Strait Islander communities that address the root causes of health inequities. Furthermore, Aboriginal and Torres Strait Islander peoples' overrepresentation in the criminal justice system can be inextricably linked to the consequences of colonisation further contributing to poorer health outcomes.

Inequities exist between people who have ever been incarcerated and those who have not. These data highlight correctional settings as a focus, noting that interventions should focus on prevention and appropriate harm reduction, as well as increased testing and treatment. Recognising that people can and will use drugs – and understanding that it is critical we do all we can to reduce the risk of related adverse outcomes – is vital to providing a comprehensive and adequate response. The criminalisation of drugs exacerbates the risk of hepatitis C transmission by fostering environments where individuals who inject drugs face heightened stigma, barriers to harm reduction services, and increased likelihood of sharing contaminated needles due to a lack of legal and safe spaces for drug use.

By acknowledging and addressing systemic issues leading to inequities, comprehensive and equitable approaches to hepatitis C prevention and management in Australia can be supported.

WHAT'S NEW IN THIS REPORT?

This 2021–2023 report contains the following new information:

– Improved estimation of prescribing by specialty, now including NPs.

– Updated source estimates for the prevalence of hepatitis C, based on newly available data.

– Revised format to account for increased uncertainty in prevalence estimates (see below section How to use the data for more information).

– Data on re-treatment, including by prescriber specialty.

– Assessment of trends in treatment through October 2023, including granular assessment of changes by year.

HOW TO USE THE DATA

Treatment uptake and prevalence data are now presented as ratios relative to the national average, reflecting the greater uncertainty in point estimates and the need for ongoing updates as the understanding of the epidemiology of hepatitis C in Australia continues to evolve. This also reflects the uncertainty in the prevalence of hepatitis C according to geographic area, as estimates of reinfection, re-treatment and correctional facility treatment are not yet available at a granular level. Previous reporting also provided estimates at the granularity of Statistical Area 3; however, this has not been undertaken for this report due to greater uncertainty in geographically specific estimates of uptake. Monthly averages have also been used to account for the partial years available, to allow assessment of trends using the most recent data.

The data presented in this report allow for identification of the estimated relative uptake of chronic hepatitis C (CHC) treatment in each region, through assessment of how much higher or lower uptake is compared to the national average. It is also possible to identify how treatment numbers have changed over time, enabling evaluation of the impact of specific changes in access to hepatitis C treatment (for example, the health services impact of COVID-19) or policies and programs aiming to improve uptake.

More detailed and geographically granular estimates may be available through direct request via the contact information below.

The report also focuses on prescribers, allowing for assessment of the relative proportion of prescribing by specialty in each region, and trends over time.

To explore the data further, visit the online portal, which provides interactive visualisations of hepatitis C prevalence and treatment Australia-wide.

The findings presented in this report should be interpreted in the context of underlying uncertainties in source data, particularly notified cases of hepatitis C. Notifications are used to estimate the number of people living with hepatitis C in Australia, and to generate estimates of the variation in prevalence according to region. For further discussion of these limitations, see the Prevalence and Methods sections. This report includes treatment delivered in prisons; however, this cannot reliably be separately categorised. Data collected directly from correctional facilities and identifying uptake in these settings are reported elsewhere.[1]

REPORT STRUCTURE

The Mapping Project is divided into two reports. This report includes:

– Section A: hepatitis C prevalence and treatment
– Section B: data sources and methodology.

The hepatitis B report, along with associated data and methodology as well as sections on viral hepatitis serology testing trends and liver cancer, will be published separately.

MORE INFORMATION

For further information about the Mapping Project and to access previous reports, please visit the project website. For further information or resources related to hepatitis B, hepatitis C and the Mapping Project, visit www.ashm.org.au/resources/viral-hepatitis-mapping-project/ and www.doherty.edu.au/viralhepatitis. The Mapping Project is constantly evolving in response to valued feedback and guidance. To provide feedback, or to request further information or specific data, please contact jennifer.maclachlan@mh.org.au.

This report would not be possible without the contributions of the data custodians who provided information, and we gratefully acknowledge their support.

SECTION A: HEPATITIS C

PREVALENCE

Australia's draft Sixth National Hepatitis C Strategy 2023–2030[2] sets a target of 85% of people living with hepatitis C in 2016 (when direct-acting antivirals [DAAs] became available) receiving curative treatment by 2030. Treatment uptake estimates therefore relate to this baseline year, consistent with other reports,[3] and prevalence data for 2016 are presented to provide context to treatment uptake metrics.

The Kirby Institute estimates that there were 162,690 people living with CHC (viraemic infection) in Australia in 2016, representing 0.66% of the total population.[3] Since the introduction of DAA treatments and their associated high cure rates, and after accounting for curative treatment, mortality and new infections, the number of people estimated to be living with CHC at the end of 2022 was 74,400.[3] For further information regarding these estimates, see the Hepatitis C Annual Surveillance Report 2023.

As the understanding of hepatitis C epidemiology in Australia evolves, the estimated number of people living with chronic infection is revised. For this reason, the estimates in this report are presented as ratios relative to the national average in order to provide an indication of the relative burden of CHC in different geographic areas in the context of changing point estimates (see How to use the data for further information).

Additionally, geographically specific estimates are subject to considerable uncertainty, due to the lack of available data regarding new hepatitis C infections (for example, through reinfection). This means that no estimates of changing prevalence over time can reliably be reported beyond the national level; however, this may be possible in the future.

PREVALENCE ACROSS STATES AND TERRITORIES

In 2016 (the baseline year used for measuring treatment uptake) the prevalence of CHC was estimated to be highest in the NT (98.3% higher than the national average) and lowest in SA (33.7% lower than the national average) (Table A.1). The prevalence of CHC was also estimated to be above the national average in NSW (10.5% higher), Qld (15.3% higher), and Tas (8.9% higher); and below the national average in WA (6.3% lower), the ACT (11.1% lower) and Vic (16.8% lower) (Table A.1).

Table A.1: Variation in estimated prevalence of CHC in 2016, relative to the national average, by state and territory

State/territory	Estimated CHC prevalence in 2016 relative to national average (% higher or lower)
ACT	-11.1%
NSW	+10.5%
NT	+98.3%
Qld	+15.3%
SA	-33.7%
Tas	+8.9%
Vic	-16.8%
WA	-6.3%

CHC, chronic hepatitis C.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. 2016 is used as the baseline for National Strategy treatment uptake targets.

Totals may not add up due to inclusion of people without a state or territory of residence recorded in source data.

For more information regarding the presentation of data in this report, see How to use the data.

PREVALENCE ACROSS PRIMARY HEALTH NETWORKS

The estimated prevalence of CHC also varied considerably by PHN (Figure A.1). Reflecting the findings by state and territory, prevalence was estimated to be highest in the **Northern Territory** PHN (98.3% higher than the national average) as well as the **Western NSW** (78% higher), **North Coast** NSW (65% higher) and **Western Queensland** (64% higher) PHNs. Prevalence was generally estimated to be higher in rural and regional PHNs; however, due to urban population concentration, this does not always reflect the greatest absolute numbers of people living with CHC. The relatively greater burden of CHC in non-metropolitan areas presents challenges for access to care and treatment, particularly in regions where specialist services may be limited.[4]

These CHC prevalence estimates are derived from routinely collected data, and therefore limitations to their accuracy must be considered. Prevalence may be overestimated where testing rates for hepatitis C are higher than average, or underestimated where they are lower. However, comparison of prevalence estimates with other data sources, including the historical testing rates for hepatitis serology and hepatitis C RNA through the Medicare Benefits Scheme (MBS), does not suggest screening has been systematically higher in regions of higher prevalence. CHC prevalence in blood donors[5] is also consistently higher in the NT, congruent with the estimates in this report. Additionally, data from the National Drug Strategy Household Survey suggest that the proportion of people in rural and remote Qld, NSW and NT who have a history of injecting drug use is higher than the national average, which would likely correlate with a higher CHC prevalence. Systematically collected and accurate data on CHC testing and seroprevalence would assist in clarifying these variations according to region, and allow for verification of treatment uptake estimates. The linkage of data regarding CHC notifications and treatment uptake would also provide far more information regarding treatment uptake at an individual level.

Figure A.1: Estimated variation in prevalence of CHC in 2016, compared to the national average, by PHN

CHC prevalence relative to the national average (% higher or lower)
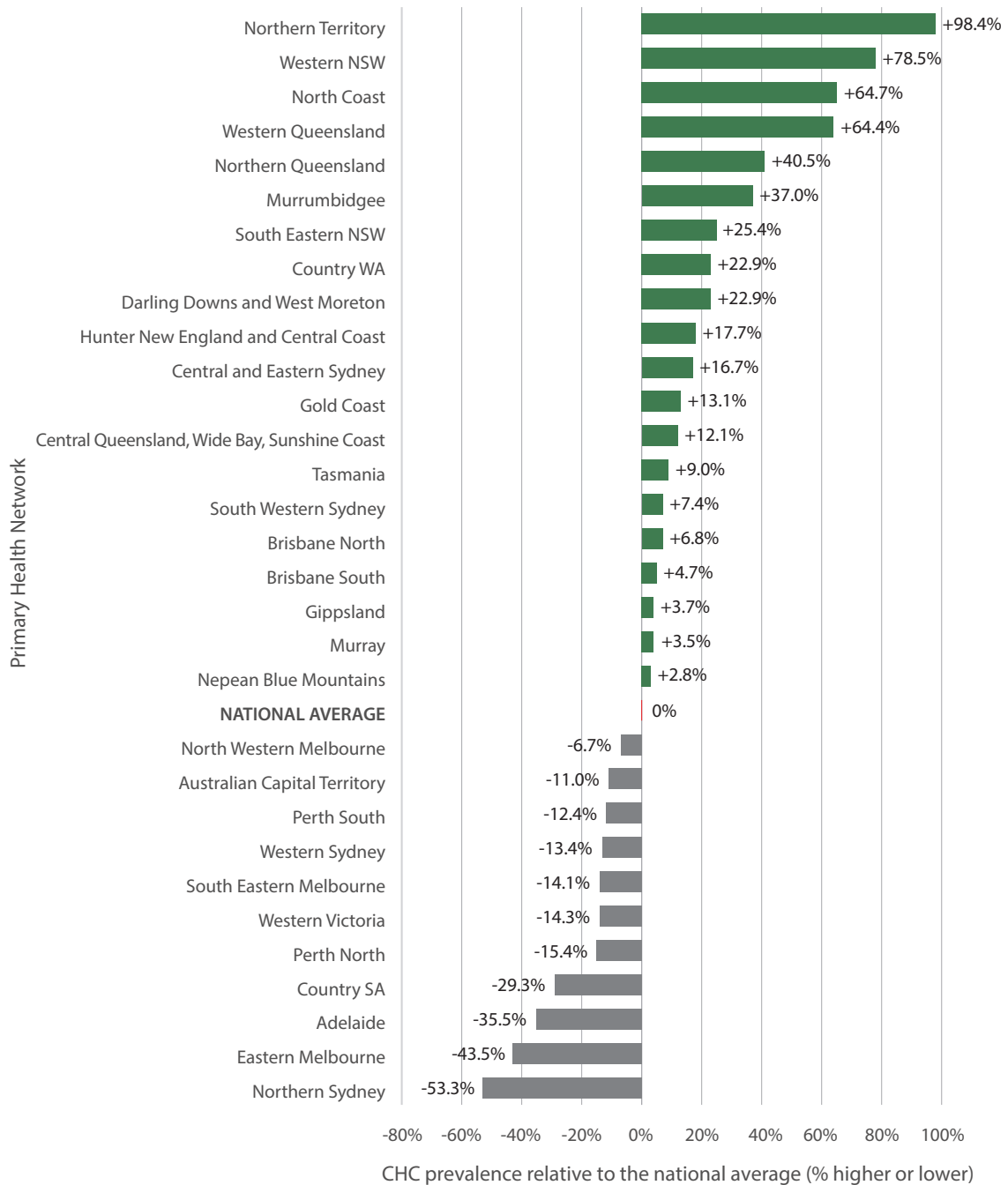
CHC, chronic hepatitis C. PHN, Primary Health Network.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. 2016 is used as baseline for the National Strategy treatment uptake targets.

For more information regarding the presentation of data in this report, see How to use the data.

(see data for this figure)

TREATMENT

A total of 104,404 people received DAA treatment for hepatitis C between March 2016 and October 2023. These data include all PBS prescriptions delivered through both the Section 85 and Section 100 schemes and include those who were treated while residing in correctional facilities.

During January – October 2023, a total of 4,308 people received treatment. The number of people treated in each month from 2020 to 2023 is shown in Figure A.2, while the monthly average number of people treated from March 2016 through October 2023 is shown in Figure A.3. Monthly averages have been used to account for the partial years available, to allow assessment of trends using the most recent data.

The monthly average number of people who received treatment had been declining steadily over time, from 3,242 per month in 2016 to 428 per month in 2022 (Figure A.3). However, in 2023 this stabilised (431 per month), ceasing the continual downward trend. These trends by state and territory are discussed in further detail below.

The monthly average decline was most pronounced between 2016 and 2017 (45.4% decline), with smaller reductions during 2018, 2019 and 2020 (26–28% per year) and during 2021 and 2022 (20–22%; Figure A.3, Table A.4). However, these reduction trends varied widely by region, as discussed in each section below.

Of those treated, the majority (88,681 people, 89.5%) received only a single course of treatment, while 10,429 people (10.5%) received more than one course of treatment. All uptake data reported here count each individual treated once regardless of the total number of courses, and re-treatment data are identified separately below (see Re-treatment).

Figure A.2: Number of people receiving CHC treatment in Australia, by month, January 2020 – October 2023
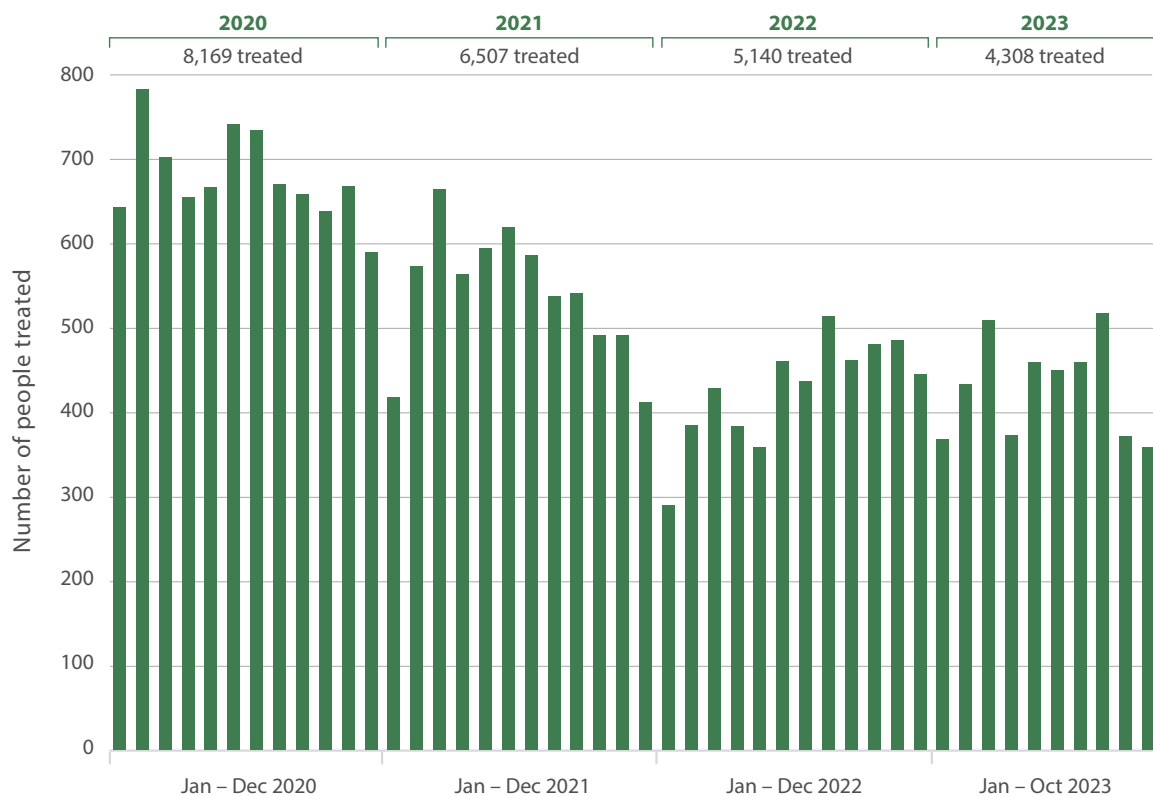
CHC, chronic hepatitis C.

Data source: Treatment data sourced from Services Australia Medicare statistics. (see data for this figure)

Figure A.3: Average monthly number of people receiving CHC treatment in Australia, by year, March 2016 – October 2023
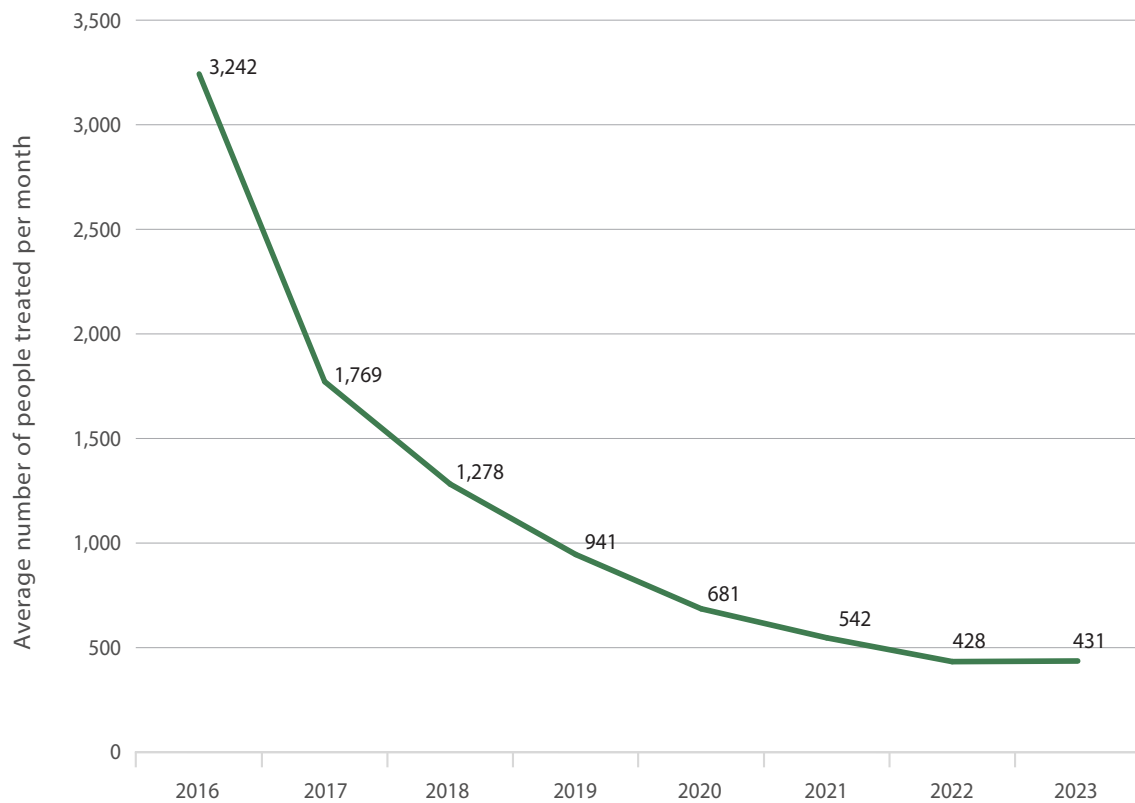
CHC, chronic hepatitis C.

Data source: Treatment data sourced from Services Australia Medicare statistics.

For more information regarding the presentation of data in this report, see How to use the data.

(see data for this figure)

TREATMENT UPTAKE

It is estimated that 60% of the 162,590 people living with CHC at the start of 2016 have since been treated.[3] In this report, treatment uptake is estimated for each geographic region relative to this national average (% higher or lower), based on the estimated prevalence in 2016 and the number of people who received treatment through the PBS (see How to use the data for further information).

Although the national estimate of treatment uptake incorporates new infections into the denominator, the lack of reliable data on new infections by geographic region means that this number is unchanged regardless of area, and so local estimates that account for reinfection are not available. This may have the impact of underestimating or overestimating uptake in a given area if new infections are occurring at a higher or lower rate than average. Further data are required to validate estimates of uptake variation by geographic region.

TREATMENT ACROSS STATES AND TERRITORIES

Treatment uptake at the end of October 2023 was estimated to be higher than the national average in SA (20.8% higher) and Vic (12.7% higher); similar to the national average in Tas (0.3% higher); lower than the national average in NSW (3.9% lower), Qld (5.4% lower), WA (5.6% lower) and the ACT (12.0% lower); and substantially lower than the national average in the NT (55.7% lower) (Table A.2).

Table A.2: Estimated CHC treatment uptake variation by state/territory,
March 2016 – October 2023

State/territory	Number of people who received treatment, March 2016 – October 2023	Estimated uptake relative to national average (% higher or lower)
ACT	1,381	-12.0%
NSW	35,148	-3.9%
NT	899	-55.7%
Qld	22,889	-5.4%
SA	5,983	+20.8%
Tas	2,485	+0.3%
Vic	25,104	+12.7%
WA	9,762	-5.6%
AUSTRALIA	**104,404**	**-**

CHC, chronic hepatitis C.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without a state or territory of residence recorded in source data.

For more information regarding the presentation of data in this report, see How to use the data.

The number of people receiving hepatitis C treatment has declined over time in all states and territories; however, trends have varied. The monthly average number of people treated, which adjusts for variations in available time periods, is shown in Table A.3 and Figures A.4 and A.5, while the proportional change in the monthly average is shown in Table A.4.

When comparing the overall period from 2016 to 2023, the largest declines in the monthly average number of people treated occurred in the ACT (95% decline), the NT and Vic (both 91% decline). A smaller-than-average decline occurred in Qld (83% decline) and WA (79%) (Table A.4).

As uptake was highest in the years immediately after DAAs became available, the largest declines were seen between 2016 and 2017 in most jurisdictions (Table A.4). There was also evidence of the impact of COVID-19 in different jurisdictions, with reduced treatment in Vic and the NT in 2020, and in Tas, SA and the ACT in 2022.

The monthly average number of people treated nationally declined each year between 2016 and 2022, then stabilised between 2022 and 2023 (Table A.3). This stabilisation was driven by a notable increase in treatment numbers in NSW, where the average number of people treated each month increased by 18% from 137 to 161, after consistent declines from 2016 to 2022 (Tables A.3 and A.4, Figure A.4). In most other states and territories, the trend between 2022 and 2023 was either stable (NT and Tas) or on a slight decline (ACT, Qld, SA, Vic and WA). Data by state are presented in Figures B.4 and B.5, separated according to population size in order to allow visualisation of trends.

Table A.3: Monthly average number of people receiving CHC treatment by state/territory, March 2016 – October 2023

State/territory	Monthly average number of people who received treatment							
	2016	2017	2018	2019	2020	2021	2022	2023
ACT	58	21	13	10	7	8	5	3
NSW	1,114	597	426	316	228	163	137	161
NT	33	17	9	8	4	4	3	3
Qld	642	342	282	219	174	144	119	111
SA	197	110	72	48	39	30	20	19
Tas	70	52	32	18	15	15	9	9
Vic	871	443	308	221	136	109	84	78
WA	230	190	123	93	77	69	51	49
AUSTRALIA	3,215	1,752	1,266	932	680	542	428	431

CHC, chronic hepatitis C.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment data sourced from Medicare statistics.

For more information regarding the presentation of data in this report, see How to use the data.

All monthly averages reported are based on total annual counts of >25 individuals; therefore suppression has not been applied for figures where the monthly average is <6.

Table A.4: Proportional change in monthly average number of people receiving CHC treatment, compared to the previous year, by state/territory, March 2016 – October 2023

State/territory	Change in monthly average							
	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023	**2016–2023**
ACT	-64%	-38%	-23%	-30%	+14%	-38%^	-40%^	**-95%**
NSW	-46%	-29%	-26%	-28%	-29%	-16%	+18%	**-86%**
NT	-48%	-47%	-11%	-50%^	0%^	-25%^	0%^	**-91%**
Qld	-47%	-18%	-22%	-21%	-17%	-17%	-7%	**-83%**
SA	-44%	-35%	-33%	-19%	-23%	-33%	-5%	**-90%**
Tas	-26%	-38%	-44%	-17%	0%	-40%	0%	**-87%**
Vic	-49%	-30%	-28%	-38%	-20%	-23%	-7%	**-91%**
WA	-17%	-35%	-24%	-17%	-10%	-26%	-4%	**-79%**
AUSTRALIA	-45%	-29%	-26%	-27%	-20%	-21%	+1%	**-87%**

CHC, chronic hepatitis C.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

Key: Green denotes lowest proportional change with the colour gradient through to red, which denotes highest proportional change.

^Low monthly average number; interpret change with caution.

Figure A.4: Monthly average number of people receiving CHC treatment by state/territory, March 2016 – October 2023 (NSW, Qld, Vic)

(see data for this figure)

Figure A.5: Monthly average number of people receiving CHC treatment by state/territory, March 2016 – October 2023 (ACT, NT, SA, Tas, WA)
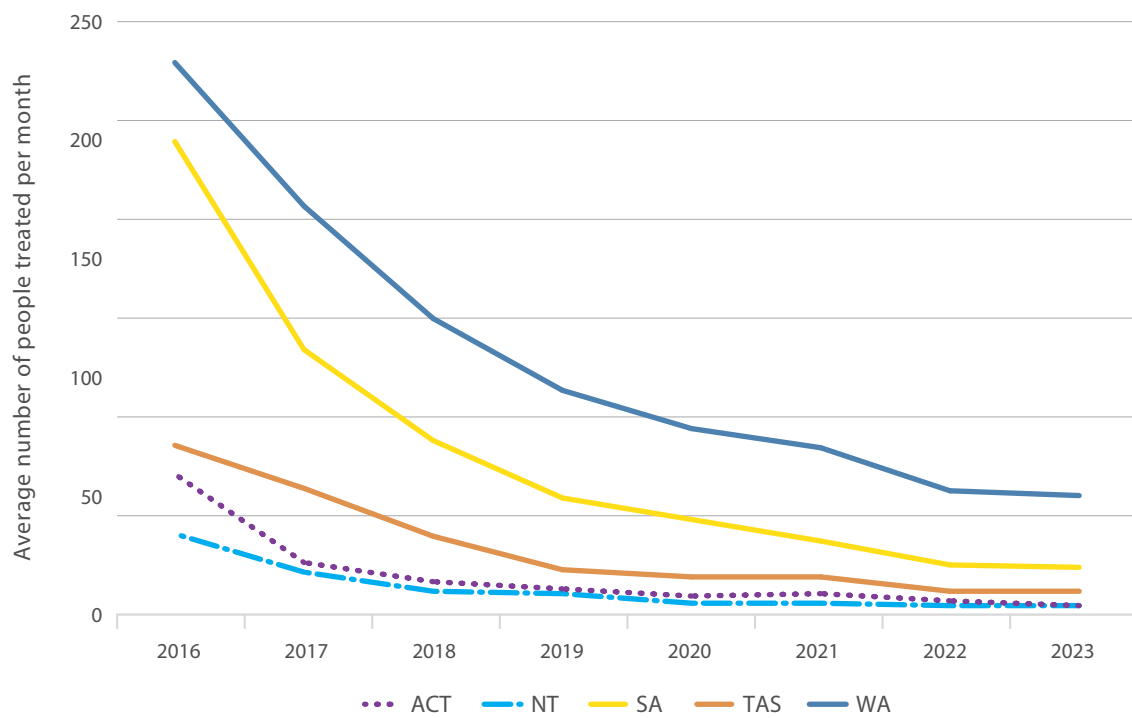
CHC, chronic hepatitis C.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

(see data for this figure)

TREATMENT ACROSS PRIMARY HEALTH NETWORKS

Estimated treatment uptake to October 2023 varied by PHN (Figure A.6), often reflecting state and territory findings. Treatment uptake was estimated to be highest in **Western Victoria** (34.7% higher than the national average), **Gippsland** (29.0% higher), **Adelaide** (25.7% higher) and **North Coast** NSW (22.8% higher) PHNs (Figure A.6; see How to use the data for further information about uptake measurement). Treatment uptake was estimated to be lowest in **Northern Territory** (55.6% lower than the national average) and **Western Queensland** (45.5% lower) PHNs. Treatment uptake variation by PHN is shown in map form in Figures A.7 and A.8.

Figure A.6: CHC treatment uptake variation in Australia by PHN, relative to the national average, March 2016 – October 2023

CHC, chronic hepatitis C. PHN, Primary Health Network.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

(see data for this figure)

Figure A.7: CHC treatment uptake in Australia by PHN, relative to the national average, March 2016 – October 2023

CHC treatment uptake ratio

-55.6%   +34.7%
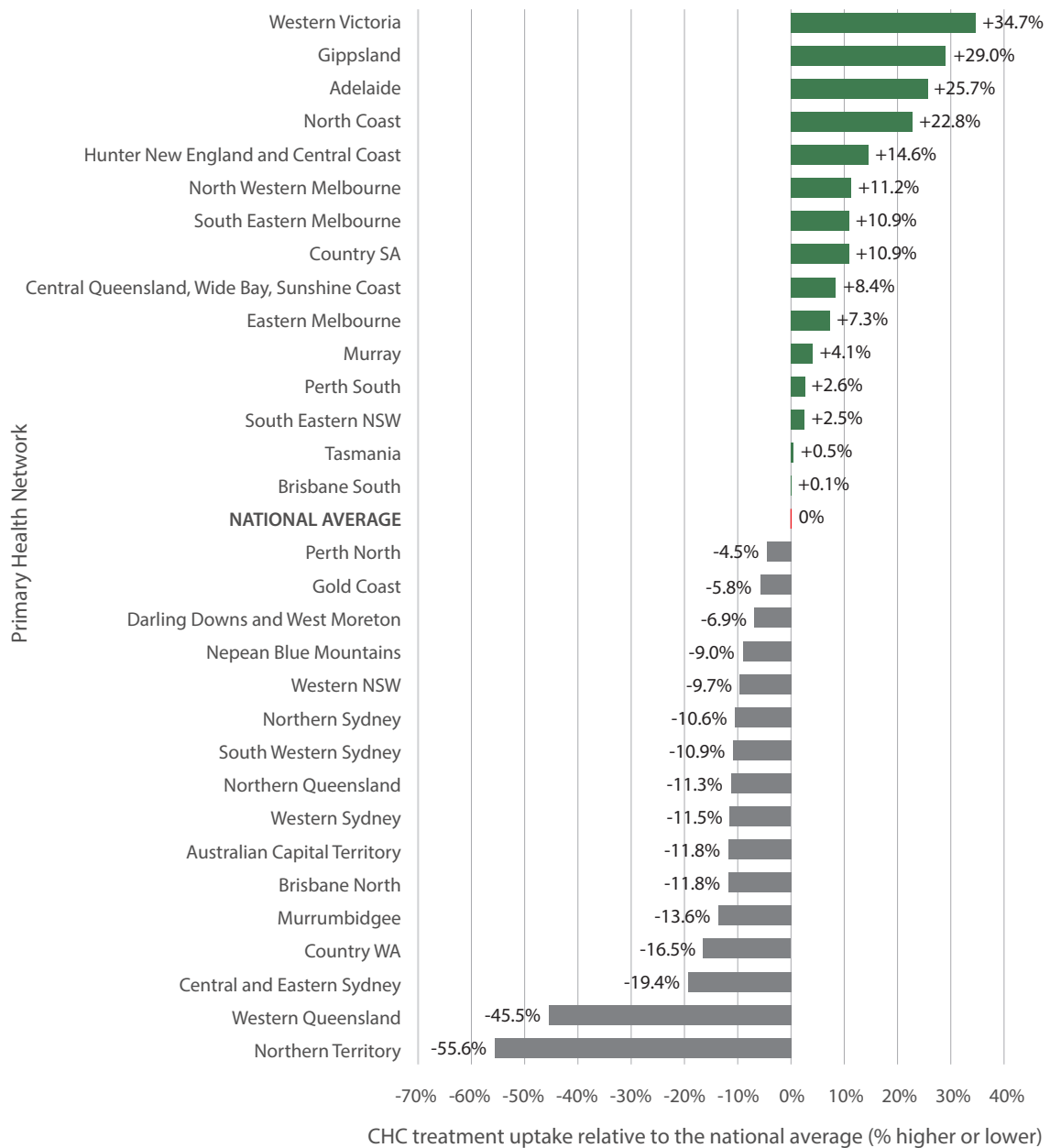
CHC, chronic hepatitis C. PHN, Primary Health Network.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

Figure A.8: CHC treatment uptake by PHN, relative to the national average, March 2016 –
October 2023 (capital city PHNs in ACT, NSW, Qld, SA, Vic and WA)
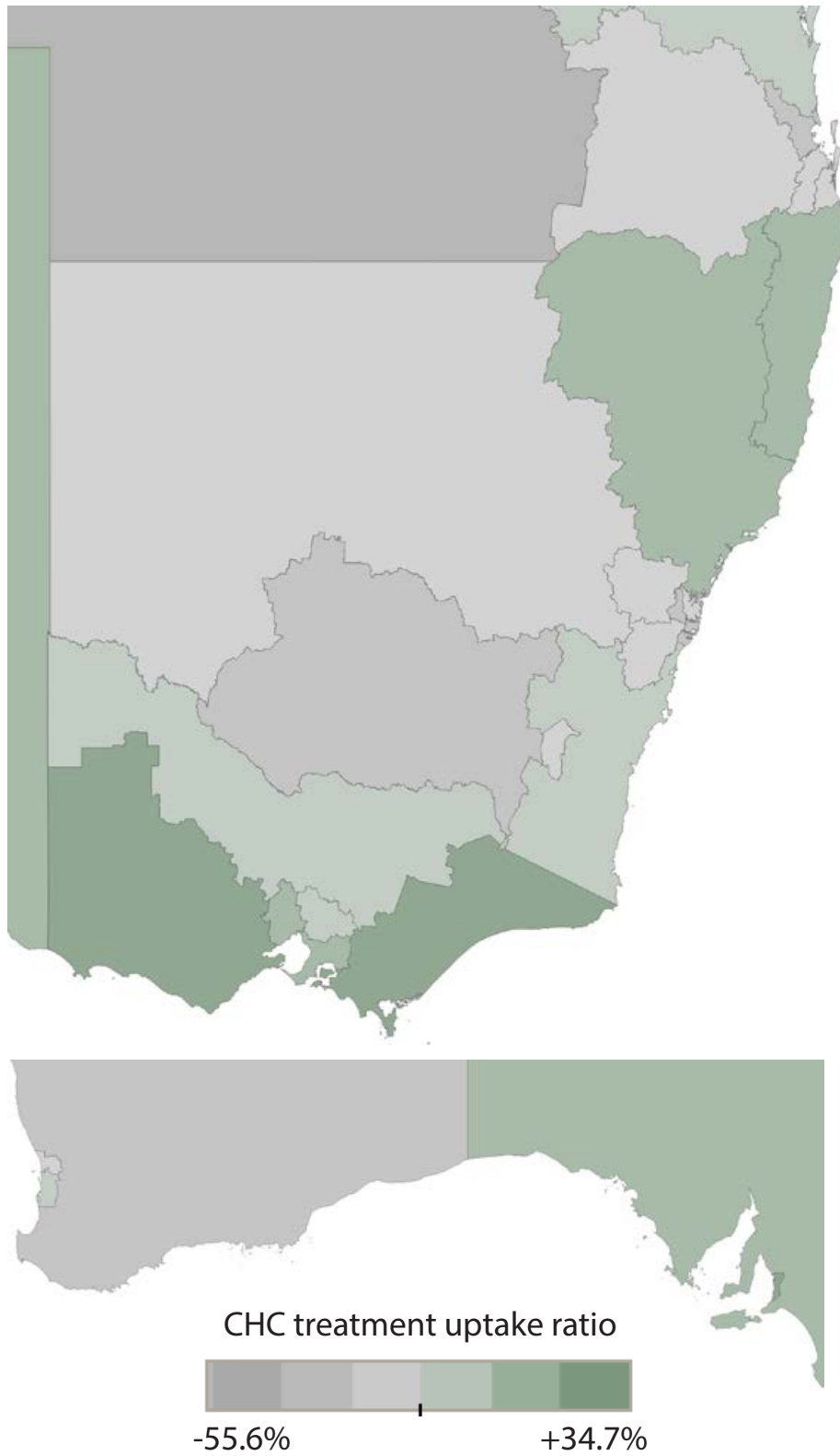
CHC treatment uptake ratio

-55.6%   +34.7%

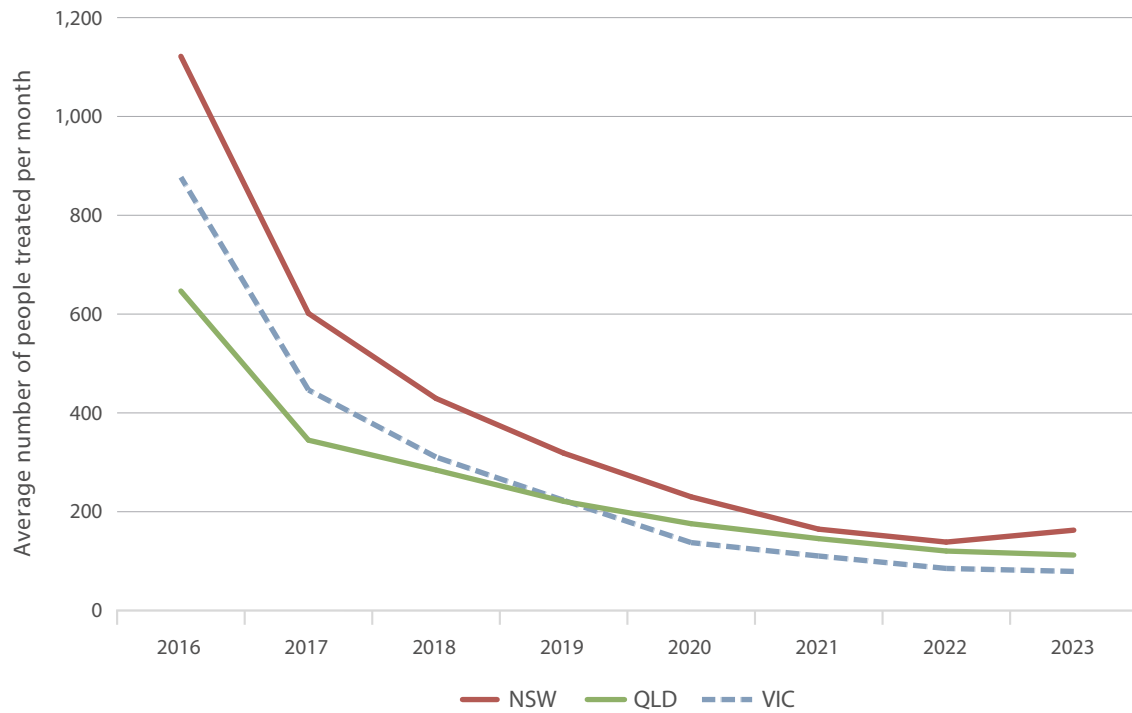CHC, chronic hepatitis C. PHN, Primary Health Network.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment
data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

TREATMENT TRENDS OVER TIME BY PRIMARY HEALTH NETWORK

Reflecting variation by state and territory, the trends in hepatitis C treatment during 2016–2023 varied by PHN (Table A.5). PHNs with the greatest overall decline in the number of people treated between 2016 and 2023 were disproportionately located in Vic and NSW, and included the **Northern Sydney**, **Central and Eastern Sydney**, **South Eastern Melbourne**, **Eastern Melbourne**, **Northern Territory**, **North Western Melbourne** and **Australian Capital Territory** PHNs (Table A.6). Many of these PHNs had above-average treatment uptake in 2016 (particularly **Northern Sydney**, **South Eastern Melbourne**, **Eastern Melbourne** and **Australian Capital Territory**) which contributed to greater relative decline.

Trends by PHN varied by year; however, the overwhelming trend during 2016–2022 was declining CHC treatment numbers in nearly all PHNs (Table A.5). In 2023, there were increases in a number of PHNs; the largest proportional increases occurred in PHNs in NSW and Qld, including **Nepean Blue Mountains** (39% increase), **Western Sydney** (31% increase), **Hunter New England and Central Coast** (28% increase), **South Eastern NSW** (23% increase), and **Darling Downs and West Moreton** (20% increase) (Tables A.5 and A.6). Although many of these increases occurred from a low baseline of people treated per month (Table A.5), in all of these PHNs the trend from 2016 to 2022 was exclusively declining numbers of people treated (Table A.6), making these increases notable even if representing a small absolute number. In the majority of PHNs where there was a decline in treatment numbers between 2022 and 2023, it was smaller in magnitude than between 2021 and 2022 (Table A.6).

Table A.5: Monthly average number of people who received CHC treatment by PHN, March 2016 – October 2023

Primary Health Network	Monthly average number of people who received treatment							
	2016	2017	2018	2019	2020	2021	2022	2023
Adelaide	144	77	52	35	28	22	14	14
Australian Capital Territory	58	21	13	10	7	8	5	3
Brisbane North	121	61	55	39	31	26	23	20
Brisbane South	115	71	61	50	39	33	25	23
Central and Eastern Sydney	261	101	65	48	30	22	19	23
Central Qld, Wide Bay, Sunshine Coast	119	69	58	39	36	24	23	19
Country SA	53	33	20	14	11	8	6	5
Country WA	58	41	28	22	18	16	14	12
Darling Downs and West Moreton	68	42	38	33	25	23	14	17
Eastern Melbourne	159	66	43	31	21	15	12	12
Gippsland	49	30	22	16	9	7	6	6
Gold Coast	96	48	29	21	15	12	12	9
Hunter New Eng. and Central Coast	195	131	97	72	49	39	28	36
Murray	89	50	37	27	19	15	12	12
Murrumbidgee	23	21	18	14	11	7	6	6
Nepean Blue Mountains	32	25	22	15	12	8	6	8

	Monthly average number of people who received treatment							
North Coast	172	74	47	38	29	17	18	17
North Western Melbourne	242	129	98	68	42	34	24	23
Northern Queensland	119	49	39	35	27	24	22	20
Northern Sydney	67	28	17	12	6	5	4	5
Northern Territory	33	17	9	8	4	4	3	3
Perth North	92	67	46	33	28	24	16	15
Perth South	80	62	49	37	31	29	20	21
South Eastern Melbourne	235	106	65	50	31	23	18	15
South Eastern NSW	102	58	37	30	22	16	15	18
South Western Sydney	119	64	46	33	24	17	15	18
Tasmania	70	52	32	18	15	15	9	9
Western NSW	55	40	33	24	19	15	12	12
Western Queensland	5	2	2	1	2	1	2	2
Western Sydney	89	56	45	31	26	16	15	19
Western Victoria	96	62	43	28	14	15	13	10
AUSTRALIA	**3,215**	**1,752**	**1,266**	**932**	**680**	**542**	**428**	**431**

CHC, chronic hepatitis C. PHN, Primary Health Network.

Data source: Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

Table A.6: Proportional change in monthly average number of people who received CHC treatment by PHN, compared to the previous year, March 2016 – October 2023

	Proportional change in monthly average number of people who received treatment							
Primary Health Network	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023	**2016–2023**
Adelaide	-46%	-33%	-33%	-20%	-19%	-36%	-6%	**-91%**
Australian Capital Territory	-63%	-38%	-28%	-23%	+9%	-41%^	-35%^	**-95%**
Brisbane North	-49%	-10%	-30%	-22%	-14%	-15%	-12%	**-84%**
Brisbane South	-38%	-14%	-18%	-22%	-15%	-27%	-6%	**-80%**
Central and Eastern Sydney	-61%	-36%	-27%	-36%	-29%	-10%	+17%	**-91%**
Central Qld, Wide Bay, Sunshine Coast	-42%	-15%	-34%	-8%	-32%	-6%	-15%	**-84%**
Country SA	-38%	-38%	-33%	-20%	-28%	-27%	-11%^	**-90%**
Country WA	-30%	-32%	-20%	-18%	-11%	-14%	-11%	**-79%**

Continued next page

Primary Health Network	Proportional change in monthly average number of people who received treatment							
	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023	2016–2023
Darling Downs and West Moreton	-39%	-9%	-12%	-25%	-10%	-36%	+20%	-75%
Eastern Melbourne	-58%	-36%	-26%	-33%	-30%	-20%	+3%	-92%
Gippsland	-39%	-28%	-25%	-44%	-26%	-16%	+9%	-87%
Gold Coast	-50%	-40%	-26%	-30%	-18%	-2%	-27%	-91%
Hunter New Eng. and Central Coast	-33%	-26%	-26%	-31%	-20%	-29%	+28%	-82%
Murray	-44%	-26%	-27%	-31%	-17%	-23%	-1%	-87%
Murrumbidgee	-12%	-15%	-22%	-22%	-34%	-11%	-4%	-74%
Nepean Blue Mountains	-22%	-13%	-32%	-16%	-37%	-25%	+39%	-74%
North Coast	-57%	-37%	-19%	-23%	-40%	+1%	-5%	-90%
North Western Melbourne	-47%	-23%	-31%	-38%	-19%	-30%	-6%	-91%
Northern Queensland	-59%	-20%	-10%	-23%	-9%	-12%	-5%	-83%
Northern Sydney	-59%	-38%	-30%	-48%	-15%^	-32%^	26%^	-93%
Northern Territory	-48%	-47%	-8%	-46%^	-8%^	-33%^	-5%^	-92%
Perth North	-27%	-31%	-28%	-17%	-15%	-31%	-8%	-84%
Perth South	-22%	-20%	-24%	-18%	-6%	-29%	+4%	-73%
South Eastern Melbourne	-55%	-39%	-22%	-38%	-26%	-24%	-15%	-94%
South Eastern NSW	-43%	-35%	-21%	-27%	-26%	-9%	+23%	-82%
South Western Sydney	-46%	-28%	-28%	-27%	-30%	-11%	+19%	-85%
Tasmania	-26%	-39%	-44%	-14%	-4%	-39%	-2%	-88%
Western NSW	-26%	-19%	-25%	-23%	-19%	-19%	-4%	-78%
Western Queensland	-55%^	0%^	-32%^	6%^	-17%^	33%^	14%^	-59%
Western Sydney	-37%	-20%	-31%	-18%	-36%	-12%	+31%	-79%
Western Victoria	-35%	-30%	-35%	-50%	+2%	-10%	-22%	-89%
AUSTRALIA	-45%	-28%	-26%	-27%	-20%	-21%	1%	-87%

CHC, chronic hepatitis C. PHN, Primary Health Network.

Data source: Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

^Low monthly average number; interpret change with caution.

TREATMENT ACROSS REMOTENESS AREAS

CHC treatment uptake was above the national average in inner regional areas (11.8% higher) and substantially lower than the national average in remote (37.2% lower) and very remote regions (39.5% lower) (Table A.7). This geographic disparity in treatment uptake is reflected in state-based and territory-based indicators, where jurisdictions with the largest non-urban populations (such as the NT and WA) had estimated lower-than-average treatment uptake (Table A.7).

Table A.7: Estimated CHC treatment uptake variation by remoteness area, relative to the national average, March 2016 – October 2023

Remoteness area	Number of people who received treatment	Estimated uptake relative to national average, 2016–2023 (% higher or lower)
Major cities	66,992	-1.8%
Inner regional	22,397	+11.8%
Outer regional	12,158	-4.8%
Remote	1,184	-37.2%
Very remote	920	-39.5%
AUSTRALIA	**104,404**	-

CHC, chronic hepatitis C.

Data source: CHC prevalence estimates based on published national estimates and notifications distribution. Treatment data sourced from Medicare.

Totals may not add up due to inclusion of people without a state or territory of residence recorded in source data.

For more information regarding the presentation of data in this report, see How to use the data.

A decline in treatment uptake occurred between 2016 and 2023 regardless of remoteness area; however, it was smaller than average in remote areas (75.3% decline) and very remote areas (68.1% decline) compared to the national average decline of 86.7% (Table A.9).

Table A.8: Monthly average number of people receiving CHC treatment, by remoteness area, March 2016 – October 2023

Remoteness area	2016	2017	2018	2019	2020	2021	2022	2023
Major cities	672	382	276	201	157	115	96	95
Inner regional	2,140	1,142	819	596	423	339	260	265
Outer regional	354	198	146	115	81	73	57	57
Remote	27	17	14	12	12	7	8	7
Very remote	22	13	11	9	7	7	6	7
AUSTRALIA	**3,215**	**1,752**	**1,266**	**932**	**680**	**542**	**428**	**431**

CHC, chronic hepatitis C.

Data source: Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

Table A.9: Proportional change in monthly average number of people receiving CHC treatment, compared to the previous year, by remoteness area, March 2016 – October 2023

Remoteness area	Proportional change in monthly average number of people who received treatment							
	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023	**2016–2023**
Major cities	-43.1%	-28.0%	-27.2%	-21.7%	-26.5%	-16.5%	-1.6%	**-85.9%**
Inner regional	-46.7%	-28.2%	-27.3%	-29.0%	-19.9%	-23.3%	2.1%	**-87.6%**
Outer regional	-44.0%	-26.4%	-21.0%	-29.8%	-9.2%	-22.0%	-0.8%	**-84.0%**
Remote	-35.1%	-19.2%	-13.7%	1.4%	-43.5%	20.5%	-20.8%	**-75.3%**
Very remote	-41.4%	-13.2%	-20.5%	-17.1%	0.0%	-17.2%	15.0%	**-68.1%**
AUSTRALIA	**-45.4%**	**-27.8%**	**-26.3%**	**-27.7%**	**-20.3%**	**-21.0%**	**0.6%**	**-86.7%**

CHC, chronic hepatitis C.

Data source: Treatment data sourced from Medicare.

For more information regarding the presentation of data in this report, see How to use the data.

DEMOGRAPHICS BY PRESCRIBER TYPE

Complete data regarding prescriber specialty for hepatitis C treatment was available for the period January 2020 – October 2023, based on the registered specialty of the prescriber as recorded by Medicare. Previous analysis used the derived provider specialty generated by Medicare;[6] however, this is subject to imprecision, and it underestimated prescribing by nurse practitioners (NPs) in particular due to misclassification.[7] Comparative analysis revealed that a subset of NPs were inaccurately identified in the derived variable (being listed as 'unclassified' specialty), resulting in an underestimate of prescribing by this group by up to two-thirds. This report therefore uses registered prescriber specialty.

During the period January 2020 – October 2023, non-GP specialists were the prescriber for 39.9% of people treated, most commonly those specialising in gastroenterology/hepatology (66.2% of those prescribed by a non-GP specialist) and infectious diseases (21.2%). GPs were the prescriber for 34.6% of people who received treatment while NPs were the prescriber for 13.3%. A further 11.1% of people treated had a provider without a classifiable specialty. This includes non-vocationally registered doctors (many of whom are likely GPs who were registered prior to the implementation of GP specialty codes), Rural Other Medical Practitioners, and interns.

Between 2020 and 2023, prescribing by non-GP specialists decreased as a proportion of total treatment, from 46.7% in 2020 to 31.1% in 2023 (Figure A.9). The proportion prescribed by NPs nearly doubled (from 9.4% to 17.0%) while the proportion prescribed by GPs remained relatively stable (Figure A.9).

NP prescribing had a strong influence on the observed increase in the number of people who received treatment between 2022 and 2023. In NSW, where this change was the most substantial (Table B.4), the number of people prescribed treatment by an NP increased by 51%, while GP prescribing remained stable.

Figure A.9: Proportion of CHC treatment by prescriber specialty by year, where a specialty was available, January 2020 – October 2023
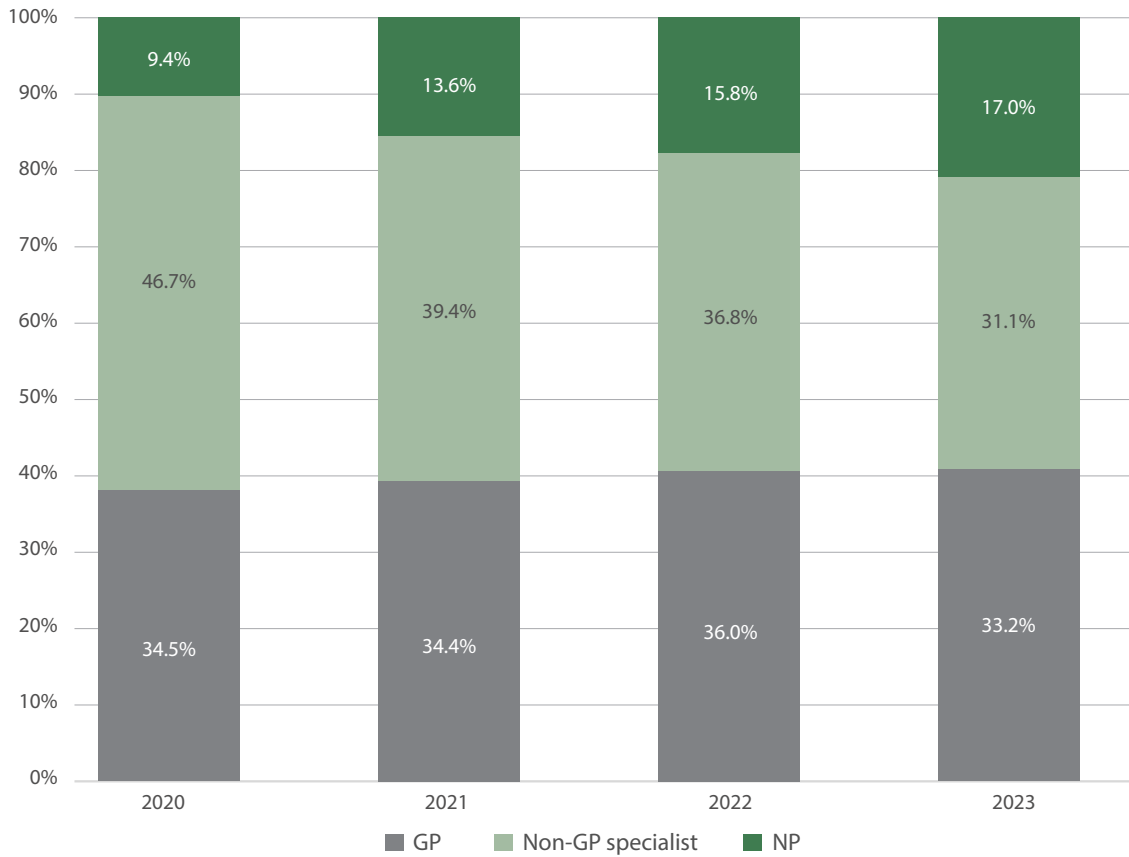
CHC, chronic hepatitis C. GP, general practitioner. NP, nurse practitioner.

Data source: Treatment data sourced from Medicare statistics using registered provider specialty.

Proportions calculated only of those with a single registered specialty provided.

*Data to October.

(see data for this figure)

The proportion of people prescribed treatment according to prescriber specialty varied widely according to state and territory (Figure A.10). GP prescribing made up the greatest proportion of CHC treatment in Tas (48.6% of treatment), WA (47.2%), the ACT (43.8%) and Qld (42.2%). NP prescribing was most common in Qld (23.6% of treatment).

Figure A.10: Proportion of CHC treatment by prescriber specialty by state and territory, where a specialty was available, January 2020 – October 2023
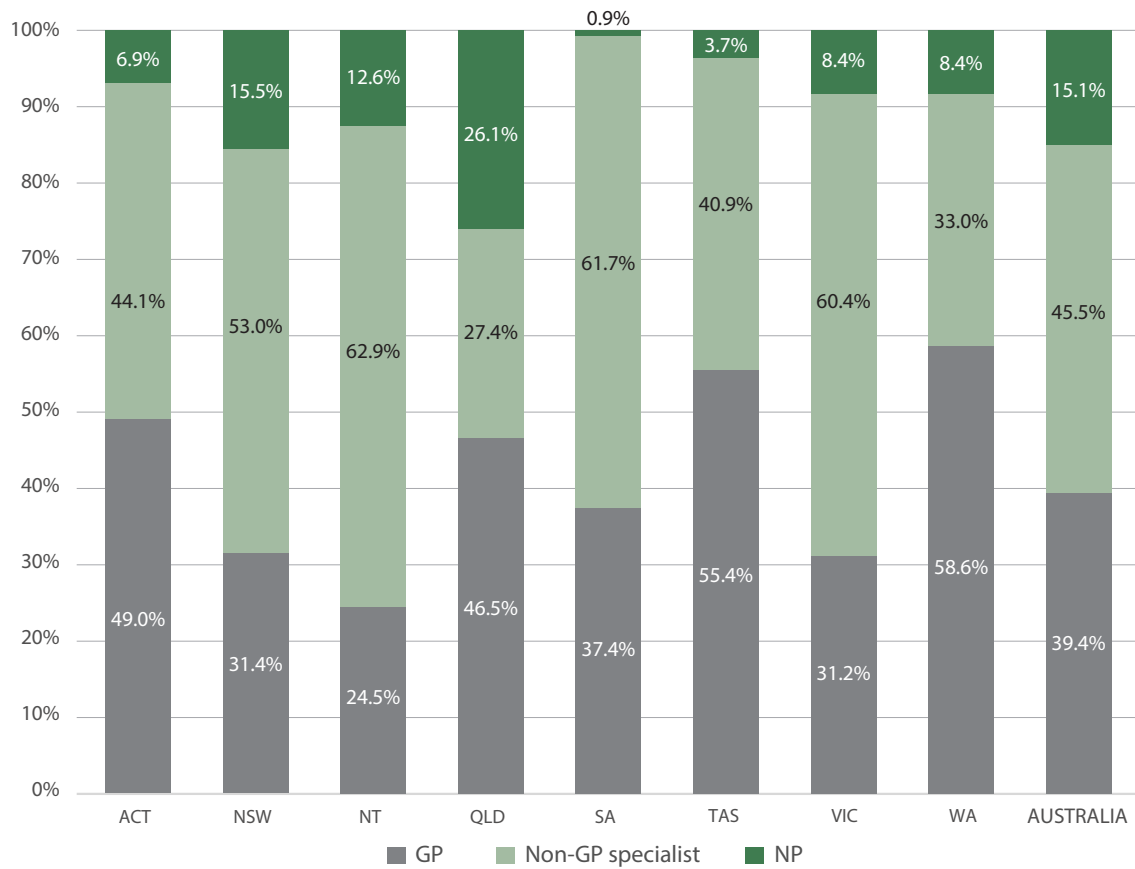
CHC, chronic hepatitis C. GP, general practitioner. NP, nurse practitioner.

Data source: Treatment data sourced from Medicare statistics using registered provider specialty.

Totals may not add up due to inclusion of people without a state/territory of residence recorded in source data. Proportions calculated only of those with a single registered specialty provided.

(see data for this figure)

In 18 PHNs, non-GP specialists were the most common prescriber of hepatitis C treatment, while GPs were the most common in 13 PHNs (Table A.10). PHNs with the highest proportion of GP prescribing were most commonly those with predominantly rural and remote populations (**Western Queensland**, 55.6% of prescribing by GPs; **Darling Downs and West Moreton**, 50.1%; **Tasmania**, 48.6%; and **Northern Queensland**, 48.3%; as well as **Perth South**, 49.5%). Those with the highest proportion of non-GP specialist prescribing were located in metropolitan regions (**Eastern Melbourne**, 64.9%; **Western Sydney**, 61.6%; and **Northern Sydney**, 60.0%). PHNs where NP prescribing was highest were located in Qld, with the highest proportions in **Brisbane South** (30.2%), **Darling Downs and West Moreton** (29.7%) and **Brisbane North** (26.2%). In these three PHNs, prescribing by NPs was more common than prescribing by non-GP specialists.

Due to the high proportion of treatment during 2020–2022 that was delivered to residents of correctional facilities,[1] the distribution of prescribers may be influenced by the models of care used in these populations.

Table A.10: Proportion of people treated for CHC by prescriber specialty, where a specialty was available (most common prescriber indicated in bold), by PHN, January 2020 – October 2023

Primary Health Network	Non-GP specialist	GP	NP
Adelaide	**50.2%**	29.0%	0.7%
Australian Capital Territory	39.4%	**43.8%**	6.2%
Brisbane North	23.4%	**38.3%**	26.2%
Brisbane South	24.4%	**36.2%**	30.2%
Central and Eastern Sydney	**50.0%**	23.0%	11.3%
Central Queensland, Wide Bay, Sunshine Coast	29.2%	**42.7%**	22.6%
Country SA	**49.9%**	33.9%	0.9%
Country WA	25.2%	**46.2%**	6.2%
Darling Downs and West Moreton	11.7%	**50.1%**	29.7%
Eastern Melbourne	**64.9%**	23.1%	5.5%
Gippsland	**53.9%**	29.3%	11.5%
Gold Coast	24.9%	**37.3%**	23.5%
Hunter New England and Central Coast	**38.1%**	28.2%	23.7%
Murray	**52.3%**	26.7%	14.4%
Murrumbidgee	40.5%	**43.0%**	7.4%
Nepean Blue Mountains	**44.4%**	27.6%	5.6%
North Coast	**34.8%**	34.5%	25.4%
North Western Melbourne	**53.1%**	26.3%	6.3%
Northern Queensland	33.4%	**48.3%**	9.2%
Northern Sydney	**60.0%**	25.8%	8.9%
Northern Territory	**55.9%**	21.7%	11.2%
Perth North	27.5%	**45.1%**	7.8%
Perth South	26.7%	**49.5%**	6.2%
South Eastern Melbourne	**53.8%**	29.5%	5.8%
South Eastern NSW	**49.4%**	34.4%	4.7%
South Western Sydney	**56.0%**	21.4%	7.1%
Tasmania	35.9%	**48.6%**	3.2%
Western NSW	**45.6%**	24.3%	15.0%
Western Queensland	20.8%	**55.6%**	15.3%
Western Sydney	**61.6%**	22.1%	5.0%
Western Victoria	**43.2%**	33.4%	5.4%
AUSTRALIA	**39.8%**	34.6%	13.3%

CHC, chronic hepatitis C. GP, general practitioner. NP, nurse practitioner. PHN, Primary Health Network.
Data source: Treatment data sourced from Medicare statistics using registered provider specialty.
Proportions calculated only of those with a single registered specialty provided.

TREATMENT DEMOGRAPHICS

People treated by GPs and NPs were younger on average, with 65.5% and 76.1% respectively aged under 50 years, compared to 56.1% of those prescribed by non-GP specialists. NPs more commonly prescribed eight-week treatment (53.7% of treatment prescribed by NPs) than GPs (42.7%) or non-GP specialists (40.2%). These data may reflect the context of prescribing, as people who are currently injecting drugs and those in correctional facilities may be younger on average and/or less likely to have liver cirrhosis than the general population being treated.

TREATMENT DURATION

The distribution of treatment course duration has shifted substantially over time, with an increase in the proportion of eight-week scripts (from 7.5% in 2016 to 47.9% in 2023) and a decrease in the proportion of 12-week scripts (from 72.3% to 51.3%) (Figure A.11). The proportion of 24-week scripts reduced from 20.2% to <0.1% during the same period, reflecting the reduced prevalence of cirrhosis among those currently receiving treatment[8] and the increased availability of newer DAAs with shorter treatment durations for those with cirrhosis.[9]

Figure A.11: Proportion of CHC treatment by course duration, by year, 2016–2023
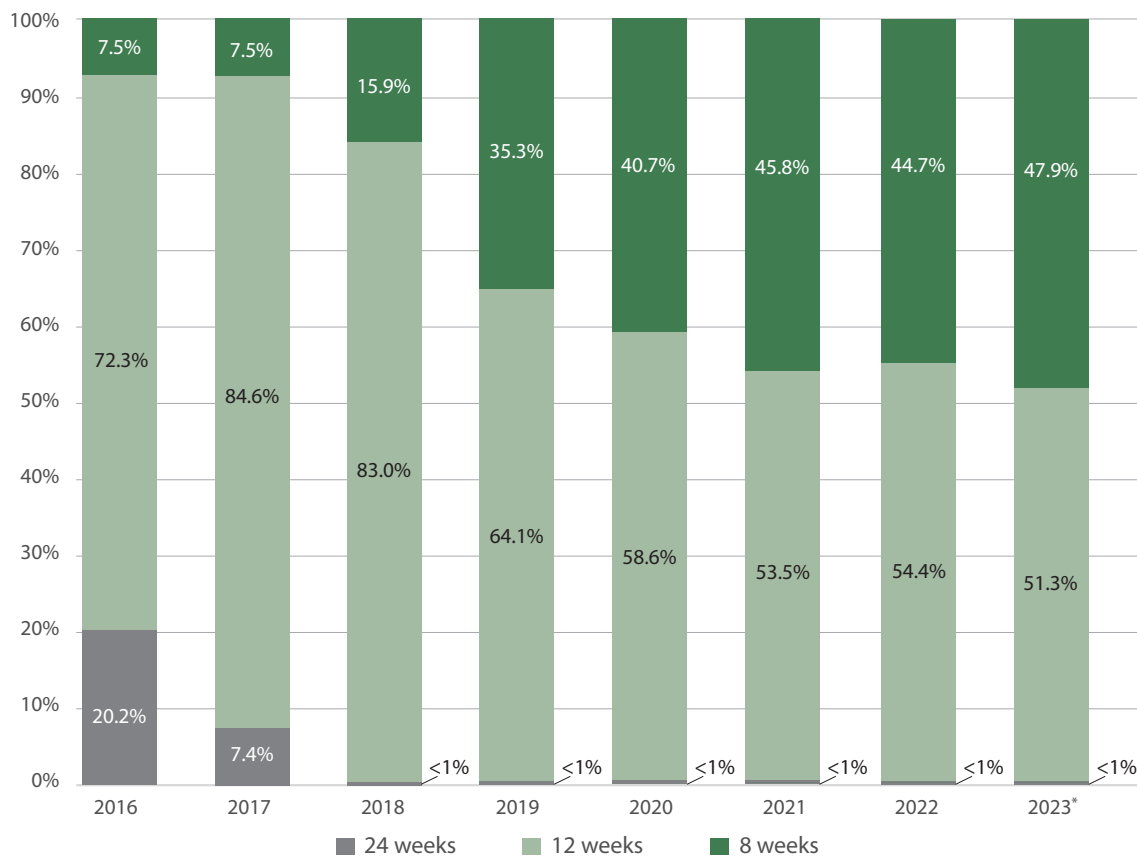
CHC, chronic hepatitis C.

Data source: Treatment data sourced from Medicare statistics. Treatment duration is based on the number of weeks of dispensing indicated in the Medicare item code.

*Data to October.

(see data for this figure)

RE-TREATMENT

Of those treated for CHC during 2016–2022, the majority (88,681 people, 89.5%) received only a single course of treatment, while 10,429 people (10.5%) received more than one course of treatment.

The proportion of people who received more than one course of treatment varied according to state and territory, and was highest in Qld, where 12.3% of people treated received more than one course. The proportion was also above the national average of 10.5% in the ACT (11.5%), while being similar to the national average in WA (10.6%), NSW (10.5%), Vic (9.8%), Tas (9.3%) and lower than the national average in SA (8.2%) and the NT (7.7%).

Re-treatment was more common among males (11.7% of those treated) compared to females (7.9%), and was most common among those aged 20–29 (19.4% of those treated) and 30–39 years (14.4%).

Data regarding prescriber specialty was available for the period 2020–2022, during which 5,029 people received re-treatment. NPs were more common prescribers for re-treatment (16.9% of those treated) than for initiations during the same period (12.1%). Non-GP specialists were prescribers for 38.7% of re-treatment courses, compared to 41.7% of initiations during this time; GPs prescribed 27.8% of re-treatments compared to 29.8% of initiations.

It has been estimated that reinfection represents 56% of re-treatment instances, while 44% represent treatment failure.[1] These demographic and prescriber characteristics likely reflect the populations who are more likely to be exposed to hepatitis C reinfection or experience treatment failure, due to factors such as the prevalence of injecting drug use and social factors which may impact the ability to continue treatment.

TREATMENT DEMOGRAPHICS

The age distribution of people treated for CHC has shifted over time, with a reduction in the proportion aged over 50 and an increase in younger age groups. In 2016, people aged 50–59 were the most common group treated, making up 38.7% of the total (Figure A.12); however, by 2023, people treated were most commonly aged 40–49 years (24.2% of the total). The proportion aged under 30 has increased from 3.7% to 17.5% between 2016 and 2023.

This age distribution and the trend towards younger people being treated was broadly similar across the states and territories, although the proportion aged over 40 years was lower than the national average of 72.5% in Qld (65.0%), WA (67.8%) and Tas (68.7%), and higher in SA (82.2%) and the NT (80.9%). The proportion was similar to the national average in the ACT (72.9%), NSW (73.9%) and Vic (74.4%). This shift in the predominant age groups receiving treatment likely reflects the initial uptake being concentrated in people who were older and who had more severe liver disease. Now that many of those older people have been treated, a higher proportion of treatment is prescribed to younger people whose risk of adverse outcomes is less immediate.

Most people treated for CHC were male (68.7%), which reflects the epidemiology of CHC in Australia;[3] this was also consistent across age groups, although those aged 20–29 were more likely to be male (76.8% of the total).

Figure A.12: Proportion of CHC treatment by age group, by year, March 2016 – October 2023
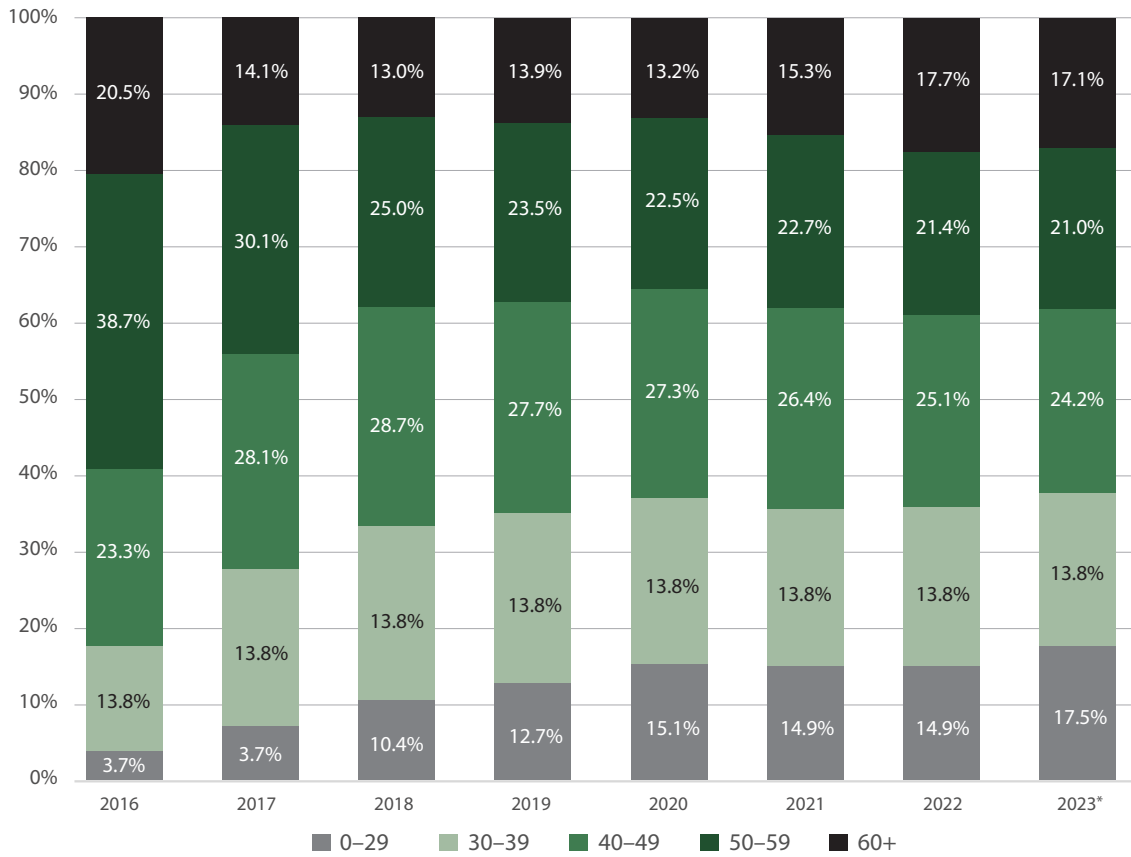
CHC, chronic hepatitis C.

Data source: Treatment data sourced from Medicare statistics.

Age group based on age at the time of the first dispensed script for that person.

*Data to October.

(see data for this figure)

SECTION B: DATA SOURCES AND METHODOLOGY

If you have questions regarding methodology, data sources, or findings of the Mapping Report, or would like to provide feedback, please contact **jennifer.maclachlan@mh.org.au**.

Table B.1: Hepatitis C: summary of data sources

Indicator	Method of estimation	Source	Basis of geographic data
CHC prevalence relative to the national average, start of 2016	Calculated by applying national prevalence data proportionally to geographic areas according to the distribution of notified cases, and deriving the prevalence ratio relative to the national average	Published modelled national prevalence data and NNDSS data (for the period 2007–2016)	Postcode of residence when the person tested positive for hepatitis C
CHC treatment	Number of individuals prescribed DAA medications indicated for hepatitis C during the period March 2016 – December 2021 (limited data also provided through October 2023)	PBS data	Postcode of residence when a person was first dispensed DAA treatment (as recorded in Medicare data)

CHC, chronic hepatitis C. DAA, direct-acting antiviral. NNDSS, National Notifiable Diseases Surveillance System. PBS, Pharmaceutical Benefits Scheme.

Table B.2: Common data terms

Term	Definition
Prescriber specialty	Specialty of the practitioner prescribing treatment, using the registered specialty available in Medicare. This approach has been updated since the last report, when specialty was derived by Medicare using the practitioner's service history (see Demographics by prescriber type).
PHN	Geographic area derived as part of the national health reform agenda; populations range between 50,000 and 1.7 million residents. There are 31 PHNs in Australia.
SA2	Geographic area defined by the ABS; populations usually range between 3,000 and 25,000 people. There were 2,310 SA2s in Australia in 2016. This report used 2016 SA2 boundaries to concord with other available data sources.
Remoteness area	Geographic area defined by the ABS based on measures of relative access to services; categories are major cities, inner regional, outer regional, remote and very remote. This report uses the 2016 Remoteness Area Structure as 2021 concordances were not yet available.
Prevalence	The proportion of the total population living with a health condition. For example, if CHC prevalence is 1%, this means 1% of people in a given population have CHC.

ABS, Australian Bureau of Statistics. CHC, chronic hepatitis C. PHN, Primary Health Network. SA2, Statistical Area 2.

DETAILED STATISTICAL METHODOLOGY

Hepatitis C prevalence

Data sources

The data sources used were:

– published estimates of national prevalence
– notifications from the NNDSS.

Details

Estimates of the number of people living with CHC and the population prevalence were derived by applying published national prevalence estimates[10] to each geographic area proportionally, according to the distribution of diagnosed cases reported to the NNDSS. The estimated number of people living with CHC was used as a denominator to estimate relative treatment uptake; however, raw data are not reported due to ongoing uncertainties in these estimates according to geographic region. Estimates of prevalence relative to the national averages are presented as ratios in order to provide an indication of the relative burden of CHC according to area.

All positive diagnoses of hepatitis C (defined as a positive HCV [hepatitis C virus] antibody or positive HCV nucleic acid test result) are legally required to be reported to jurisdictional departments of health by the diagnosing laboratory, and are collated and published by the NNDSS. Notifications are de-duplicated by jurisdictions, and the aim is to record only one positive diagnosis per individual per state or territory. However, duplicates may exist if individuals have been diagnosed in multiple jurisdictions. Use of these data was approved by the Department of Health and Aged Care and the Communicable Diseases Network Australia. Due to the inclusion of antibody-positive cases as notifications, the data used are likely to have included a proportion of people who had previously been infected but did not have active infection at the time of testing. However, the denominator data used, and therefore the prevalence data generated, only include people living with chronic infection.

Data were provided according to postcode, and were assigned to each remoteness area and PHN using the concordances published by the Australian Bureau of Statistics (ABS)[11] and the Department of Health and Aged Care.[12] Cases in which the postcode was unknown but the jurisdiction was provided were distributed proportionally to each region across each jurisdiction. All estimates were based on diagnosed cases which occurred during the period 2007 to 2016, but sensitivity analyses were conducted to assess the effect of different years of source data (the periods 1997–2016 and 2016 only), and the 10-year period was then selected as the most representative.

Correctional facility adjustments

The number of hepatitis C notifications is disproportionately concentrated in some geographic regions due to the presence of correctional facilities, which often have high rates both of CHC and of screening, leading to a large number of infections detected each year. Data which allowed assessment of the effect of correctional facilities on the overall number of notifications in a given area, through the collection of a correctional facility status variable, were readily available from jurisdictional departments of health in Vic and Qld. Data were requested that provided the proportions of hepatitis C notifications from correctional facilities in each region. When the data indicated that more than 50% of notifications originated from a correctional facility, prevalence calculations for hepatitis C were adjusted, so that notifications by correctional facilities were excluded from the data for that region and redistributed across the rest of the state or territory.

Adjustments were applied to selected regions in NSW, the NT, SA, Tas and WA and were identified using Census data that indicated the presence of correctional facilities[13] and outliers in hepatitis C notification rates.

Hepatitis C treatment

Data source

The data source used was Pharmaceutical Benefits Scheme records.

Details

This source includes all services provided through Australia's national subsidised health care system, Medicare. Data were provided regarding the period 1 January 2016 to 31 October 2023. Hepatitis C treatment uptake is measured cumulatively as the total proportion of people treated of those living with hepatitis C at the start of 2016. For most analyses, the period to 31 December 2021 was used to capture a full year of data; analyses including 2022 data are indicated in the report.

Regions of residence were assigned using the postcode of residence for the individual at the time of prescription dispensing or service provision. Postcodes were assigned to each remoteness area and PHN using the concordances published by the ABS[11] and the Department of Health and Aged Care.[12] These residential details depend on individuals updating their information with Medicare, so they may not have been up to date for all individuals. All time periods are based on the date of service, which represents the date the patient was supplied with their medication by a pharmacy or the date a test was performed.

These data do not include services that were not provided by Medicare, such as those paid for by individual patients, or subsidised by state government services. Previous analyses and comparison with other source data demonstrated that the vast majority of treatment for hepatitis C is provided through Medicare and included in these estimates;[14] however, it will not include those who are ineligible for Medicare due to their visa status.

The data do not include pharmaceutical company compassionate-access programs or clinical trials, but access to hepatitis C treatment through these channels will mostly have been limited to the period before the listing of DAAs on the PBS in March 2016, which is not assessed in this report.

Ascertainment of age and sex in Medicare

Age was ascertained as age at the time of the first treatment script in a given year. Sex is ascertained from the Medicare record, and is provided as only male or female.

Prescriber specialty

Prescriber specialty is provided in Medicare data, and reflects the registered specialty of the prescriber. The prescriber is the provider who prescribed the first treatment script of a person's course (or re-treatment course).

Complete data regarding prescriber specialty for hepatitis C treatment was available for the period January 2020 – October 2023, based on the registered specialty of the prescriber as recorded by Medicare. Previous analysis used the derived provider specialty generated by Medicare;[6] however, this is subject to imprecision, and underestimated prescribing by NPs in particular due to misclassification. Comparative analysis revealed that a subset of NPs were inaccurately identified in the derived variable (being listed as 'unclassified' specialty), resulting in an underestimate of prescribing by this group by up to two-thirds. Prescribers are grouped as GPs; non-GP specialists, including all internal medicine subspecialties; and NPs. Some prescribers were unable to be classified and are grouped together as 'other prescribers', including those without a specialty code, resident doctors, Rural Other Medical Practitioners, and locum relief doctors. Practitioners in training were categorised into their prospective occupational categories (for example, non-GP specialist trainees were classified as non-GP specialists).

Treatment

Treatment data for CHC represent the number of individuals prescribed any drug listed on the PBS[15] for the treatment of CHC during March 2016 to October 2022. These drugs and drug combinations included daclatasvir +/− sofosbuvir; glecaprevir + pibrentasvir; grazopresvir + elbasvir +/− ribavirin; sofosbuvir +/− ledipasvir; sofosbuvir + ribavirin; paritaprevir + ritonavir + ombitasvir + dasabuvir +/− ribavirin; peginterferon alfa-2a or alfa-2b; and sofosbuvir + velpatasvir. Individuals treated multiple times were only counted once in overall figures, to effectively measure overall uptake as a proportion of the number living with CHC. Re-treatment was estimated separately, using the assumption that a treatment course commenced one month or more after the estimated completion of the initial course represented a re-treatment course.

Treatment uptake was derived by dividing the number of people receiving treatment by the total estimated population living with CHC in a given geographic area (see Hepatitis C prevalence for details).

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DATA TABLES TO ACCOMPANY FIGURES

Figure A.1: Estimated variation in prevalence of CHC in 2016, compared to the national average, by PHN

Primary Health Network	Proportion of the population living with CHB (%)
Northern Territory	+98.4%
Western NSW	+78.5%
North Coast	+64.7%
Western Queensland	+64.4%
Northern Queensland	+40.5%
Murrumbidgee	+37.0%
South Eastern NSW	+25.4%
Country WA	+22.9%
Darling Downs and West Moreton	+22.9%
Hunter New England and Central Coast	+17.7%
Central and Eastern Sydney	+16.7%
Gold Coast	+13.1%
Central Queensland, Wide Bay, Sunshine Coast	+12.1%
Tasmania	+9.0%
South Western Sydney	+7.4%
Brisbane North	+6.8%
Brisbane South	+4.7%
Gippsland	+3.7%
Murray	+3.5%
Nepean Blue Mountains	+2.8%
NATIONAL AVERAGE	**0%**
North Western Melbourne	-6.7%
Australian Capital Territory	-11.0%
Perth South	-12.4%
Western Sydney	-13.4%
South Eastern Melbourne	-14.1%
Western Victoria	-14.3%
Perth North	-15.4%
Country SA	-29.3%
Adelaide	-35.5%
Eastern Melbourne	-43.5%
Northern Sydney	-53.3%

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Figure A.2: Number of people receiving CHC treatment in Australia, by month, January 2020 – October 2023

Month-Year	Number of people
Jan-20	644
Feb-20	785
Mar-20	704
Apr-20	657
May-20	668
Jun-20	743
Jul-20	736
Aug-20	672
Sep-20	660
Oct-20	640
Nov-20	669
Dec-20	591
Jan-21	419
Feb-21	575
Mar-21	666
Apr-21	565
May-21	596
Jun-21	621
Jul-21	587
Aug-21	539
Sep-21	542
Oct-21	492
Nov-21	492
Dec-21	413
Jan-22	290
Feb-22	386
Mar-22	429
Apr-22	384
May-22	359
Jun-22	461
Jul-22	438
Aug-22	515
Sep-22	463
Oct-22	482
Nov-22	487
Dec-22	446
Jan-23	369
Feb-23	434

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Month-Year	Number of people
Mar-23	510
Apr-23	374
May-23	460
Jun-23	451
Jul-23	460
Aug-23	519
Sep-23	372
Oct-23	359

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Figure A.3: Average monthly number of people receiving CHC treatment in Australia, by year, March 2016 – October 2023

Year	Average per month
2016	3,242
2017	1,769
2018	1,278
2019	941
2020	681
2021	542
2022	428
2023	431

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Figure A.4: Monthly average number of people receiving CHC treatment by state/territory, March 2016 – October 2023 (NSW, Qld, Vic)

State	2016	2017	2018	2019	2020	2021	2022	2023
NSW	1,114	597	426	316	228	163	137	161
QLD	642	342	282	219	174	144	119	111
VIC	871	443	308	221	136	109	84	78

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Figure A.5: Monthly average number of people receiving CHC treatment by state/territory, March 2016 – October 2023 (ACT, NT, SA, Tas, WA)

State	2016	2017	2018	2019	2020	2021	2022	2023
ACT	58	21	13	10	7	8	5	3
NT	33	17	9	8	4	4	3	3
SA	197	110	72	48	39	30	20	19
TAS	70	52	32	18	15	15	9	9
WA	230	170	123	93	77	69	51	49

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Figure A.6: CHC treatment uptake variation in Australia by PHN, relative to the national average, March 2016 – October 2023

Primary Health Network	Proportion of the population living with CHB (%)
Western Victoria	+34.7%
Gippsland	+29.0%
Adelaide	+25.7%
North Coast	+22.8%
Hunter New England and Central Coast	+14.6%
North Western Melbourne	+11.2%
South Eastern Melbourne	+10.9%
Country SA	+10.9%
Central Queensland, Wide Bay, Sunshine Coast	+8.4%
Eastern Melbourne	+7.3%
Murray	+4.1%
Perth South	+2.6%
South Eastern NSW	+2.5%
Tasmania	+0.5%
Brisbane South	+0.1%
NATIONAL AVERAGE	**0%**
Perth North	-4.5%
Gold Coast	-5.8%
Darling Downs and West Moreton	-6.9%
Nepean Blue Mountains	-9.0%
Western NSW	-9.7%
Northern Sydney	-10.6%
South Western Sydney	-10.9%
Northern Queensland	-11.3%
Western Sydney	-11.5%
Australian Capital Territory	-11.8%
Brisbane North	-11.8%
Murrumbidgee	-13.6%
Country WA	-16.5%
Central and Eastern Sydney	-19.4%
Western Queensland	-45.5%
Northern Territory	-55.6%

Figure A.9: Proportion of CHC treatment by prescriber specialty by year, where a specialty was available, January 2020 – October 2023

Year	Other	GP	Non-GP specialist	NP	Combo
2020	7.4%	34.5%	46.7%	9.4%	2.0%
2021	11.7%	34.4%	39.4%	13.6%	0.9%
2022	10.4%	36.0%	36.8%	15.8%	1.0%
2023*	17.8%	33.2%	31.1%	17.0%	1.0%

Figure A.10: Proportion of CHC treatment by prescriber specialty by state and territory, where a specialty was available, January 2020 – October 2023

State	GP	Non-GP specialist	NP	Unspecified
ACT	43.8%	39.4%	6.2%	10.6%
NSW	27.7%	46.7%	13.7%	10.9%
NT	21.7%	55.9%	11.2%	10.6%
QLD	42.2%	24.8%	23.6%	7.3%
SA	30.4%	50.1%	0.7%	18.7%
TAS	48.6%	35.9%	3.2%	11.7%
VIC	27.7%	53.7%	7.5%	10.2%
WA	47.2%	26.6%	6.8%	17.9%
AUSTRALIA	34.6%	39.9%	13.3%	11.1%

Figure A.11: Proportion of CHC treatment by course duration, by year, 2016–2023

Year	8 Weeks	12 Weeks	24 Weeks
2016	7.5%	72.3%	20.2%
2017	7.5%	84.6%	7.4%
2018	15.9%	83.0%	<1%
2019	35.3%	64.1%	<1%
2020	40.7%	58.6%	<1%
2021	45.8%	53.5%	<1%
2022	44.7%	54.4%	<1%
2023*	47.9%	51.3%	<1%

Figure A.12: Proportion of CHC treatment by age group, by year, where a specialty was available, March 2016 – October 2023

Year	0–29	30–39	40–49	50–59	60+
2016	3.7%	13.8%	23.3%	38.7%	20.5%
2017	7.0%	20.7%	28.1%	30.1%	14.1%
2018	10.4%	22.9%	28.7%	25.0%	13.0%
2019	12.7%	22.2%	27.7%	23.5%	13.9%
2020	15.1%	21.9%	27.3%	22.5%	13.2%
2021	14.9%	20.6%	26.4%	22.7%	15.3%
2022	14.9%	20.9%	25.1%	21.4%	17.7%
2023*	17.5%	20.1%	24.2%	21.0%	17.1%

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