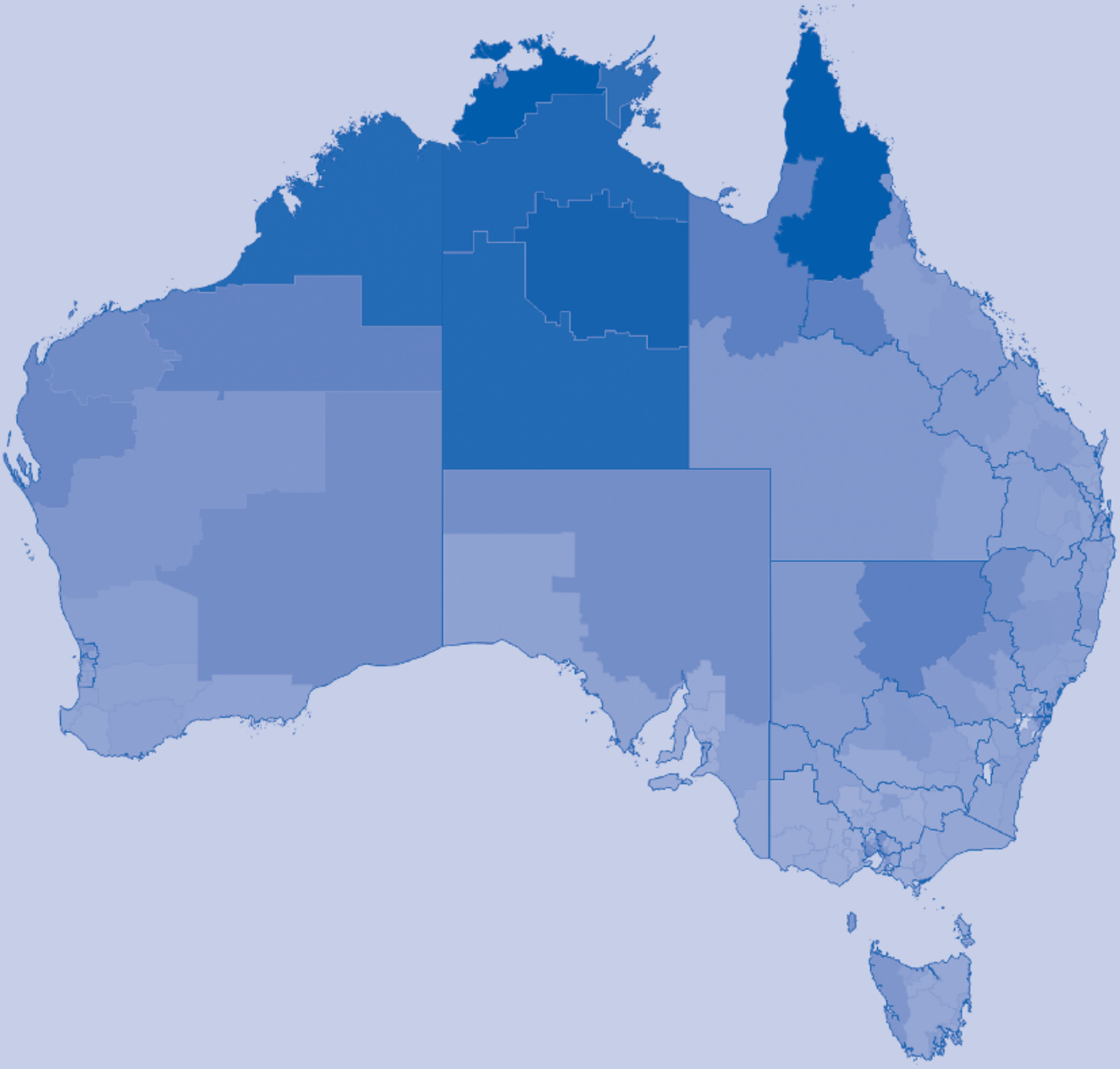

VIRAL HEPATITIS MAPPING PROJECT:
HEPATITIS B

Geographic diversity in chronic hepatitis B prevalence, management and treatment

NATIONAL REPORT 2022

ashm

WHO Collaborating Centre for Viral Hepatitis VIDRL

Doherty Institute

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WHO COLLABORATING CENTRE FOR VIRAL HEPATITIS, THE PETER DOHERTY INSTITUTE FOR INFECTION AND IMMUNITY
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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIR	Australian Immunisation Register
ASHM	Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine
CHB	chronic hepatitis B
CHC	chronic hepatitis C
GP	general practitioner
MBS	Medicare Benefits Schedule
NNDSS	National Notifiable Diseases Surveillance System
NP	nurse practitioner
NSW	New South Wales
NT	Northern Territory
PBS	Pharmaceutical Benefits Scheme
PHN	Primary Health Network
Qld	Queensland
SA	South Australia
SA2	Statistical Area 2
SA3	Statistical Area 3
Tas	Tasmania
Vic	Victoria
WA	Western Australia
WHO	World Health Organization

For data terms and definitions, see Section D – Data sources and methodology.

EXECUTIVE SUMMARY

SECTION A: HEPATITIS B

PREVALENCE

- An estimated 205,549 people were living with chronic hepatitis B (CHB) in Australia in 2022, representing 0.78% of the total population.
- The proportion of the population living with CHB (prevalence) varied widely by Primary Health Network (PHN) and was highest in **Northern Territory** PHN and in PHNs in Sydney and Melbourne.

TREATMENT

- Treatment uptake for CHB in 2022 was 12.9%, below the National Hepatitis B Strategy 2018–2022 target of 20% by 2022.
- Although the number of people receiving treatment has increased over time, the rate of increase has reduced during 2018–2022.
- Treatment uptake was highest in PHNs in Sydney, Melbourne and Brisbane, as well as **Australian Capital Territory** PHN.
- Only 14 Statistical Area 3s (SA3s) (4.8% of those reported) reached the 2022 treatment uptake target of 20%, generally located in PHNs with higher uptake of treatment.
- General practitioner (GP) prescribing represented 22.1% of all CHB treatment in 2022.

CARE

- Engagement in care (treatment or viral load test monitoring) in 2022 was 25.5%, half the National Strategy 2018–2022 target of 50%.
- Similar to treatment uptake, care uptake was highest in PHNs in Sydney, Melbourne, Brisbane and **Australian Capital Territory** PHN.
- Only two SA3s reached the National Strategy 2018–2022 care uptake target of 50% by 2022, in the **Northern Territory** (East Arnhem SA3) and **Northern Queensland** (Far North SA3) PHNs.
- The number of people engaged in monitoring (received a viral load test while not receiving antiviral treatment) reduced between 2018 and 2022, impeding progress towards the care uptake target.
- Only half of all people living with CHB had received a viral load test in the past seven years.
- GPs provided 55.9% of viral load monitoring tests in 2022.

IMMUNISATION

- Timely infant hepatitis B immunisation uptake (measured at 12 months of age) nationally declined to 93.8% in 2022, below the 95% National Strategy 2018–2022 target. Overall coverage declined during the period 2018 to 2022.
- Coverage was lower among Aboriginal and Torres Strait Islander children (90.2%), and this also declined between 2018 and 2022.
- The 95% coverage target was met in 12 of Australia's 31 PHNs for all children, a reduction from 16 PHNs in 2021.
- The 95% coverage target was met in two PHNs for Aboriginal and Torres Strait Islander children, a reduction from eight PHNs in 2021.

SECTION B: VIRAL HEPATITIS SEROLOGY TESTING TRENDS

- The number of hepatitis serology tests occurring through Medicare reduced during 2020–2022. There was an increase in 2023; however, testing rates were still below 2019 levels.
- This reduction led to an estimated 1.9 million fewer serology tests during 2020–2023.
- Although specific yearly trends varied, this decline between 2019 and 2023 occurred in all states and territories (except Tas, where rates were stable).

SECTION C: LIVER CANCER

- Liver cancer rates in Australia are highly variable according to region.
- In the **North Western Melbourne**, **Western Sydney**, **Central and Eastern Sydney**, **Northern Territory** and **South Western Sydney** PHNs, the majority of Statistical Area 2s (SA2s) had liver cancer rates above the national average.
- The five PHNs with the highest liver cancer rates also had above-average prevalence of CHB (**North Western Melbourne** and **Western Sydney**) or had above-average prevalence of both CHB and chronic hepatitis C (CHC) (**Central and Eastern Sydney**, **Northern Territory** and **South Western Sydney**).

HEPATITIS C

The equivalent report on hepatitis C, geographic diversity and trends in prevalence and treatment uptake and related methods are presented in the Viral Hepatitis Mapping Project: Hepatitis C National Report 2021–2023.

CONTENTS

TABLES AND FIGURES

INTRODUCTION

BACKGROUND

The Viral Hepatitis Mapping Project aims to assess geographic variations in the prevalence of viral hepatitis and disparities in access to care in order to identify priority areas for response. Improving access to care and treatment for viral hepatitis is needed to reduce the burden of attributable liver disease and cancer, the distribution of which is also geographically disparate.

This publication includes data regarding hepatitis B, as well as estimates of viral hepatitis testing and liver cancer. The most recent data regarding hepatitis C prevalence and treatment uptake are presented in the Viral Hepatitis Mapping Project: Hepatitis C National Report 2021–2023 (published 2024).

This report presents the most recent available estimates for prevalence, treatment and care to the end of 2022, with testing data available to the end of 2023. This allows for assessment of ongoing trends, including the health service effects of the ongoing COVID-19 pandemic and associated restrictions. The report enables readers to identify the prevalence of hepatitis B in local areas, and to assess progress in delivering care to affected people.

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

This report highlights a range of disparities which must be addressed to meet Australia's 2030 elimination goals for hepatitis B, focusing on geographic inequities. These often reflect health disparities between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians, and disparities between people born overseas and people born in Australia. The findings in this report highlight the enduring traumatic legacy of colonisation on Aboriginal and Torres Strait Islander peoples, and recognise the historical disadvantage perpetuated by institutional racism and systemic failures that collectively contribute to these disparities.[1,2] This emphasises the urgent need for culturally appropriate care and programs led by affected communities that address the root causes of health inequities. These factors also may impact the likelihood of experiencing adverse outcomes related to CHB, emphasising the need to focus on marginalised communities for increased access to care and treatment.

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

WHAT'S NEW IN THIS REPORT?

This 2022 report contains the following new information:

- Increased granularity in practitioner data, including estimates of prescribing by nurse practitioners (NPs).
- Updated national and state/territory estimates of hepatitis B prevalence, based on revised modelling.
- Updated estimates of the proportion of people living with CHB who have been diagnosed, based on revised modelling accounting for variation in diagnosis by phase of hepatitis B.
- Further assessment of trends in diagnosis, care and treatment through 2022, and testing trends through 2023, reflecting the continued impact of COVID-19.
- Expanded assessment of monitoring over time, providing increased understanding of long-term trends in care uptake.

HOW TO USE THE DATA

The data in this report are intended for use in the development and implementation of policy and service delivery, allowing identification of priority groups and assessment of variation in key metrics by area. The specification of priority populations, such as culturally and linguistically diverse communities, is intended to improve health care services to these communities. However, data should be used in a way that considers the broader social, cultural and personal context of individuals, and recognises the various factors that influence health service access, as people living with viral hepatitis are often subject to intersecting discrimination.[3]

The information presented here should be understood to represent estimates, and used with consideration for the uncertainty inherent in population modelling and routinely collected data. These estimates are also subject to continued revision and updating to ensure that information is as accurate as possible.

REPORT STRUCTURE

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

- Section A1: national snapshot of hepatitis B prevalence, treatment, monitoring and care, and immunisation
- Section A2: geographic diversity and trends in CHB by state and territory
- Section B: viral hepatitis serology testing trends
- Section C: liver cancer
- Section D: data sources and methodology.

The hepatitis C report, along with associated data and methodology, will be published separately.

MORE INFORMATION

For further information about the Mapping Project, to access previous reports, and to view frequently asked questions, please visit the project website. To explore the data included in this report, visit the online portal, which provides interactive visualisations of these variations at the state and territory, PHN and SA3 level. For further information or resources related to viral hepatitis and the Mapping Project, visit www.doherty.edu.au/viralhepatitis and www.ashm.org.au/resources. 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 B

SECTION A1: NATIONAL SNAPSHOT – HEPATITIS B

IN THIS SECTION

Section A1 includes the following information:

- national and state/territory-level estimates of CHB prevalence, diagnosis, treatment uptake and care uptake
- national and PHN-level estimates of CHB prevalence, treatment, care uptake and immunisation coverage
- assessment of trends over time in treatment and ongoing care engagement during 2016–2022
- assessment of variation in treatment and care uptake according to demographic and clinical factors
- data regarding prescribing and viral load testing by provider specialty according to state/territory and PHN.

Table A.1: Heat map of CHB prevalence, treatment uptake and care uptake, by PHN, 2022

PHN	PREVALENCE Proportion of the population living with CHB (%)	TREATMENT Proportion of people with CHB who received treatment (%)	CARE Proportion of people with CHB who received care (treatment or monitoring) (%)
NATIONAL AVERAGE	**0.78%**	**12.9%**	**25.5%**
NATIONAL STRATEGY TARGET	**-**	**20.0%**	**50.0%**
Northern Territory	1.72%	11.5%	24.2%
South Western Sydney	1.34%	20.6%	38.1%
Western Sydney	1.25%	18.0%	37.1%
Central and Eastern Sydney	1.22%	15.8%	30.5%
Northern Sydney	1.15%	16.4%	33.5%
Eastern Melbourne	1.12%	14.1%	30.8%
North Western Melbourne	1.09%	14.5%	30.1%
Brisbane South	0.91%	13.8%	29.0%
South Eastern Melbourne	0.91%	13.1%	27.9%
Country WA	0.80%	3.7%	6.2%
Perth North	0.76%	9.9%	14.2%
Perth South	0.75%	9.7%	14.2%
Adelaide*	0.68%	12.0%	18.0%
Western Queensland	0.67%	#	#
Australian Capital Territory	0.63%	15.8%	30.6%
Northern Queensland	0.61%	7.0%	17.8%
Brisbane North	0.60%	8.3%	15.7%
Nepean Blue Mountains	0.57%	8.9%	19.4%
Gold Coast	0.55%	9.1%	16.8%
Western NSW	0.52%	5.6%	14.6%
Darling Downs and West Moreton	0.51%	7.0%	15.2%
Hunter New England and Central Coast	0.42%	6.0%	12.4%
Murrumbidgee	0.42%	5.2%	12.0%
South Eastern NSW	0.42%	8.3%	19.2%
North Coast	0.38%	7.2%	15.8%
Murray	0.38%	9.2%	20.8%
Central Queensland, Wide Bay, Sunshine Coast	0.36%	7.6%	13.5%
Western Victoria	0.35%	8.9%	18.3%
Gippsland	0.33%	9.0%	17.9%
Country SA*	0.32%	5.9%	10.8%
Tasmania	0.28%	9.4%	17.0%

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. Key: Green denotes lowest prevalence and highest care and treatment uptake, with the colour gradient through to red, which denotes highest prevalence and lowest care and treatment uptake.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment and monitoring (viral load test while not receiving treatment) data sourced from Medicare statistics.

Data suppressed where number of people receiving treatment or monitoring was <6.

* Data relating to SA may underestimate monitoring by up to 50% from 2020 onwards due to the provision of services outside of Medicare.

THE CASCADE OF CARE

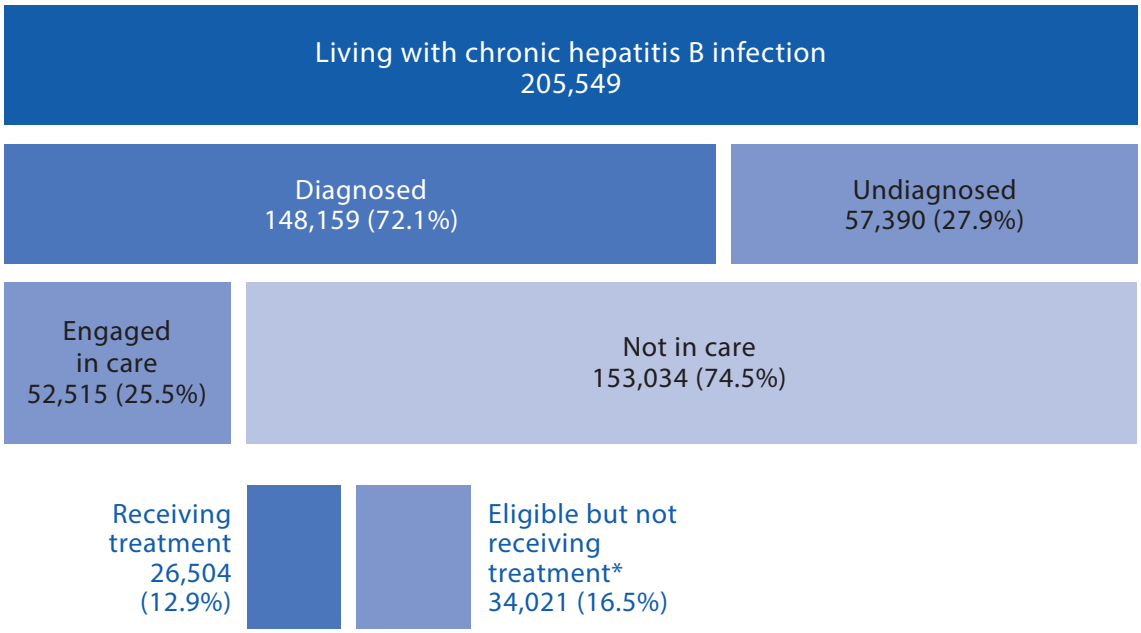
Australia's Third National Hepatitis B Strategy 2018–2022[4] targets included:

- 80% of people living with CHB diagnosed
- 50% of people living with CHB engaged in care (treatment or viral load test monitoring)
- 20% of people living with CHB receiving treatment.

In 2022 in Australia, an estimated 205,549 people were living with CHB. Of those, 148,159 (72.1%) had ever been diagnosed; 52,515 (25.5%) people received care (either treatment or monitoring); and 26,504 (12.9%) received antiviral treatment (Figure A.1). Detailed data and exploration of variation in each of these cascade indicators by geographic area is explored in later sections of this report.

Trends show gradual increases in diagnosis and treatment uptake over time (Table A.2); however, care uptake decreased in 2022. Based on modelled projections of the future number of people estimated to be living with CHB,[5] and extrapolation of previous trends, none of these targets are estimated to be met until beyond 2030 under the current trajectories.

Figure A.1: CHB cascade of care, Australia, 2022



*Treatment eligibility based on Australian clinical guidelines, estimated using mathematical modelling

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Proportion diagnosed estimated using modelling combined with notifications data. Treatment and monitoring (viral load test while not receiving treatment) data sourced from Medicare statistics.

(see data for this figure)

Table A.2: Progress made towards 2022 National Hepatitis B Strategy targets for diagnosis, care and treatment, 2018–2022

Indicator	2018	2019	2020	2021	2022	National Strategy target by 2022	Year Australia projected to reach 2022 target
Diagnosis	68.0%	68.1%	70.2%	72.7%	72.1%	**80.0%**	**2037**
Care (treatment or monitoring*)	25.0%	25.3%	24.9%	26.0%	25.5%	**50.0%**	**2047**
Treatment	10.6%	11.1%	11.8%	12.7%	12.9%	**20.0%**	**2036**

CHB, chronic hepatitis B.

*Monitoring is represented by a viral load test while not receiving treatment. Targets presume trends in population living with CHB and change in indicators over time remain stable. See ***National Surveillance for Hepatitis B Indicators Report 2022***[5] for more information about the assumptions and projections used.

It should be noted that the 'engaged in care' indicator reflects only a snapshot of the proportion of people with CHB who received items of guideline-based care[4] (either monitoring measured using viral load testing, or treatment) in a given year. Further assessment of the uptake of more frequent testing which more closely reflects current guidelines is assessed in Section A1 – Ongoing engagement in monitoring.

PREVALENCE

In 2022 in Australia, an estimated 205,549 people were living with CHB,[5] representing 0.78% of the total population (Table A.3).

In 2020 the estimated number of people living with CHB in Australia decreased for the first time since the 1990s, as international border closures due to the COVID-19 pandemic led to reduced migration from overseas to Australia. However, after the resumption of overseas migration to Australia, the estimated number of people living with CHB increased in 2022 to pre-2019 levels. This was previously estimated to not occur until 2024; however, the net overseas migration occurring in 2022 was higher than had previously been projected.[5]

PREVALENCE ACROSS STATES AND TERRITORIES

The highest prevalence of CHB was estimated to be in the NT at 1.72%, and the lowest prevalence in Tas at 0.28%. Among other jurisdictions, the prevalence of CHB was also above the national average of 0.78% in NSW (0.90%) and Vic (0.88%). Prevalence was similar to the national average in WA (0.76%), and below it in the ACT (0.63%), Qld (0.61%) and SA (0.58%) (Table A.3).

Table A.3: Estimated prevalence of CHB, by state and territory, 2022

State/territory	Total population	People living with CHB	CHB prevalence (%)
ACT	462,117	2,927	0.63%
NSW	8,177,728	73,671	0.90%
NT	252,823	4,360	1.72%
Qld	5,347,589	32,744	0.61%
SA	1,817,144	10,513	0.58%
Tas	573,657	1,621	0.28%
Vic	6,657,801	58,268	0.88%
WA	2,811,351	21,445	0.76%
AUSTRALIA	**26,268,359**	**205,549**	**0.78%**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

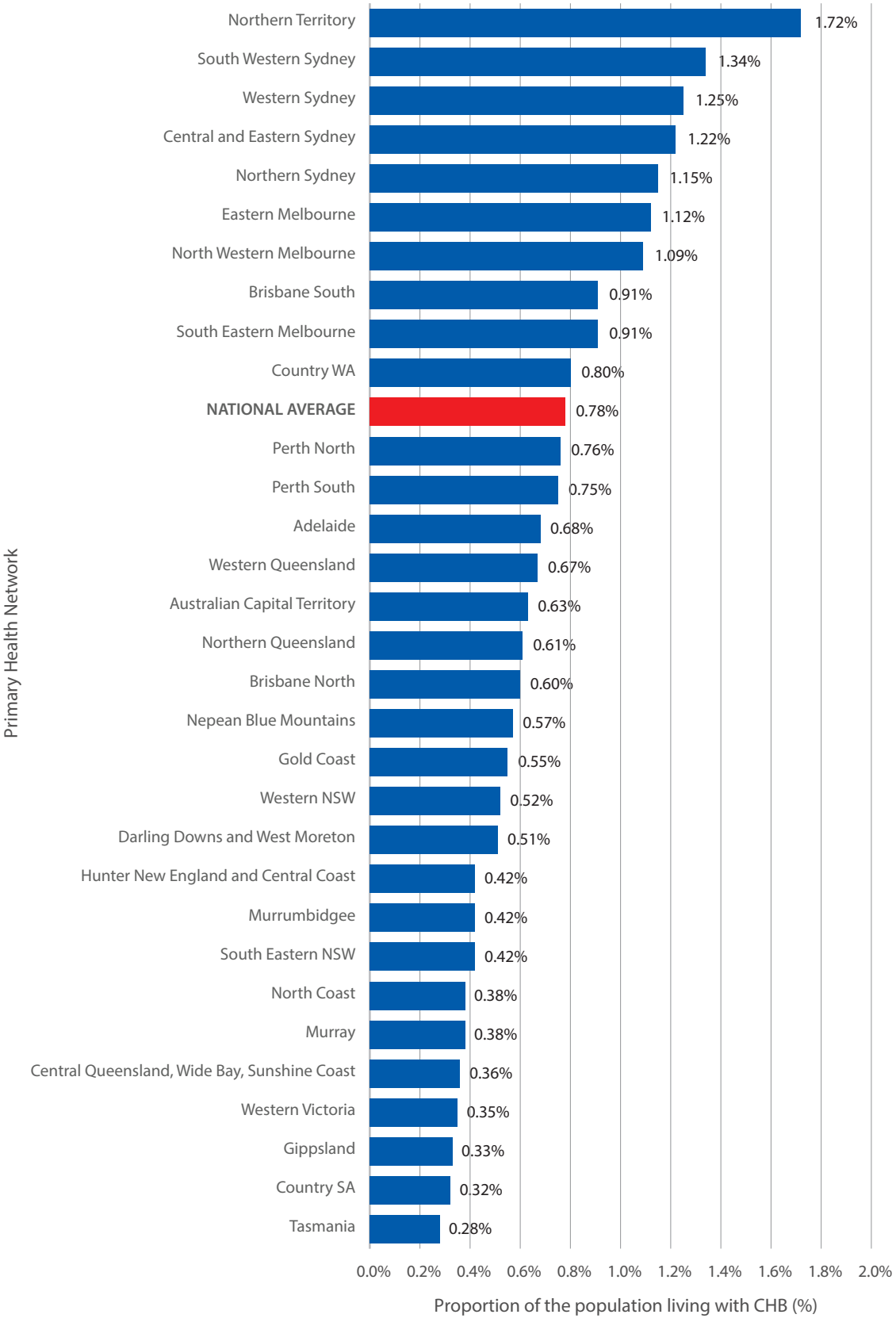
Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data.

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

PREVALENCE ACROSS PRIMARY HEALTH NETWORKS

The **Northern Territory** PHN comprises the whole jurisdiction and had the highest CHB prevalence of any PHN in 2022 (1.72%), more than six times that of the lowest prevalence PHN. The number of people estimated to be living with CHB also varied widely according to PHN, as shown in Figure A.3. Outside the NT, prevalence was highest in following PHNs: **South Western Sydney** (1.34%), **Western Sydney** (1.25%), **Central and Eastern Sydney** (1.22%), **Northern Sydney** (1.15%), **Eastern Melbourne** (1.12%) and **North Western Melbourne** (1.09%) (Figure A.2).

Figure A.2: Estimated prevalence of CHB by PHN, 2022



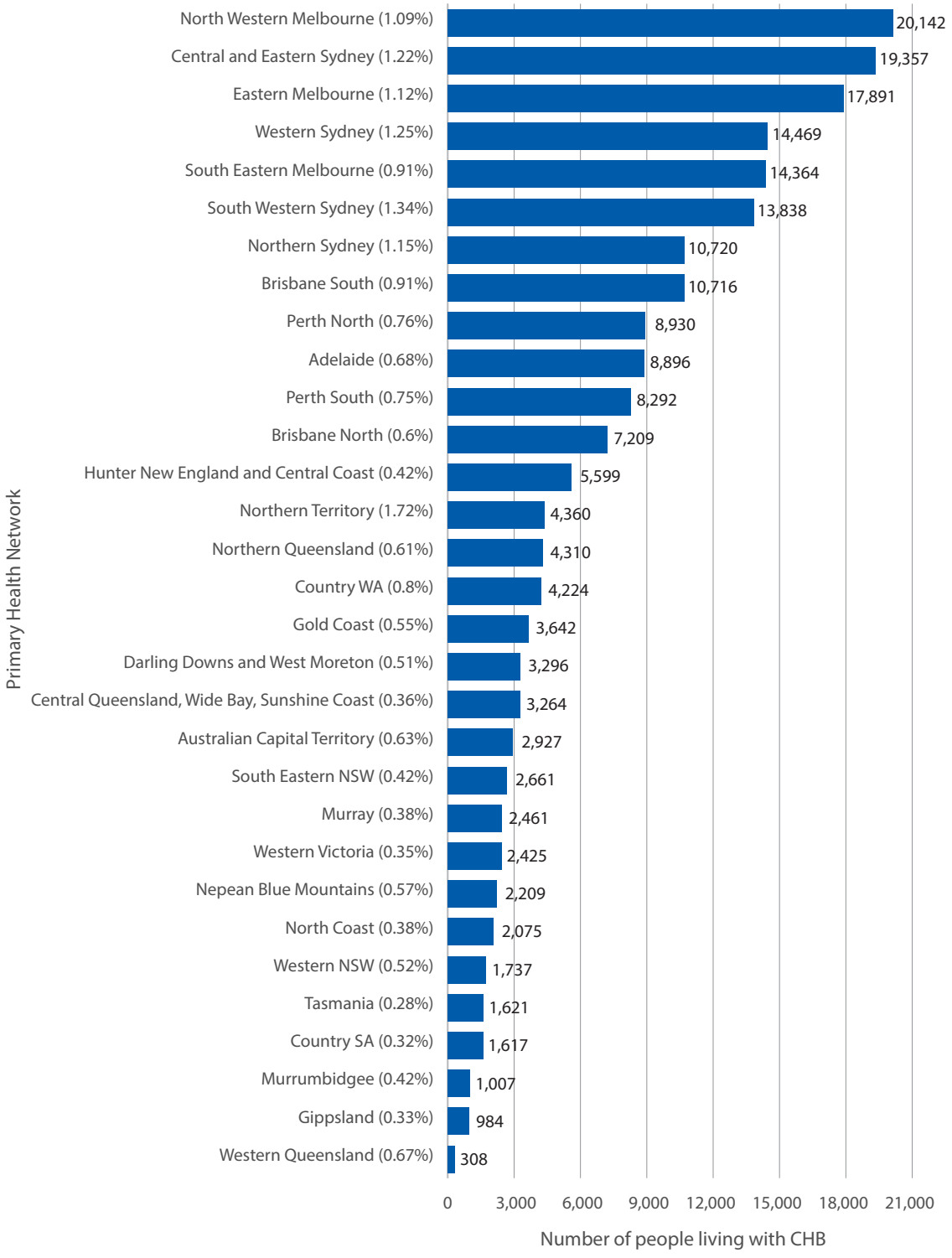
ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data.

(see data for this figure)

Due to the distribution patterns of Australia's population, the number of people living with CHB is largest in PHNs covering Sydney and Melbourne, and these seven PHNs are estimated to comprise more than half (53.9%) of all people living with CHB in Australia (Figure A.3).

Figure A.3: Estimated number of people living with CHB by PHN (prevalence in brackets), 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. For tabulated data see Section A2 – Geographic diversity and trends in chronic hepatitis B by state and territory.

(see data for this figure)

PREVALENCE ACROSS REMOTENESS AREAS

CHB prevalence in 2022 was highest in very remote regions (2.35%), where it was triple the national average. The high CHB prevalence in very remote regions relates to the greater prevalence in the Aboriginal and Torres Strait Islander population, as they make up the majority of residents in very remote regions. This is the reason for the high prevalence observed in the **Northern Territory** PHN, which has a high proportion of residents in very remote regions (Figure A.4).

Table A.4: Estimated prevalence of CHB by remoteness category, 2022

Remoteness level	Total population	People living with CHB	CHB prevalence (%)
Major cities	19,201,661	172,348	0.90%
Inner regional	4,610,462	16,915	0.37%
Outer regional	1,927,367	10,289	0.53%
Remote	235,055	3,048	1.30%
Very remote	125,665	2,949	2.35%
AUSTRALIA	**26,268,359**	**205,549**	**0.78%**

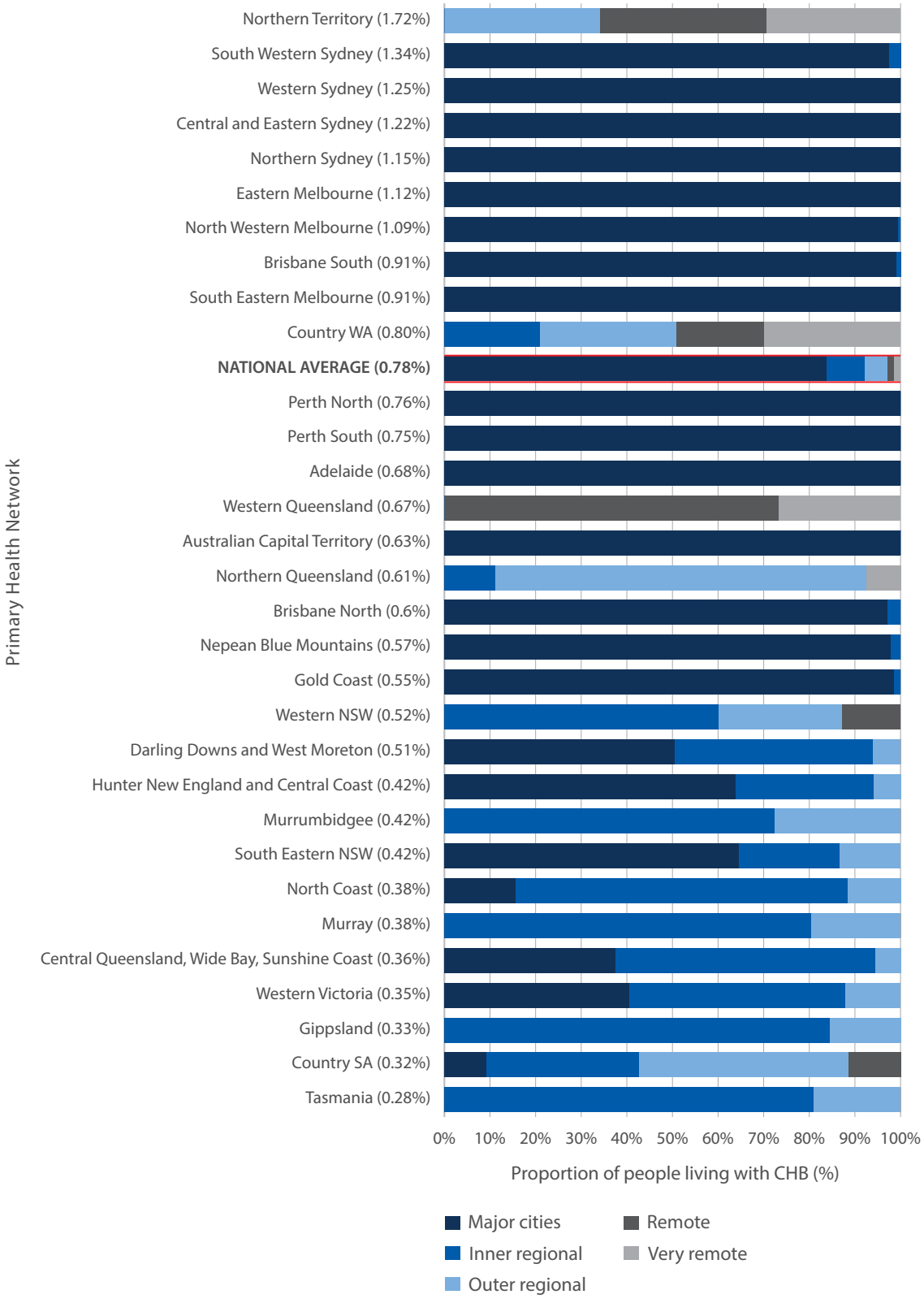
ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Remoteness category based on designations by the ABS.[8]

Totals may not add up due to inclusion of people without a remoteness category of residence recorded in source data.

Prevalence was also above the national average in remote regions (1.30%) and major cities (0.90%) (Table A.4). These prevalence variations reflect the variation in the proportion of the population which belong to the key priority populations for CHB (people born overseas in endemic regions, and Aboriginal and Torres Strait Islander people). In PHNs where people living with CHB are predominantly born overseas, the vast majority of people live in major cities (Figure A.4). This distribution has relevance for the design and delivery of services for people living with CHB and highlights the substantial challenges in providing care for people living in remote regions. In many remote regions the predominant group living with CHB is Aboriginal and Torres Strait Islander people; disparities in care and treatment uptake often reflect the ongoing impact of the legacy of colonisation, institutional racism and systemic disadvantage. Prevalence according to remoteness and state and territory specific to Aboriginal and Torres Strait Islander people was provided in the 2021 Mapping Report Supplement.

Figure A.4: Proportion of people living with CHB according to remoteness of residence, by PHN, ordered by CHB prevalence (in brackets), 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Remoteness category based on designations by the ABS.[6]

(see data for this figure)

PRIORITY POPULATIONS FOR CHB IN AUSTRALIA

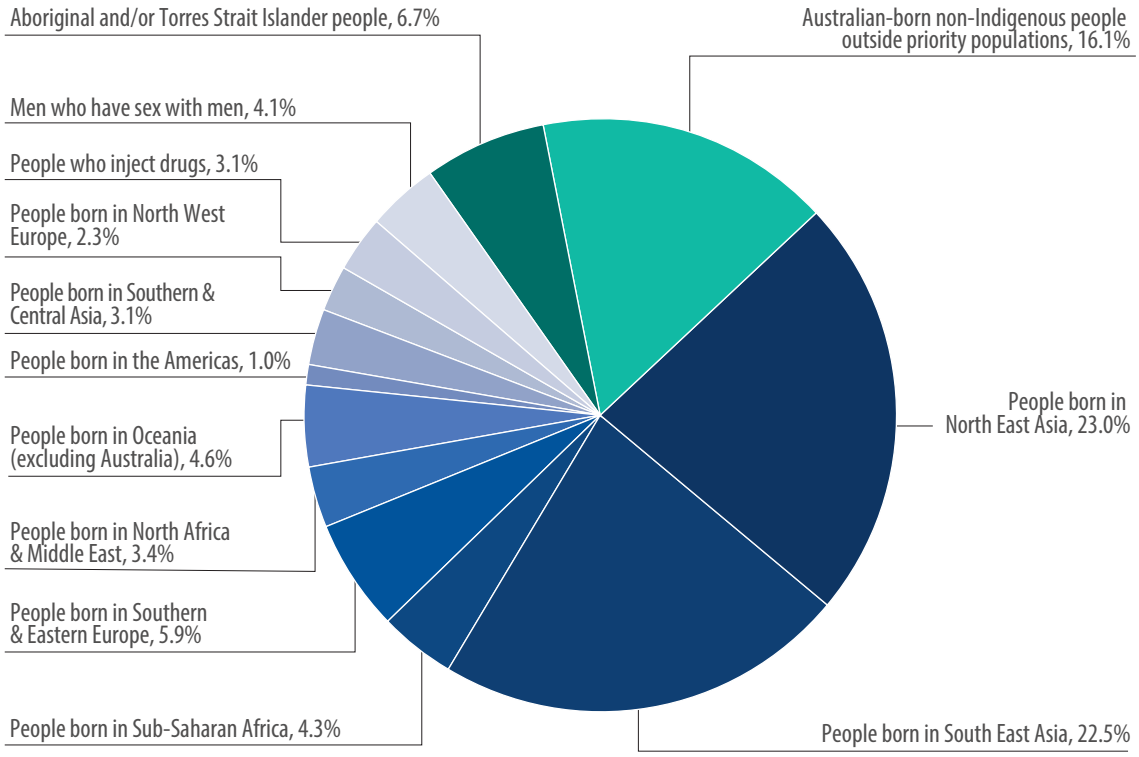
Country of birth is a key predictor of the risk of CHB, and 70% of all people living with CHB in Australia in 2022 were born overseas.

Note that all data are based on residents counted in the Australian Census of Population and Housing and include individuals regardless of visa status. Proportions presented here according to country and region of birth are unchanged from the 2021 Mapping Report, as updated Census data are not available; in future reports, analysis of granular migration data by region of residence is planned in order to generate updated estimates of the number of people with CHB according to priority population.

Regions of birth with the highest prevalence were North East Asia (5.00% prevalence, representing 23.0% of the total with CHB) and South East Asia (4.03% prevalence, 22.5% of the total) (Figure A.5 and Table A.5). A smaller proportion of people in Australia with CHB were born in Southern and Eastern Europe (5.9% of the total with CHB), Oceania (4.6%) and Sub-Saharan Africa (4.3%).

Due to the higher prevalence of CHB among people born overseas and the evidence that culturally and linguistically diverse communities in Australia are likely to experience broader health care access disparities,[7] data presented in this section of the report focus on this population. These data can support the identification and prioritisation of people most likely to be living with CHB in Australia.

Figure A.5: People living with CHB in Australia, by priority population,* 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data.

*When a person belonged to more than one population group, they were allocated to only one in the model based on evidence regarding the most common transmission risk, with prioritisation given to country of birth and Aboriginal and Torres Strait Islander status.

(see data for this figure)

Aboriginal and Torres Strait Islander people, the majority of whom likely acquired CHB via mother-to-child transmission in the era prior to immunisation,[8] were estimated to represent 6.7% of people living with CHB in Australia. Men who have sex with men are estimated to represent 4.1% of the total, and people who inject drugs are estimated to represent 3.1%. Australian-born non-Indigenous people outside priority populations with CHB (16.1% of the total) include those who acquired CHB through various modes of transmission, such as mother-to-child transmission in Australia (particularly before universal infant hepatitis B vaccination in 2000),[9] via unsterile health care practices, transfusions, tattooing or piercing practices, or through sexual contact.

A person may belong to more than one of these groups, but they are allocated to only one priority population, because data regarding the intersectional influence of CHB epidemiology across priority populations are highly limited. The methodology prioritises country of birth and Aboriginal and Torres Strait Islander status when allocating populations, as this usually reflects transmission in early life when the risk of developing chronic infection is highest.[10] However, policy responses to CHB should not assume exclusivity of risk group categories, and should recognise that a person may belong to more than one community. Further detail regarding methodology for sourcing these estimates is available in Section D – Data sources and methodology.

Table A.5 People living with CHB in Australia, by priority population,* ordered from highest to lowest prevalence within each subgroup, 2022

Population group	Total population	People living with CHB	Prevalence (%)	Proportion of all people living with CHB (%)
People born in Australia (total)	**18,729,353**	**61,616**	**0.33%**	**30.0%**
People who inject drugs	246,526	6,318	2.56%	3.1%
Men who have sex with men	371,576	8,359	2.25%	4.1%
Aboriginal and/or Torres Strait Islander people	892,520	13,810	1.55%	6.7%
Australian-born non-Indigenous people outside priority populations	17,218,730	33,129	0.19%	16.1%
People born overseas (total)	**7,525,895**	**143,933**	**1.91%**	**70.0%**
People born in North East Asia	937,547	47,179	5.03%	23.0%
People born in South East Asia	1,142,242	46,288	4.05%	22.5%
People born in Sub-Saharan Africa	382,708	8,761	2.29%	4.3%
People born in Southern and Eastern Europe	675,355	12,054	1.78%	5.9%
People born in North Africa and Middle East	477,615	6,996	1.46%	3.4%
People born in Oceania (excluding Australia)	742,805	9,437	1.27%	4.6%
People born in the Americas	346,167	2,137	0.62%	1.0%
People born in Southern and Central Asia	1,259,171	6,408	0.51%	3.1%
People born in North West Europe	1,562,285	4,673	0.30%	2.3%
AUSTRALIA	**26,268,359**	**205,549**	**0.78%**	**100.0%**

Continued next page

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

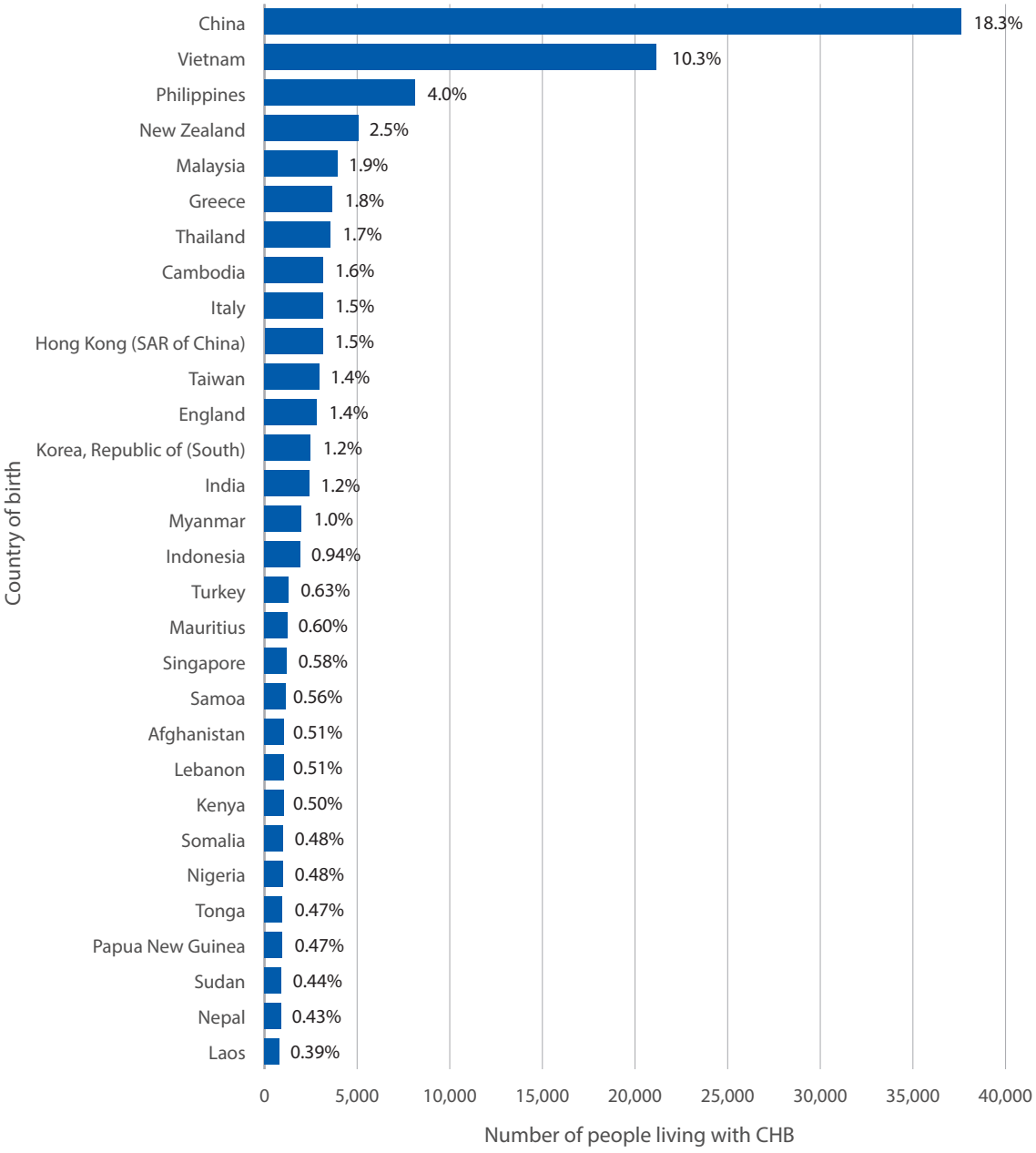
Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data.

*When a person belonged to more than one population group, they were allocated to only one in the model based on evidence regarding the most common transmission risk, with prioritisation given to country of birth and Aboriginal and Torres Strait Islander status.

Totals may not add up due to inclusion of people with an inadequately described country of birth recorded in source data.

Among all people living with CHB in Australia who were born overseas, the majority were born in a relatively small number of countries, predominantly in the Asia–Pacific region (Figure A.5 and Figure A.6). The most common countries of birth were China (18.3% of all people with CHB) and Vietnam (10.3%) (Figure A.6), which together represented more than one-quarter of people with CHB. The 14 most common countries of birth comprised half of all people living with CHB in Australia. This reflects both the variation in prevalence of CHB by country of birth, and the total number of people born in these countries living in Australia. Because of this, some countries, such as New Zealand and England, rank highly due to their very large populations within Australia, despite not being countries with a high prevalence of CHB (although they may include subpopulations with a higher prevalence, such as Māori). Conversely, many countries in Sub-Saharan Africa and the Pacific have high CHB prevalence but lower numbers of people living in Australia. For more extensive data regarding prevalence of CHB by country of birth, see the *2021 Mapping Report Supplement*.

Figure A.6: Number (bars) and proportion (labels) of people born overseas and living with CHB in Australia, by country of birth (top 30 countries), 2022



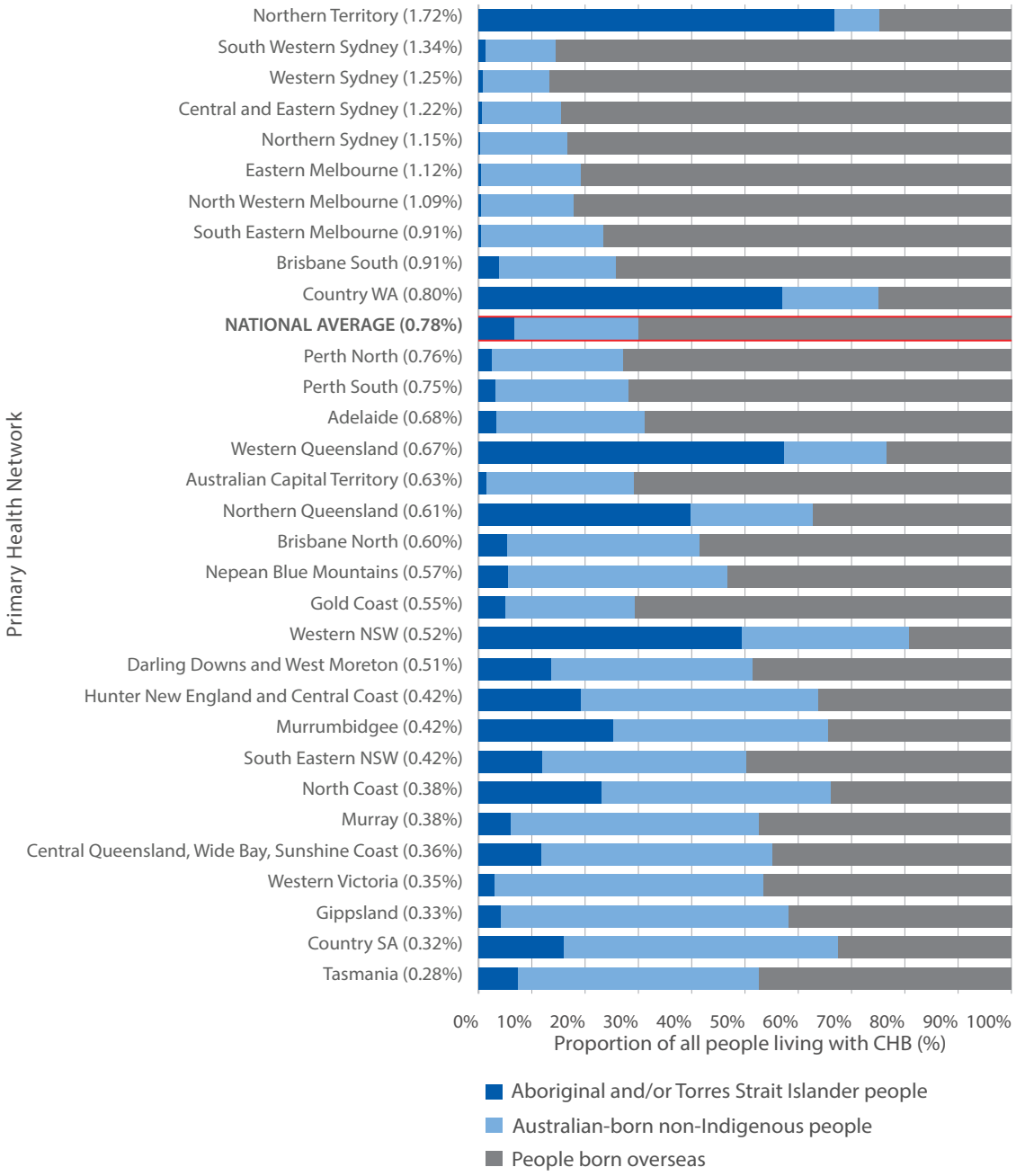
ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Country-specific data sourced predominantly from local antenatal studies.[11, 12]

(see data for this figure)

In most PHNs, people born overseas were the most common group living with CHB, reflecting the overall national distribution. However, in five PHNs, Aboriginal and Torres Strait Islander people represented the largest group of people living with CHB: **Northern Territory**, **Western Queensland**, **Country WA**, **Northern Queensland**, and **Western NSW** (Figure A.7). Consideration of the particular priority populations affected in each PHN can assist when designing culturally appropriate and effective public health responses to CHB in local communities. These PHNs generally have a higher proportion of residents in remote regions (see Figure A.4), where population sizes are often smaller and more widely distributed geographically. For relative comparison of the total number of people living with CHB in each PHN, see Figure A.3.

Figure A.7: Proportion of people living with CHB according to priority population, by PHN, ordered by CHB prevalence (in brackets), 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data.

(see data for this figure)

This variation is consequently reflected in the distribution of people living with CHB by remoteness area by PHN, as the distribution of priority populations varies according to area. In PHNs where Aboriginal and Torres Strait Islander people represent the largest group living with CHB, the residential location is predominantly rural or remote (Figure A.4). Conversely, PHNs where most people living with CHB were born overseas are predominantly located in major cities. This distribution has relevance for the design and delivery of services for people living with CHB and highlights the substantial challenges in providing care for people living in remote areas.

In addition to variation in the proportion of people living with CHB who were born overseas by PHN (Figure A.7), there is also variation in the most common countries of birth among those born overseas. This is due to differences in both migration patterns and in the age distribution of migrants in a given area, as age distribution is associated with CHB prevalence (for more detail see the *2021 Mapping Report Supplement*). These factors lead to variation by PHN in the most common groups living with CHB.

China was the most common overseas country of birth in the majority of PHNs (Table A.6), reflecting the national pattern (Figure A.6). However, for some PHNs, the most common overseas country of birth was Vietnam or the Philippines (Table A.6). This variation from the national average was most pronounced in **South Western Sydney**, where 35.1% of people with CHB were born in Vietnam, compared to 10.3% nationally. Although New Zealand is not a country with a high CHB prevalence, the high population in many areas led to it being the most common overseas country of birth in two PHNs.

The three most common overseas countries of birth for people living with CHB in each PHN are presented in Table A.6. More detailed ranking information is available on request, and data regarding prevalence by country is provided in the *2021 Mapping Report Supplement*. Consideration of predominant overseas countries of birth in a given region can assist with tailoring responses to the local linguistic and cultural context. Data regarding the most common languages spoken by people with CHB is available in the *2021 Mapping Report Language Supplement*.

Table A.6: Top three overseas countries of birth for people living with CHB and proportion of the total number living with CHB, by PHN, ordered by CHB prevalence, 2022

PHN	Most common overseas country of birth for people with CHB in this PHN	Proportion of the total with CHB who were born in this country (%)	2nd most common overseas country of birth for people with CHB in this PHN	Proportion of the total with CHB who were born in this country (%)	3rd most common overseas country of birth for people with CHB in this PHN	Proportion of the total with CHB who were born in this country (%)
Northern Territory	Philippines	4.7%	China	2.6%	Vietnam	2.5%
South Western Sydney	Vietnam	35.1%	China	9.1%	Cambodia	6.5%
Western Sydney	China	31.8%	Vietnam	8.3%	Philippines	7.3%
Central & Eastern Sydney	China	35.3%	Vietnam	7.9%	Greece	4.0%
Northern Sydney	China	43.4%	Hong Kong (SAR of China)	5.4%	South Korea	3.8%
Eastern Melbourne	China	37.3%	Vietnam	7.7%	Malaysia	4.1%
North Western Melbourne	Vietnam	22.3%	China	11.9%	Philippines	4.4%
South Eastern Melbourne	China	15.4%	Vietnam	12.6%	Cambodia	7.3%
Brisbane South	China	17.1%	Vietnam	11.5%	Taiwan	6.3%
Country WA	Philippines	4.4%	NZ	3.6%	England	2.1%
Perth North	Vietnam	13.0%	China	8.7%	Philippines	3.9%

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PHN	Most common overseas country of birth for people with CHB in this PHN	Proportion of the total with CHB who were born in this country (%)	2nd most common overseas country of birth for people with CHB in this PHN	Proportion of the total with CHB who were born in this country (%)	3rd most common overseas country of birth for people with CHB in this PHN	Proportion of the total with CHB who were born in this country (%)
Perth South	China	13.5%	Philippines	6.5%	Malaysia	6.0%
Adelaide	China	14.5%	Vietnam	12.9%	Philippines	3.3%
Western Queensland	#	#	#	#	#	#
Australian Capital Territory	China	20.0%	Vietnam	8.7%	Philippines	3.8%
Northern Queensland	Philippines	5.0%	NZ	3.3%	PNG	3.1%
Brisbane North	China	11.2%	NZ	5.8%	Philippines	5.0%
Nepean Blue Mountains	Philippines	8.2%	China	7.5%	NZ	2.9%
Gold Coast	China	16.2%	NZ	12.4%	Philippines	4.3%
Western NSW	#	#	#	#	#	#
Darling Downs and West Moreton	NZ	5.7%	Philippines	5.2%	Vietnam	4.4%
Hunter New England and Central Coast	China	6.7%	Philippines	3.8%	Vietnam	2.4%
Murrumbidgee	#	#	#	#	#	#
South Eastern NSW	China	7.2%	Vietnam	3.9%	Philippines	3.8%
North Coast	#	#	#	#	#	#
Murray	Philippines	4.6%	China	4.1%	Vietnam	4.0%
Central Qld, Wide Bay, Sunshine Coast	NZ	7.8%	Philippines	5.3%	China	3.7%
Western Victoria	China	7.9%	Philippines	4.6%	Vietnam	3.1%
Gippsland	#	#	#	#	#	#
Country SA	#	#	#	#	#	#
Tasmania	China	13.7%	Vietnam	3.3%	England	2.9%
NATIONAL AVERAGE	**China**	**18.3%**	**Vietnam**	**10.3%**	**Philippines**	**4.0%**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. NZ, New Zealand. PHN, Primary Health Network. PNG, Papua New Guinea. SAR, special administrative region.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data.

Data suppressed where total number of people born overseas was <1000.

DIAGNOSIS

In Australia it is estimated that 72.1% of people living with CHB in 2022 have ever been diagnosed, based on data on notified cases of CHB. It should be noted that this does not necessarily mean that the person living with CHB is aware of and understands their diagnosis and has been linked to care. It represents only a notification to a state or territory health department following a positive diagnostic test, and merely represents the minimum requirement for potential engagement in care. The proportion diagnosed did not reach the Third National Hepatitis B Strategy 2018–2022 target of 80% diagnosed by 2022, and this is not on track to be reached until 2037 based on current trends.

The estimated proportion of people living with CHB who have been diagnosed varied greatly between jurisdictions (Table A.7), with NSW (83.9%) and the NT (71.9%) having the highest proportion diagnosed as of 2022. Estimates for all other states and territories were below the national average of 72.1%, with higher levels seen in the ACT (69.6%), SA (69.2%) and Qld (68.0%) than in Vic (66.1%), Tas (63.6%) and WA (56.4%).

It is anticipated that the estimated proportion diagnosed with CHB will be further refined in future Mapping Reports, as the effect of duplicate notifications between jurisdictions is enumerated by a national surveillance data linkage project currently underway. Until this new evidence on duplicate notifications is available, in the current Mapping Report the proportion of notifications which are duplicates due to multiple notification in different states and territories is estimated to be 8%.[1] This interim approximation is based on assessments of duplicate notifications from linkage studies conducted in NSW and Vic which may not be nationally representative.

Table A.7: Estimated proportion of people living with CHB who have been diagnosed, by state and territory, 2022

State/territory	People living with CHB	Proportion who have been diagnosed (%)	Number who have been diagnosed	Number remaining undiagnosed
ACT	2,927	69.6%	2,038	889
NSW	73,671	83.9%	61,823	11,848
NT	4,360	71.9%	3,135	1,225
Qld	32,744	68.0%	22,261	10,483
SA	10,513	69.2%	7,277	3,236
Tas	1,621	63.6%	1,031	590
Vic	58,268	66.1%	38,506	19,762
WA	21,445	56.4%	12,088	9,357
AUSTRALIA	**205,549**	**72.1%**	**148,159**	**57,390**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Proportion diagnosed estimated using modelling combined with notifications data.

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

TREATMENT

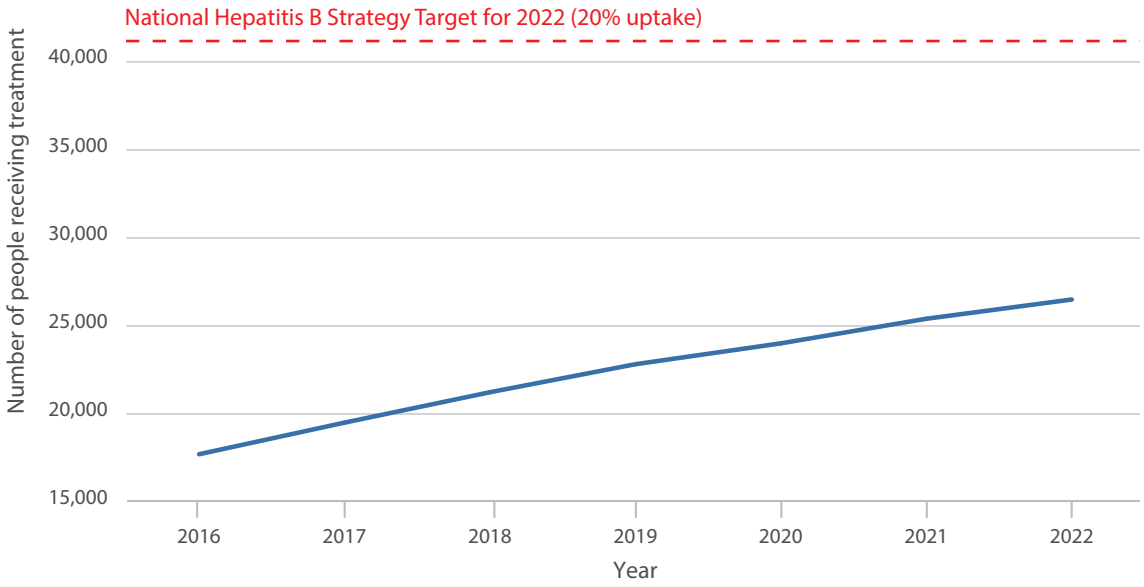
The overall number of people who received treatment for CHB in Australia in 2022 was 26,504, or 12.9% of the total number living with CHB. This is only two-thirds of the Third National Hepatitis B Strategy 2018–2022 target of 20% by 2022.

TREATMENT TRENDS OVER TIME

The number of people who received CHB treatment in a given year has increased over time, from 21,237 in 2018 to 26,504 in 2022. This represents a 24.8% increase overall; however, this is well below the required 90% increase from 2018 to meet the Third National Strategy 2018–2022 treatment uptake target of 20% by 2022. This treatment trend relative to the National Strategy target is presented in Figure A.8. The rate of increase in the number of people receiving treatment has been slowing over time, from an 8.9% increase between 2018 and 2019 to a 4.3% increase between 2021 and 2022.

The relative treatment uptake trends over time by state and territory, by PHN and SA3, and by factors such as provider type and demographics, are discussed in specific sections below.

Figure A.8: Number of people receiving treatment for CHB, 2016–2022, compared to National Strategy 2022 target level



CHB, chronic hepatitis B.

Data source: Treatment data sourced from Medicare statistics.

(see data for this figure)

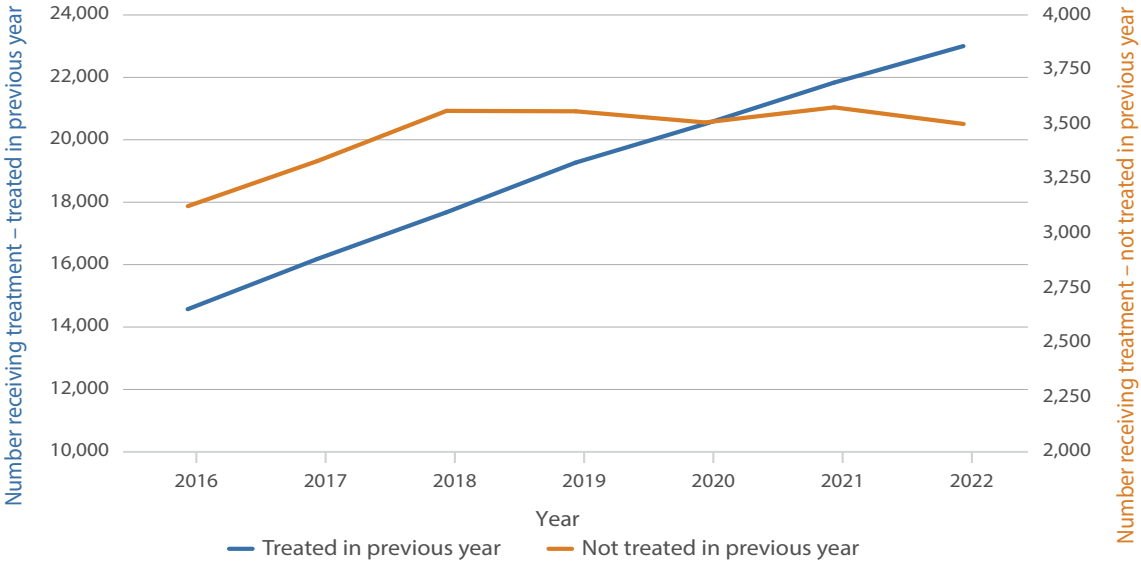
The slower increase in the number of people receiving treatment has been driven by reduced new initiations in treatment, as shown in Figure A.9, below. New initiations increased by 13.9% between 2016 and 2019, but decreased by 1.6% between 2019 and 2022. This reduction began in 2019 (Figure A.9) but may have been further influenced by reduced health care access during 2020–2022 due to the COVID-19 pandemic.

This trend is consistent with findings regarding viral load testing, which has reduced since 2019 (see Monitoring and care trends over time). A viral load test is an essential requirement for workup of a newly diagnosed person prior to initiation of antiviral treatment.

As discussed above, the number of people estimated to be living with CHB reduced in 2020 and 2021, due to the effects on migration of international border closures due to COVID-19. Border closures may also have had an impact on the number of new treatment initiations, due to reduced numbers of

diagnoses in new migrants. However, given treatment numbers need to significantly increase in order to prevent attributable morbidity and mortality, this remains a concerning trend.

Figure A.9: Number of people receiving treatment for CHB, by year and past treatment history status, 2016–2022 (note separate truncated axes)



CHB, chronic hepatitis B.

Data source: Treatment data sourced from Medicare statistics.

(see data for this figure)

TREATMENT ACROSS STATES AND TERRITORIES

Treatment uptake in 2022 varied greatly between jurisdictions, but no state or territory approached the national target of 20% (Table A.8). Treatment uptake was above the national average of 12.9% in the ACT (15.8%), NSW (15.4%) and Vic (13.5%); and below the national average in the NT (11.5%), SA (11.1%), Qld (9.8%), Tas (9.4%) and WA (8.6%).

Table A.8: CHB treatment uptake, by state and territory, 2022

State/territory	People living with CHB	People receiving treatment	Treatment uptake (%)
ACT	2,927	462	15.8%
NSW	73,671	11,324	15.4%
NT	4,360	502	11.5%
Qld	32,744	3,195	9.8%
SA	10,513	1,165	11.1%
Tas	1,621	152	9.4%
Vic	58,268	7,855	13.5%
WA	21,445	1,845	8.6%
AUSTRALIA	**205,549**	**26,504**	**12.9%**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

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

TREATMENT TRENDS OVER TIME BY STATE AND TERRITORY

The number of people who received treatment for hepatitis B increased between 2021 and 2022 in all states and territories; however, the slowing trend in treatment increases over time seen at the national level was also seen in all states and territories (Table A.9).

Table A.9: Number of people receiving treatment for CHB, by state and territory, 2018–2022

State/territory	People on treatment in 2018	People on treatment in 2019	People on treatment in 2020	People on treatment in 2021	People on treatment in 2022
ACT	348	373	410	445	462
NSW	9,719	10,115	10,362	10,884	11,324
NT	342	369	419	469	502
Qld	2,292	2,640	2,827	3,027	3,195
SA	867	977	1,021	1,113	1,165
Tas	109	102	130	142	152
Vic	6,148	6,698	7,197	7,557	7,855
WA	1,402	1,549	1,638	1,769	1,845
AUSTRALIA	**21,237**	**22,828**	**24,008**	**25,410**	**26,504**

CHB, chronic hepatitis B.

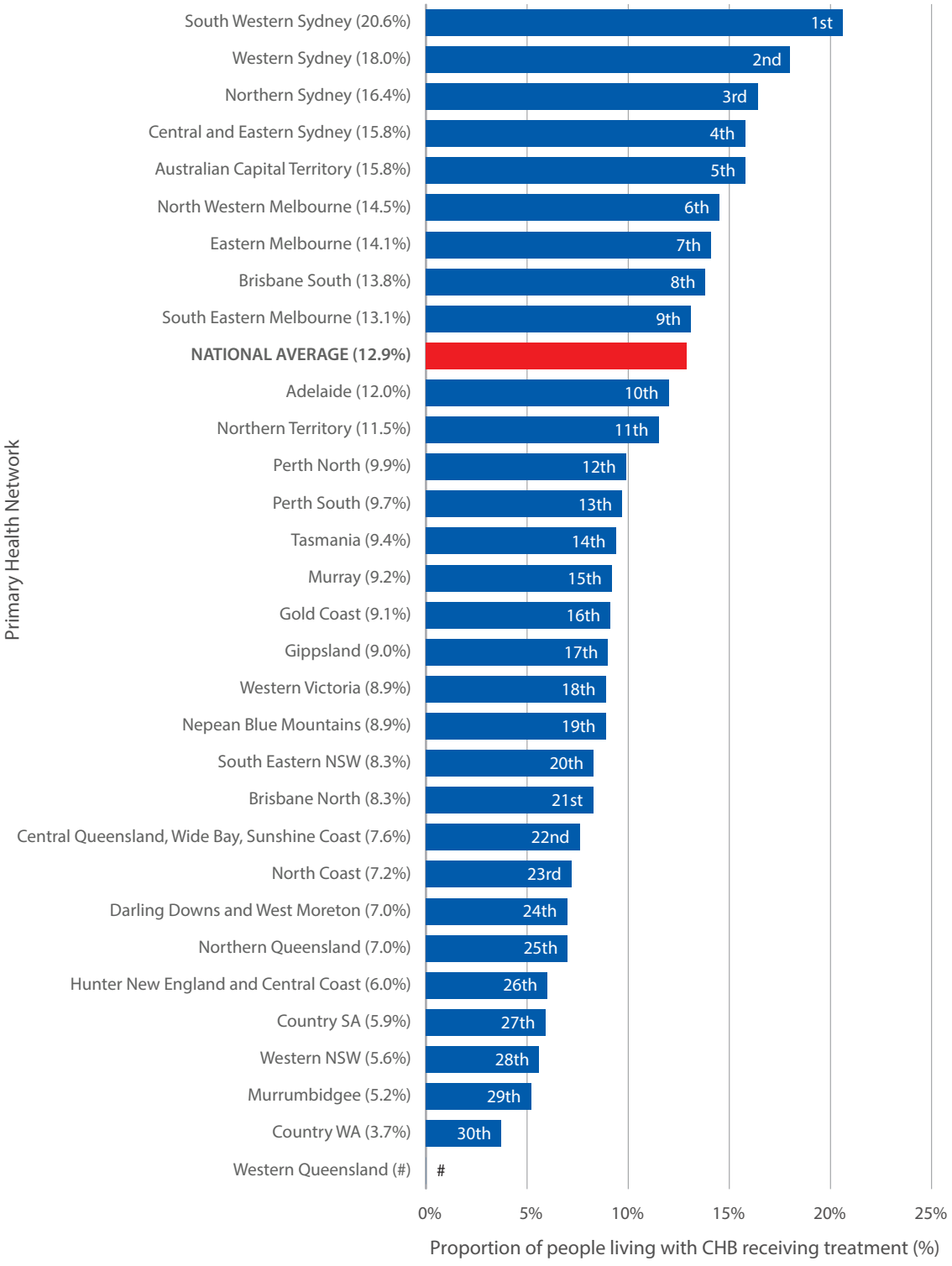
Data source: Treatment data sourced from Medicare statistics.

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

TREATMENT ACROSS PRIMARY HEALTH NETWORKS

Treatment uptake was highest in PHNs in Sydney, Melbourne and Brisbane, as well as the **Australian Capital Territory** PHN (Figure A.10). Only one PHN is estimated to have reached the 2022 National Strategy treatment uptake target of 20% (**South Western Sydney**, 20.6%). PHNs where uptake was lowest were generally located in the most rural and remote regions of Australia (with the exception of the **Northern Territory**), reflecting the challenges in service delivery to people living with CHB in these regions. In many of these regions the predominant group living with CHB is Aboriginal and Torres Strait Islander people, and the disparity in uptake often reflects the ongoing impact of the legacy of colonisation, institutional racism and systemic disadvantage. Variation within PHNs can also be substantial, and is explored in each state and territory in detail in Section A2.

Figure A.10: CHB treatment uptake (bars and in brackets) and ranking (label) by PHN, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Data suppressed where number of people receiving treatment was <6.

(see data for this figure)

TREATMENT TRENDS OVER TIME BY PRIMARY HEALTH NETWORK

In all PHNs the total number of people receiving treatment increased or remained stable between 2021 and 2022, reflecting the national trend; however, the magnitude of the increase differed widely according to PHN and is influenced by prior yearly trends. The largest increases between 2021 and 2022 occurred in **Murrumbidgee**, **Western Victoria**, **Country SA**, **Gippsland**, **Gold Coast** and **Murray**. However, yearly trends may be influenced by small numbers and prior yearly trends, particularly during the period affected by COVID-19. Time trends assessed between 2018 and 2022, the period of time covered by the Third National Hepatitis B Strategy, are explored below.

The proportional increase in the number of people receiving treatment between 2018 and 2022 was 24.8% at the national level. The largest proportional increases occurred in PHNs with lower baseline treatment uptake, including **Western Victoria** (87.1% increase); **Central Queensland, Wide Bay and Sunshine Coast** (81.0% increase); **Gippsland** (78.0% increase); **Brisbane North** (56.4% increase); and **Nepean Blue Mountains** (51.5% increase) (Table A.10). PHNs where the proportional increase in the number treated was smaller than the national average included **Central and Eastern Sydney** (8.5% increase), **Hunter New England and Central Coast** (13.1% increase) and **South Western Sydney** (14.7% increase).

Table A.10: Number of people receiving treatment for CHB in 2018 and 2022, proportional change over time and uptake in 2022, by PHN

State/territory	People on treatment in 2018	People on treatment in 2022	Proportional change in number on treatment, 2018–2022 (%)	Treatment uptake in 2022 (%)
Adelaide	790	1070	35.4%	12.0%
Australian Capital Territory	324	462	42.6%	15.8%
Brisbane North	383	599	56.4%	8.3%
Brisbane South	1104	1482	34.2%	13.8%
Central and Eastern Sydney	2818	3057	8.5%	15.8%
Central Queensland, Wide Bay, Sunshine Coast	137	248	81.0%	7.6%
Country SA	77	95	23.4%	5.9%
Country WA	107	158	47.7%	3.7%
Darling Downs and West Moreton	180	231	28.3%	7.0%
Eastern Melbourne	1927	2519	30.7%	14.1%
Gippsland	50	89	78.0%	9.0%
Gold Coast	241	330	36.9%	9.1%
Hunter New England and Central Coast	298	337	13.1%	6.0%
Murray	171	226	32.2%	9.2%
Murrumbidgee	44	52	18.2%	5.2%
Nepean Blue Mountains	130	197	51.5%	8.9%
North Coast	120	150	25.0%	7.2%
North Western Melbourne	2388	2928	22.6%	14.5%
Northern Queensland	214	300	40.2%	7.0%
Northern Sydney	1371	1753	27.9%	16.4%
Northern Territory	342	502	46.8%	11.5%

Continued next page

State/territory	People on treatment in 2018	People on treatment in 2022	Proportional change in number on treatment, 2018–2022 (%)	Treatment uptake in 2022 (%)
Perth North	721	881	22.2%	9.9%
Perth South	572	806	40.9%	9.7%
South Eastern Melbourne	1505	1876	24.7%	13.1%
South Eastern NSW	166	222	33.7%	8.3%
South Western Sydney	2490	2856	14.7%	20.6%
Tasmania	109	152	39.4%	9.4%
Western NSW	71	97	36.6%	5.6%
Western Queensland	#	#	#	#
Western Sydney	2199	2603	18.4%	18.0%
Western Victoria	116	217	87.1%	8.9%
AUSTRALIA	**21,237**	**26,504**	**24.8%**	**12.9%**

CHB, chronic hepatitis B. PHN, Primary Health Network.
Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals include people without a state/territory of residence recorded in source data.

Data suppressed where number of people receiving treatment was <6 for one or more years.

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

TREATMENT ACROSS REMOTENESS AREAS

CHB treatment uptake in 2022 was highest in major cities (14.0%) and in very remote areas (8.6%) (Table A.11). This reflects trends by PHN (Figure A.10), given that PHNs with higher treatment uptake are those in capital cities (particularly Melbourne and Sydney) as well as the **Northern Territory**, which has a high very remote population (Figure A.4). The uptake of monitoring and care across remoteness areas is discussed in the section Care across remoteness areas below.

Table A.11: CHB treatment uptake by remoteness category, 2022

Remoteness level	Total population	People living with CHB	People on treatment	Treatment uptake (%)
Major cities	19,201,661	172,348	24,140	14.0%
Inner regional	4,610,462	16,915	1,170	6.9%
Outer regional	1,927,367	10,289	760	7.4%
Remote	235,055	3,048	176	5.8%
Very remote	125,665	2,949	254	8.6%
AUSTRALIA	**26,268,359**	**205,549**	**26,504**	**12.9%**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

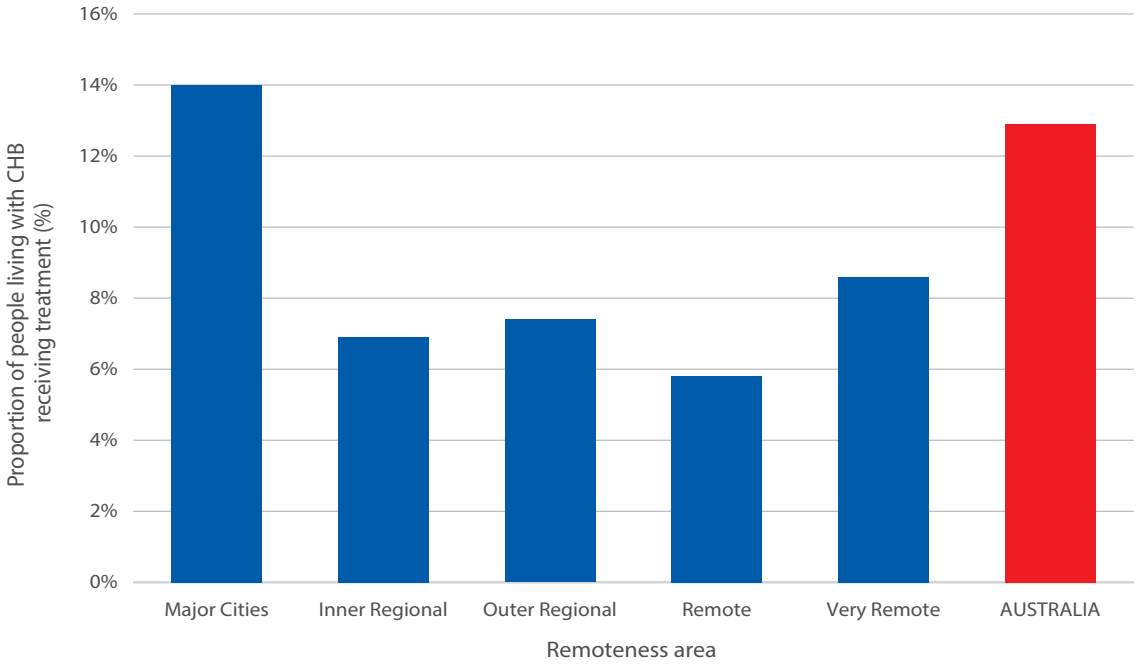
Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics. Remoteness category based on designations by the ABS.[8]

Totals may not add up due to inclusion of people without an area of residence recorded in source data.

TREATMENT TRENDS OVER TIME BY REMOTENESS AREA

The number of people receiving treatment for CHB has increased more rapidly over time in areas outside of major cities, most prominently in remote areas, where there was an 81.4% increase between 2018 and 2022, and very remote areas, where there was a 77.6% increase, compared to the national average increase of 24.8%. These areas previously had the lowest baseline uptake, and this shift has resulted in a reduced disparity in treatment uptake between rural or remote and metropolitan areas.

Figure A.11: CHB treatment uptake by remoteness area, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics. Remoteness category based on designations by the ABS.8

(see data for this figure)

TREATMENT ACROSS STATISTICAL AREA 3 REGIONS

Due to the relatively small population size of Statistical Area 3s (SA3s) (averaging around 70,000 residents), there were large variations in treatment uptake observed, and some SA3s had high levels of uptake. Uptake variation by SA3 is discussed in detail for each state and territory in Section A2. Of the 284 SA3s with sufficient data available for reliable reporting (see Table D.2), 14 had treatment uptake that met or exceeded the 20% National Strategy target for 2022.

The highest uptake was in East Arnhem (31.8% uptake) in the **Northern Territory** PHN, the only very remote SA3 to reach the 20% target. This reflects the impact of the Hep B PAST program, a comprehensive, culturally appropriate education and care coordination program conducted in collaboration with Aboriginal and Torres Strait Islander communities. Reflecting its high overall uptake, three SA3s in the **South Western Sydney** PHN reached the target (Fairfield, 26.9% uptake; Bringelly – Green Valley, 20.6%; and Bankstown, 21.7%), as did three in the **Western Sydney** PHN (Carlingford, 23.1%; Auburn, 21.9%; and Merrylands – Guildford, 20.9%). One SA3 reached the target in each of **Northern Sydney** (Pennant Hills – Epping, 21.1%) and **Central and Eastern Sydney** PHNs (Hurstville, 23.8%).

In Victoria, three SA3s reached the target – **Brimbank** (22.5%) and **Maribyrnong** (20.5%) in the **North Western Melbourne** PHN and **Dandenong** in the **South Eastern Melbourne** PHN (21.4%). The target was also reached in the SA3s of **Gunghalin** in the **Australian Capital Territory** PHN (23.2% uptake) and **Forest Lake – Oxley** in the **Brisbane South** PHN (20.9%). All of these SA3s had reached the 20% target by 2021, with the exception of **Maribyrnong**, which exceeded 20% for the first time in 2022.

Further exploration of SA3-specific data, including rankings across Australia for CHB treatment and care uptake, is available in the online portal.

TREATMENT PROVIDERS

In 2022, a total of 5,862 people (22.1% of people that received CHB treatment) had at least one of their prescriptions prescribed by a GP. This included 3,582 people who had all their prescriptions provided by a GP (13.5% of people treated), while the remainder (2,280 people, 8.6% of people treated) were prescribed prescriptions by both a GP and a non-GP specialist physician and/or other provider. These categories are based on the registered specialty or specialties derived by the Department of Health and Aged Care, rather than derived using a practitioner's qualifications and service history (as has been the case in previous reporting), as this previous methodology led to incorrect classifications for some practitioners.[13] See Section D – Data sources and methodology for more details on provider classifications.

This revised estimate of GP prescribing is approximately 10% lower than previous estimates, though this varies widely by jurisdiction. These more refined data are only available from 2020 onwards, and analysis is limited to this period.

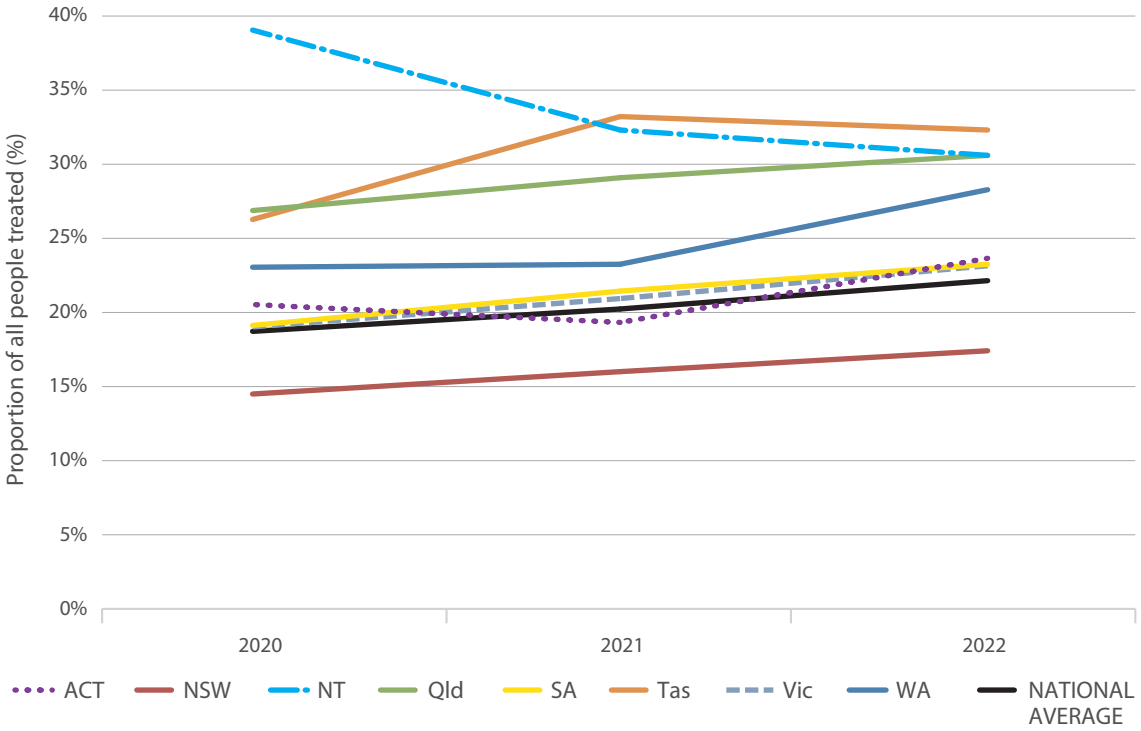
Of those prescribed CHB treatment exclusively by a non-GP specialist (18,793), the vast majority were prescribed their treatment by a gastroenterologist (15,160, 80.7%).

From 1 April 2020, authorised community-based nurse practitioners (NPs) became eligible to prescribe hepatitis B treatment. In 2021, 273 people were prescribed at least one of their prescriptions by an NP (1.1% of the total treated), and this increased to 431 (1.6%) in 2022. The majority of this prescribing occurred in Qld (42.7% of those prescribed by an NP) and the NT (32.3%).

The proportion of people who were prescribed treatment for CHB by a GP has increased over time, from 18.7% in 2020 to 22.1% in 2022. This occurred in all states and territories, with the exception of the NT, which declined but still had above-average GP prescribing in 2022 (Figure A.12).

The proportion of people prescribed treatment by a GP was highest in Tas (32.2%), the NT (30.5%) and Qld (30.5%). These findings are consistent with the service access limitations in the NT and Qld, where remote residence is common for people living with CHB and non-GP specialist services may not be available.

Figure A.12: Proportion of people with a GP involved^ in CHB treatment prescribing, by state and territory, 2020–2022



CHB, chronic hepatitis B. GP, general practitioner.

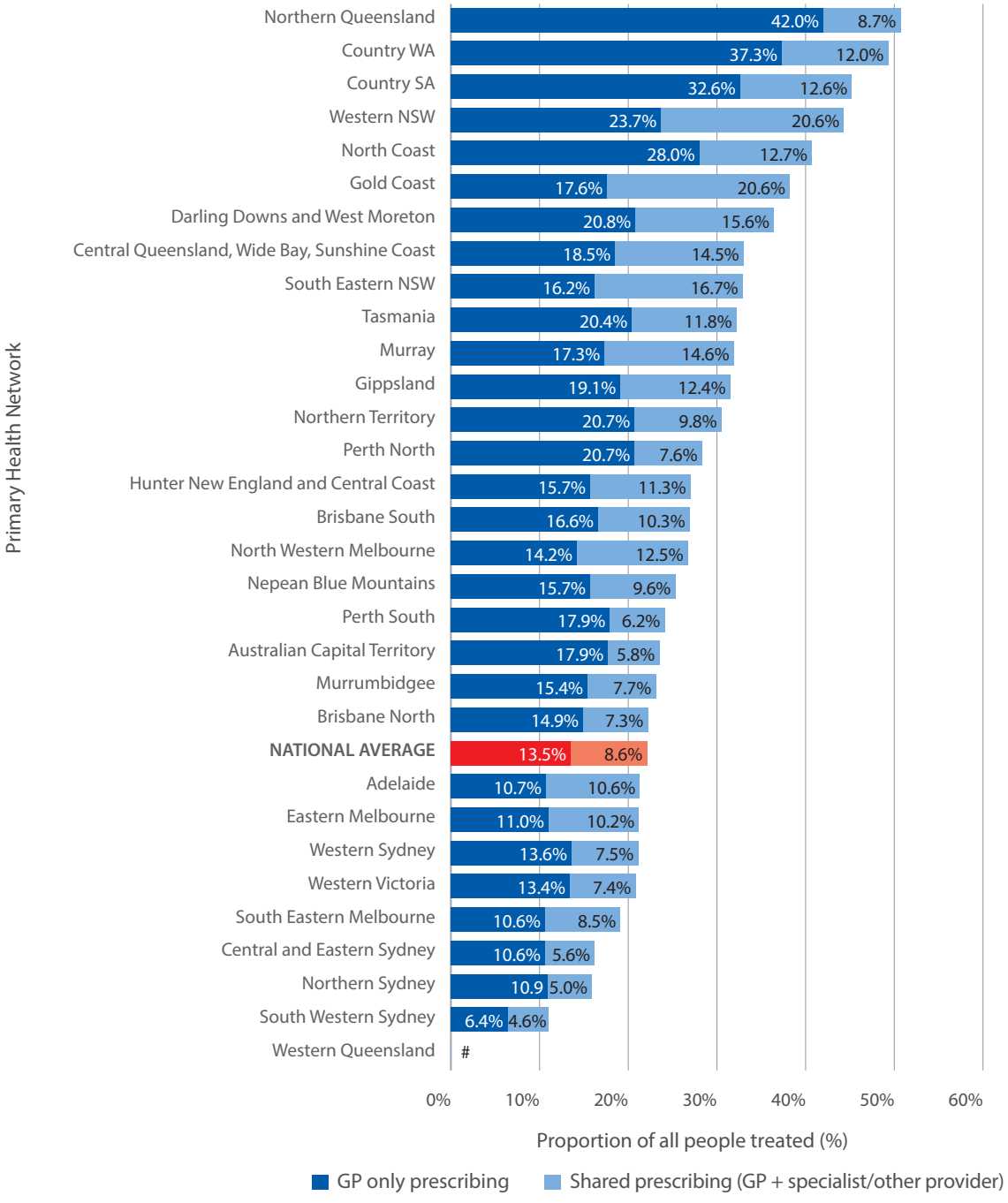
Data source: Treatment data sourced from Medicare statistics. Provider type is based on the clinician's registered specialty.

^ A GP prescribed at least one of the treatment prescriptions for a person in that year.

(see data for this figure)

When assessed by PHN, the proportion of people treated by a GP (either exclusively or through shared prescribing) was highest in the **Northern Queensland** (50.7%), **Country WA** (49.4%), **Country SA** (45.3%), **Western NSW** (44.3%), **North Coast** NSW (40.7%) and **Gold Coast** (38.2%) PHNs. Figure A.13 shows the ranking by PHN, including the proportion of people prescribed treatment exclusively by a GP and those whose antivirals were prescribed by both a GP and another provider.

Figure A.13: Proportion of people with a GP involved^ in CHB treatment prescribing, by PHN, 2022



CHB, chronic hepatitis B. GP, general practitioner. PHN, Primary Health Network.

Data source: Treatment data sourced from Medicare statistics. Provider type is based on the clinician's registered specialty.

^ A GP prescribed at least one of the treatment prescriptions for a person in that year. 'GP only prescribing' indicates all of a person's prescriptions were provided by a GP. 'Shared prescribing' indicates prescriptions were prescribed for a person by multiple providers, with at least one provided by a GP.

Data suppressed where number receiving treatment was <6.

(see data for this figure)

PHNs with below-average GP prescribing were more likely to be located in the major cities of Melbourne and Sydney, reflecting findings at the state level of the correlation between GP prescribing and remoteness of residence for people with CHB.

TREATMENT DEMOGRAPHICS

People who received CHB treatment in 2022 were more commonly male (58.7%; see Section D – Ascertainment of age and sex in Medicare).

People receiving treatment were most commonly in the ≥60 year age group (36.6%) or the 50–59 year age group (24.6%). This is concordant with modelled estimates of the proportion eligible for treatment, of which 28.4% are estimated to be aged ≥60 years and 19.1% aged 50–59 years.[5]

The age distribution of those receiving treatment has shifted over time. There was a large increase in new treatment initiations begun in people aged ≥60 years (39.7%) between 2018 and 2022 compared to the overall trend of a 1.7% decrease (see Figure A.9). The number of people initiating treatment who were aged under 30 decreased by 36.8%. This also reflects a declining trend in the estimated number of people estimated to be eligible for treatment in this age group, likely due to the impact of overseas infant hepatitis B vaccination programs scaling up from the 1990s with a resultant reduction in the prevalence of CHB in these age groups.

TREATMENT TYPES

The vast majority of people who received CHB treatment in 2022 were prescribed first line monotherapy (94.1% of the total treated), either entecavir (64.4% of the total treated) or tenofovir (29.7%). The proportion of people treated with lamivudine and/or adefovir has continued to decline over time, from 9.1% in 2016 to 3.8% in 2022. It is notable that no individuals received interferon therapy for CHB in 2022.

MONITORING AND CARE

In 2022 in Australia, 52,515 people, or 25.5% of all those estimated to be living with CHB in Australia, were provided with care (treatment or monitoring) in 2022. This included 26,504 people who received treatment and 26,011 people who were not on treatment for CHB but received a viral load test (defined as receiving monitoring). Clinical guidelines recommend that all people living with CHB should be engaged in regular care, and viral load testing is an essential component in the laboratory assessment of CHB, allowing for identification of the need for treatment.[14-16] This estimate of care engagement is an optimistic estimate, given it represents only treatment or viral load testing provided in 2022, and not necessarily ongoing care. Further metrics of care are explored in the Ongoing engagement in monitoring section below.

The Third National Hepatitis B Strategy 2018–2022 set a target of 50% in care, which Australia did not meet. The number of people who received monitoring declined by 10.9% between 2018 and 2022, reducing progress towards this target.

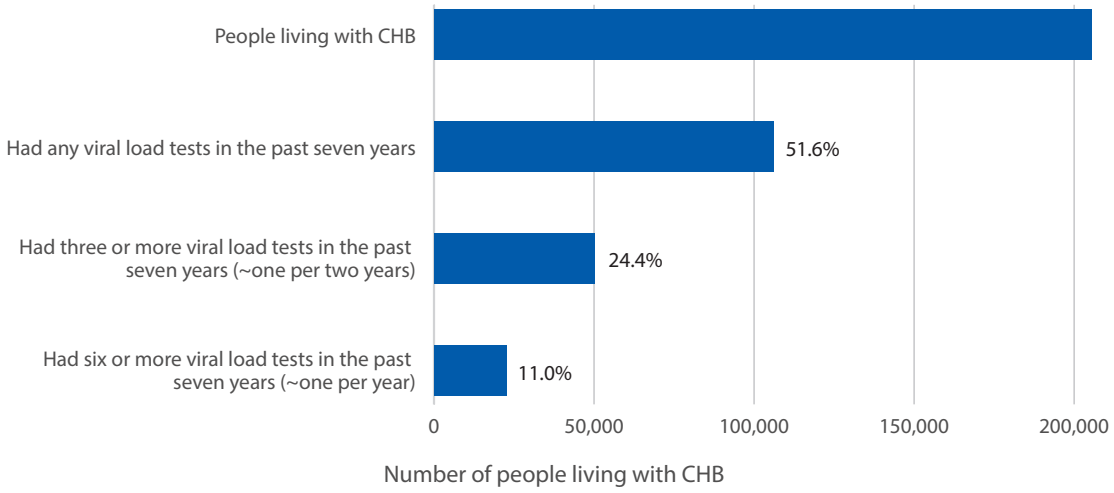
ONGOING ENGAGEMENT IN MONITORING

As hepatitis B viral load testing is recommended annually, the occurrence of a viral load test in the past year is used for the standard care metric assessed in this report. However, guideline-based care requires ongoing monitoring, not merely once-off testing, and analysis of long-term trends is key. Data with unique identifiers were available for the period 2016–2022 for this report, allowing assessment of the ongoing pattern of testing at the individual level over a seven-year period. Analysis was conducted using the following metrics, for all people, regardless of current treatment status or history:

- the proportion who had at least one viral load test in the past seven years
- the proportion who had three or more tests in the past seven years (reflecting testing approximately every two years)
- the proportion who had six or more tests in the past seven years (representing testing approximately annually).

Between 2016 and 2022, a total of 106,128 people received at least one hepatitis B viral load test. This represents 51.6% of all people living with CHB, indicating that only half the number of people with CHB have received the minimum requirement for guideline-based care at least once in the past seven years.

Figure A.14: Metrics of ongoing engagement in care for people living with CHB, 2016–2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Viral load testing data sourced from Medicare statistics.

(see data for this figure)

These data also demonstrate that, even among people who are receiving viral load testing, few are receiving it at the frequency recommended in clinical guidelines. Only 11.0% of people with CHB had at least six viral load tests during 2016–2022, which reflects viral load testing about once per year (Figure A.14), a frequency which reflects clinical guideline recommendations.[14-16] This represented only one-fifth of the total number of people who had a viral load test during that period, indicating that intermittent viral load testing is far more common than regular testing.

Testing approximately every two years was more common; this occurred for 24.4% of those living with CHB.

These findings highlight that estimates of engagement in care based on a single year are optimistic, and include a significant number of people whose viral load was monitored during the year in question but were not sufficiently engaged in guideline-based care over time.

MONITORING AND CARE TRENDS OVER TIME

The number of people who received monitoring for CHB (viral load testing while not receiving treatment) had been increasing consistently since 2010 but began to decline from 2018. The largest decline occurred between 2019 and 2020, from 29,064 to 26,813 (a 7.7% decrease). The number then declined by 0.4% to 26,711 in 2021 and by 2.6% in 2022 to 26,011 (Table A.13). Due to this, care uptake declined in 2022, despite increases in treatment uptake.

CARE ACROSS STATES AND TERRITORIES

As the measure of care used includes treatment as a component, and the uptake of treatment and monitoring are generally correlated according to region, patterns of care uptake generally reflect those for treatment. Care uptake, like treatment uptake, was highest in 2022 in the ACT (30.6%), NSW (30.5%) and Vic (28.7%) (Table A.12). Care uptake was similar to the national average of 25.5% in the NT (24.2%), and was below average in Qld (20.1%), Tas (17.0%), SA (16.9%*, see note below table) and WA (12.7%) (Table A.12).

Table A.12: CHB treatment and care uptake, by state and territory, 2022

State/ territory	People living with CHB	People receiving treatment	Treatment uptake (%)	People receiving monitoring	Care uptake (treatment and monitoring) (%)	People not in care	Proportion of all people not in care in Australia (%)
ACT	2,927	462	15.8%	435	30.6%	2,030	1.3%
NSW	73,671	11,324	15.4%	11,164	30.5%	51,183	33.4%
NT	4,360	502	11.5%	554	24.2%	3,304	2.2%
Qld	32,744	3,195	9.8%	3,380	20.1%	26,169	17.1%
SA*	10,513	1,165	11.1%	614	16.9%	8,734	5.7%
Tas	1,621	152	9.4%	124	17.0%	1,345	0.9%
Vic	58,268	7,855	13.5%	8,856	28.7%	41,557	27.2%
WA	21,445	1,845	8.6%	869	12.7%	18,731	12.2%
AUSTRALIA	**205,549**	**26,504**	**12.9%**	**26,011**	**25.5%**	**153,034**	**-**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment and monitoring (viral load test while not receiving treatment) data sourced from Medicare statistics.

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

* Data relating to SA may underestimate monitoring by up to 50% due to the provision of services outside of Medicare.

Estimation of the number of viral load tests and therefore care uptake uses Medicare data as the primary source; however, this can lead to underestimation as it is unable to include viral load testing services through funding streams outside Medicare, such as in public hospitals (if Medicare is not used for test reimbursement) or privately funded testing for Medicare-ineligible people. This has been found to be the case for a substantial proportion of all viral load tests conducted in SA, representing up to 50% of tests conducted in 2022 (personal communication, SA Health). As SA represents only 5% of all people living with CHB in Australia, this is unlikely to have notable impacts on national estimates of care uptake. However, if this underestimation is consistent for monitoring tests, care uptake in SA could be as high as 23.4%, increasing the care uptake ranking for SA from 7th to 4th among states and territories. This issue may also be leading to underestimates of monitoring in WA and the NT, based on comparison of treatment and viral load numbers.

MONITORING TRENDS OVER TIME BY STATE AND TERRITORY

The number of people who received monitoring declined between 2018 and 2022 in most states and territories except for the ACT and WA (Table A.13), reflecting the national trend. This change was substantial enough, and not offset with a sufficiently large increase in treatment, to lead to a decline

in care uptake in the NT and Tas. The largest declines in monitoring occurred during 2020 in NSW and Vic, during 2021 in the ACT, the NT and Qld, and during 2022 in Tas. These variations potentially reflect the diverse impact of the COVID-19 pandemic on health services in different states and territories.

This reduction in monitoring led to an increase in the number of people not in care nationally and in all states and territories (Table A.12).

Due to the data limitations discussed above, trends could not be reliably estimated for SA. The decline observed between 2018 and 2022 is the result of a shift in testing billing away from Medicare and likely does not reflect a true reduction in monitoring provision.

Table A.13: Number of people receiving monitoring of CHB, by state and territory, 2018–2022

State	People receiving monitoring in 2018	People receiving monitoring in 2019	People receiving monitoring in 2020	People receiving monitoring in 2021	People receiving monitoring in 2022
ACT	420	415	427	420	435
NSW	11,986	12,050	11,289	11,259	11,164
NT	922	759	727	556	554
Qld	3,645	3656	3,605	3,473	3,380
SA*	1,716	1232	934	763	614
Tas	147	144	135	159	124
Vic	9,499	10,029	8,899	9,232	8,856
WA	843	772	793	840	869
AUSTRALIA	**29,195**	**29,064**	**26,813**	**26,711**	**26,011**

CHB, chronic hepatitis B.

Data source: Monitoring data (viral load test while not on treatment) sourced from Medicare statistics.

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

* Data relating to SA may underestimate monitoring by up to 50% from 2020 onwards due to the provision of services outside of Medicare.

ONGOING ENGAGEMENT IN MONITORING ACROSS STATES AND TERRITORIES

The proportion of people who received ongoing monitoring for CHB varied significantly according to state and territory (Table A.14), generally correlating with differences seen in the care uptake indicator (Table A.8). The proportion of people who had at least one viral load test in the past seven years was above the national average of 51.6% in NSW (61.1%), the ACT (59.4%) and Vic (56.7%), and similar to the national average in the NT (52.0%) and SA (50.2%).

The proportion who had three or more tests in the past seven years showed similar patterns according to state and territory to the proportion of those with one test (Table A.14). When assessing approximately yearly testing uptake (six or more tests in the past seven years), uptake in the NT was substantially below the national average, in contrast to the other uptake measures. This trend is influenced by the lower number of tests in the NT during 2016–2017, and is also likely associated with the considerable geographic barriers to accessing pathology testing in much of the NT, given the high proportion of people with CHB living in remote areas (Figure A.4). Yearly uptake was also lower than average in SA, which reflects issues with ascertainment of tests via Medicare discussed above, and in WA, which may also relate to this issue.

Table A.14: Ongoing CHB viral load testing, by state and territory and frequency of testing, 2016–2022

State/territory	People living with CHB in 2022	Proportion who had one or more viral load tests in the past seven years (%)	Proportion who had three or more viral load tests in the past seven years (~one per two years) (%)	Proportion who had six or more viral load tests in the past seven years (~one per year) (%)
ACT	2,927	59.4%	27.0%	12.1%
NSW	73,671	61.1%	30.2%	13.7%
NT	4,360	52.0%	25.2%	5.9%
Qld	32,744	37.1%	18.0%	8.1%
SA*	10,513	50.2%	20.0%	6.2%
Tas	1,621	41.5%	15.0%	6.7%
Vic	58,268	56.7%	28.4%	14.0%
WA	21,445	27.5%	5.7%	1.0%
AUSTRALIA	**205,549**	**51.6%**	**24.4%**	**11.0%**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Viral load testing data sourced from Medicare statistics.

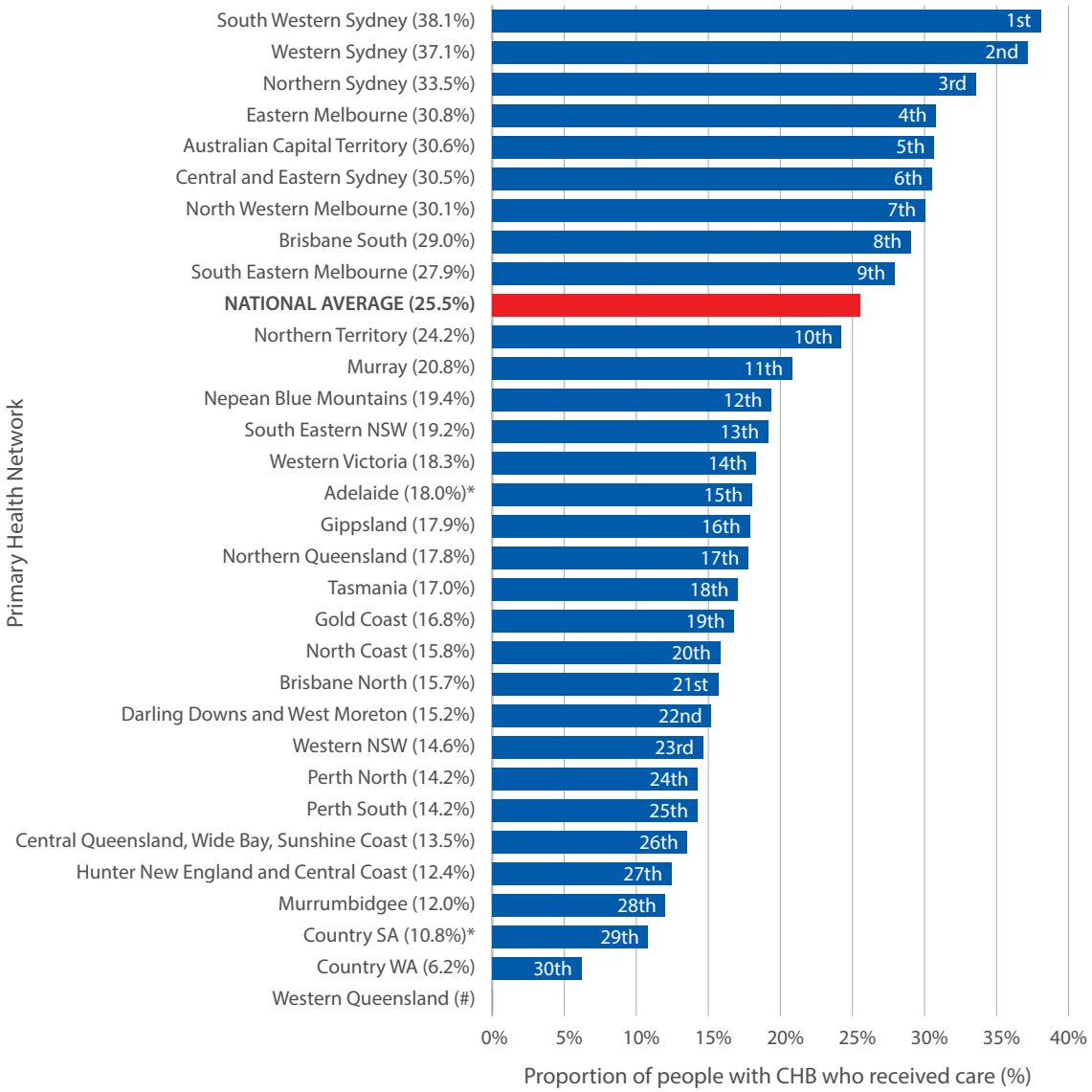
Totals may not add up due to inclusion of people without a state/territory of residence recorded in source data.

* Data relating to SA may underestimate monitoring by up to 50% from 2020 onwards due to the provision of services outside of Medicare.

CARE ACROSS PRIMARY HEALTH NETWORKS

Care uptake was highest in PHNs in Sydney, Melbourne and Brisbane, and in the **Australian Capital Territory** PHN (Figure A.15). No PHN reached the 2022 National Strategy target of 50% care uptake. Care uptake by PHN generally reflects the ranking of PHNs according to treatment uptake, but in some areas there was a disparity between treatment uptake and care uptake ranking. This was most substantial for the **Northern Queensland** PHN (ranked 17th for care uptake but 25th for treatment uptake) and for **Perth North** and **Perth South**, which ranked 24th and 25th for care uptake but 12th and 13th for treatment uptake respectively. These differences are discussed further in Section A2.

Figure A.15: CHB care uptake, ranked by PHN, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Care data (treatment and monitoring) sourced from Medicare statistics.

Data suppressed where number receiving treatment or monitoring was <6.

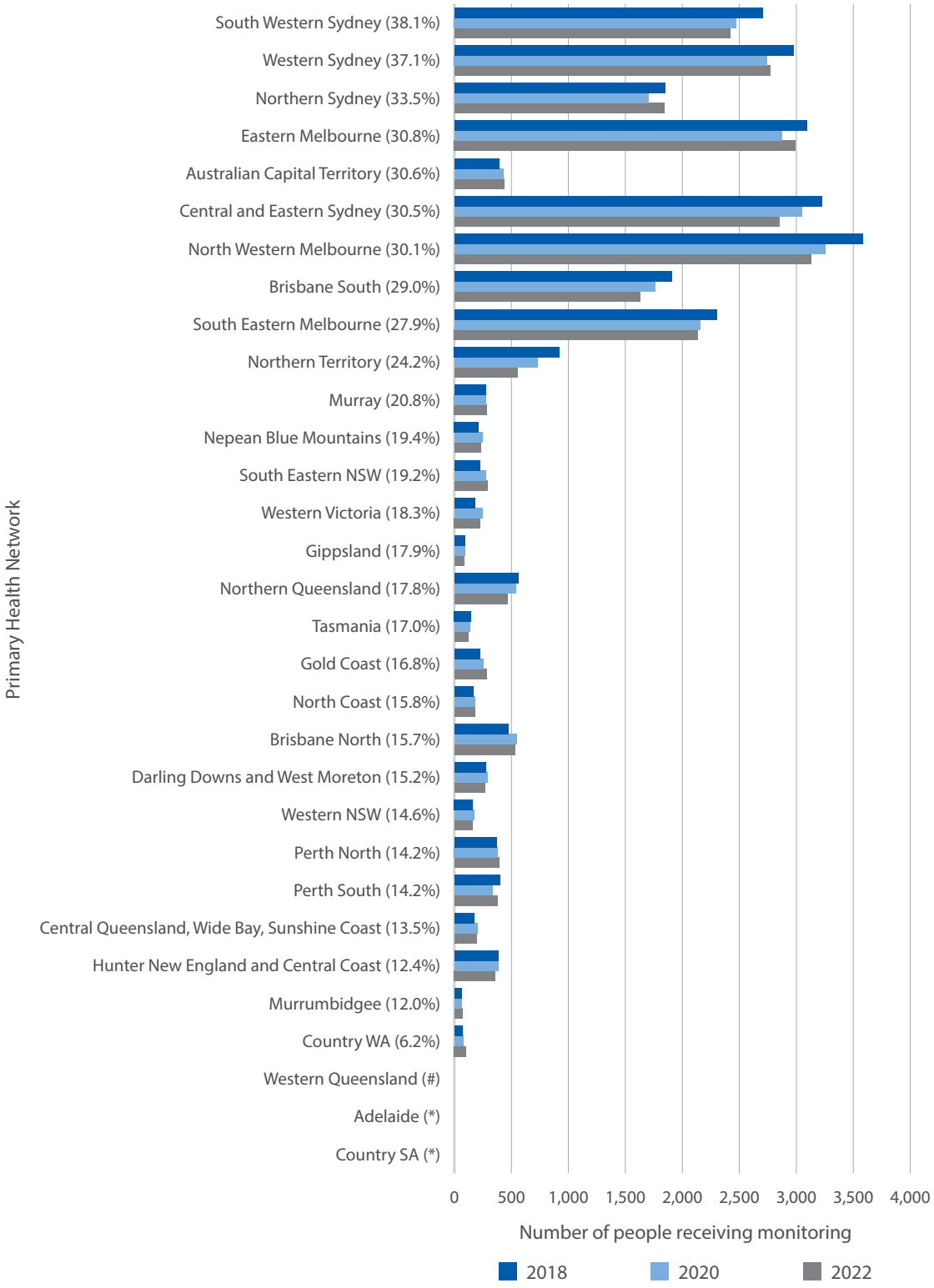
* Data relating to SA may underestimate monitoring by up to 50% from 2020 onwards due to the provision of services outside of Medicare.

(see data for this figure)

MONITORING AND CARE TRENDS OVER TIME BY PRIMARY HEALTH NETWORK

The number of people who received monitoring declined in half of Australia's PHNs between 2018 and 2022, with the most substantial declines occurring in **Northern Territory** (39.9% decline), **Northern Queensland** (16.5% decline), **Tasmania** (15.6% decline), **Brisbane South** (14.4% decline), **North Western Melbourne** (12.7% decline) and **Central and Eastern Sydney** (11.5% decline). This shift led to declines in care uptake in all of these PHNs with the exception of Tasmania and Brisbane South, where increases in treatment over this period were sufficient to offset declines in monitoring. Because of high baseline uptake, all of the PHNs with a decline in care uptake remained ranked above the national average (Figure A.16).

Figure A.16: Number of people receiving CHB monitoring over time by PHN, 2018, 2020 and 2022, ordered by care uptake in 2022 (in brackets)



CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: Medicare statistics. Monitoring represents viral load testing while not receiving treatment.

Data suppressed where number receiving treatment or care was <6.

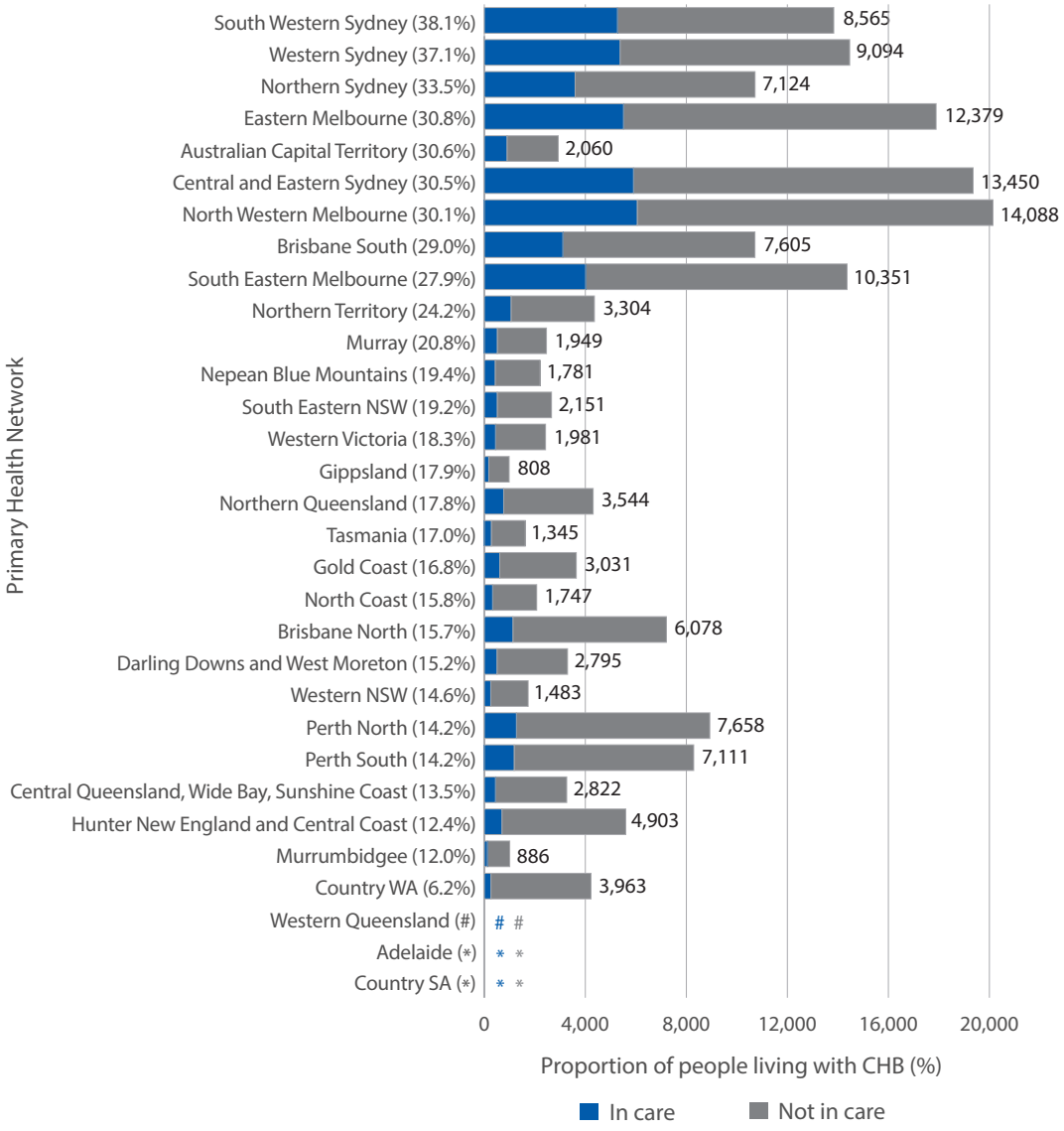
* Data relating to SA may underestimate monitoring by up to 50% from 2020 onwards due to the provision of services outside of Medicare, and SA PHNs are excluded from this time trends analysis.

(see data for this figure)

NUMBER NOT IN CARE ACROSS PRIMARY HEALTH NETWORKS

Although the proportion of people with CHB who were engaged in care is highest in PHNs in Sydney and Melbourne, the large number of people living with CHB in major cities means that these are also the locations with the highest number of people not engaged in care (Figure A.17). Of the estimated 149,000 people not engaged in care for CHB in 2022, nearly half (48.8%) lived in the seven Sydney and Melbourne PHNs. The PHNs with the largest number of people estimated not to be receiving care were **North Western Melbourne** (30.1% care uptake, 14,088 people not in care), **Central and Eastern Sydney** (30.5% care uptake, 13,450 people not in care) and **Eastern Melbourne** (30.8% care uptake, 12,379 people not in care). The number of people not in care increased in the vast majority of PHNs, while remaining stable in a small number.

Figure A.17: Number of people living with CHB in care (blue bars) and not in care (grey bars and labels), by PHN, ordered by proportional care uptake (in brackets), 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Care data (treatment and monitoring) sourced from Medicare statistics.

Data suppressed where number receiving treatment or care was <6.

* Data relating to SA may underestimate monitoring by up to 50% from 2020 onwards due to the provision of services outside of Medicare. (see data for this figure)

CARE ACROSS REMOTENESS AREAS

Care uptake according to remoteness area is shown in Table A.15. Similar to trends in treatment uptake, care uptake was highest in major cities and in very remote areas. This is reflected in the findings by PHN, where uptake is higher in the **Northern Territory** and **Northern Queensland** PHNs, which are disproportionately very remote PHNs, shown in Figure A.4.

Table A.15: CHB treatment and care uptake by remoteness area, 2022

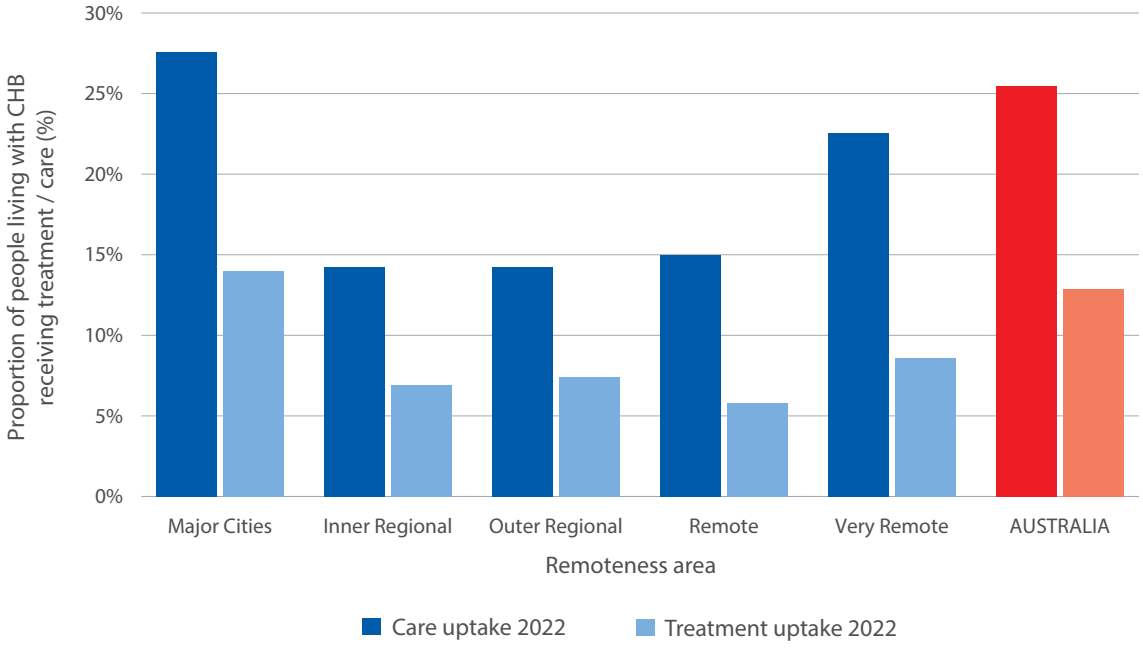
Remoteness area	Total population	People living with CHB	People on treatment	Treatment uptake (%)	People receiving monitoring	Care uptake (treatment or monitoring) (%)
Major cities	19,201,661	172,348	24,140	14.0%	23,360	27.6%
Inner regional	4,610,462	16,915	1,170	6.9%	1,236	14.2%
Outer regional	1,927,367	10,289	760	7.4%	707	14.3%
Remote	235,055	3,048	176	5.8%	281	15.0%
Very remote	125,665	2,949	254	8.6%	412	22.6%
AUSTRALIA	**26,268,359**	**205,549**	**26,504**	**12.9%**	**26,011**	**25.5%**

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment and monitoring (viral load test while not receiving treatment) data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an area of residence recorded in source data.

Figure A.18: CHB treatment and care uptake by remoteness area, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Care data (treatment and monitoring) sourced from Medicare statistics. Monitoring represents viral load testing while not receiving treatment.

(see data for this figure)

MONITORING AND CARE TRENDS OVER TIME BY REMOTENESS AREA

The number of people who received CHB monitoring declined in all remoteness areas between 2018 and 2022 with the exception of inner regional areas, where they were stable. The decline was most pronounced in outer regional (24.7% decline) and remote areas (40.7% decline). This led to a decline in overall care uptake in outer regional and remote areas between 2018 and 2022, while in major cities and very remote areas the declines in monitoring uptake were offset sufficiently by increased treatment numbers that care uptake did not decline.

CARE ACROSS STATISTICAL AREA 3 REGIONS

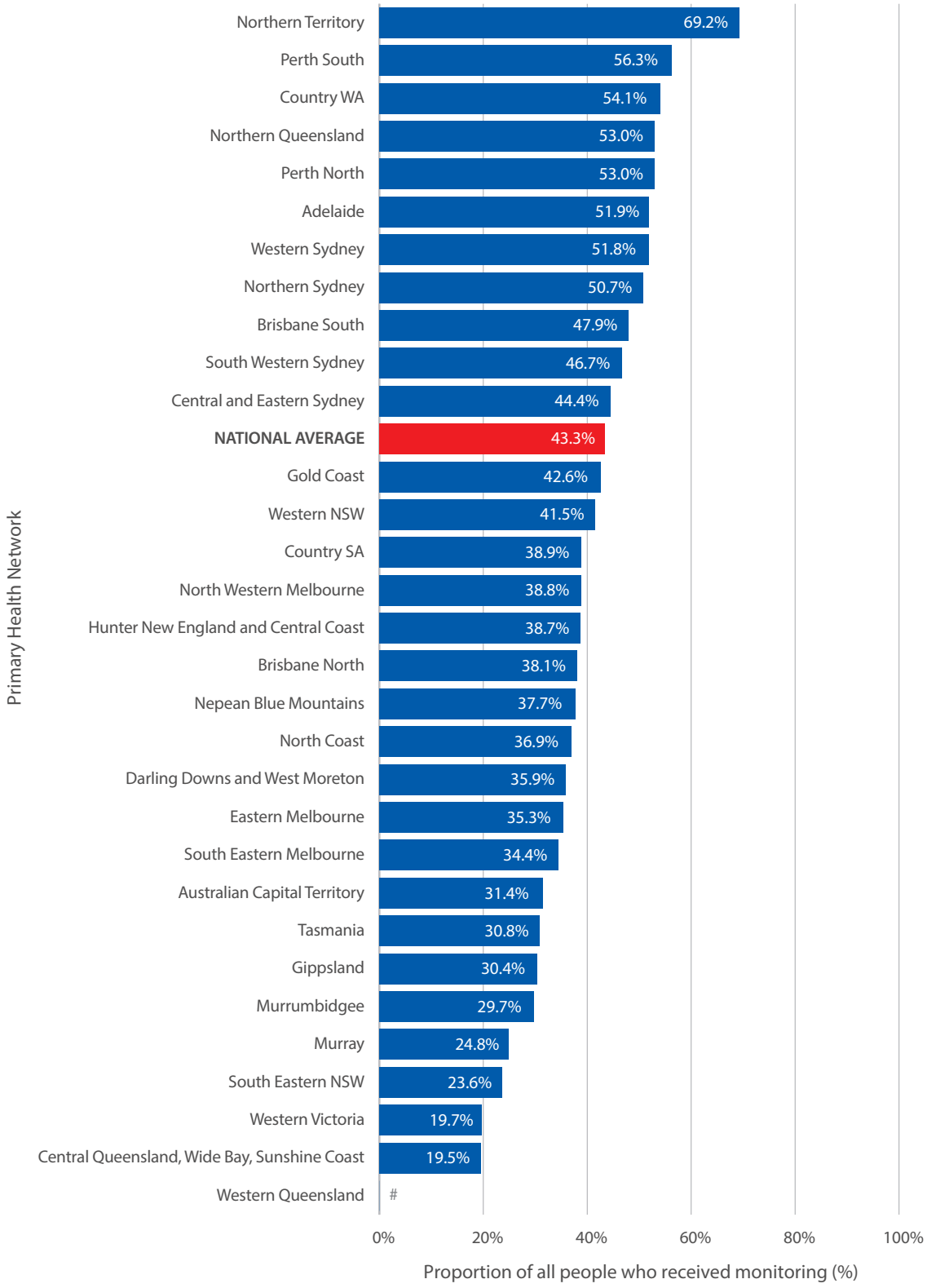
CHB care uptake variation and trends by SA3 are discussed in detail in relation to the relevant state or territory in Section A2. Of the 284 SA3s with sufficient data available for reliable reporting (see Table D.2), two had care uptake that met or exceeded the 50% National Strategy target for 2022, Far North (54.5% uptake) in the **Northern Queensland** PHN and East Arnhem (**Northern Territory** PHN), where uptake was estimated to be >85% (precise estimation in this SA3 is limited by small population size). Uptake reached the 2022 care target in the Forest Lake – Oxley SA3 in the **Brisbane South** PHN in 2021 (50.3% uptake), but declined slightly to 48.4% in 2022. Five additional SA3s approached the 50% care uptake target: Fairfield (47.8%) in the **South Western Sydney** PHN; Carlingford (45.8%) and Auburn (47.2%) in the **Western Sydney** PHN; Brimbank (45.7%) in the **North Western Melbourne** PHN; and Dandenong (45.2%) in the **South Eastern Melbourne** PHN.

Further exploration of SA3-specific data, including rankings across Australia for CHB treatment and care uptake, are provided in the ASHM Viral Hepatitis Mapping Project online portal.

MONITORING PROVIDERS

GPs provided the majority of monitoring (viral load tests in people not receiving treatment) in 2022, making up 55.9% of the total (Figure A.19). This proportion varied widely according to PHN, and generally reflected trends for treatment prescribing by GPs (Figure A.13). PHNs with the highest levels of GP monitoring were **Northern Territory**, **Country WA**, **Perth South**, **Perth North** and **Northern Sydney**, where GPs made up more than half of providers of monitoring tests for people not on treatment (Figure A.19).

Figure A.19: Proportion of CHB monitoring provided by a GP, by PHN, 2022



CHB, chronic hepatitis B. GP, general practitioner. NP, nurse practitioner. PHN, Primary Health Network.

Data source: Medicare statistics. Monitoring represents viral load testing while not receiving treatment. Provider type is based on the clinician's registered specialty.

Data suppressed where number receiving treatment or care was <6.

(see data for this figure)

MONITORING DEMOGRAPHICS

People receiving monitoring in 2022 were relatively evenly distributed by sex (52.3% female and 47.7% male; Section D – Ascertainment of age and sex in Medicare). A similar proportion of all monitoring tests occurred in people in each of the age groups 30–39 years (19.1%), 40–49 years (24.7%), 50–59 years (22.3%) and ≥60 years (29.0%). The distribution by sex has remined stable since 2018, while the proportion aged 60+ has increased, when it made up 22.2% of the total; this trend reflects the findings for treatment uptake.

IMMUNISATION

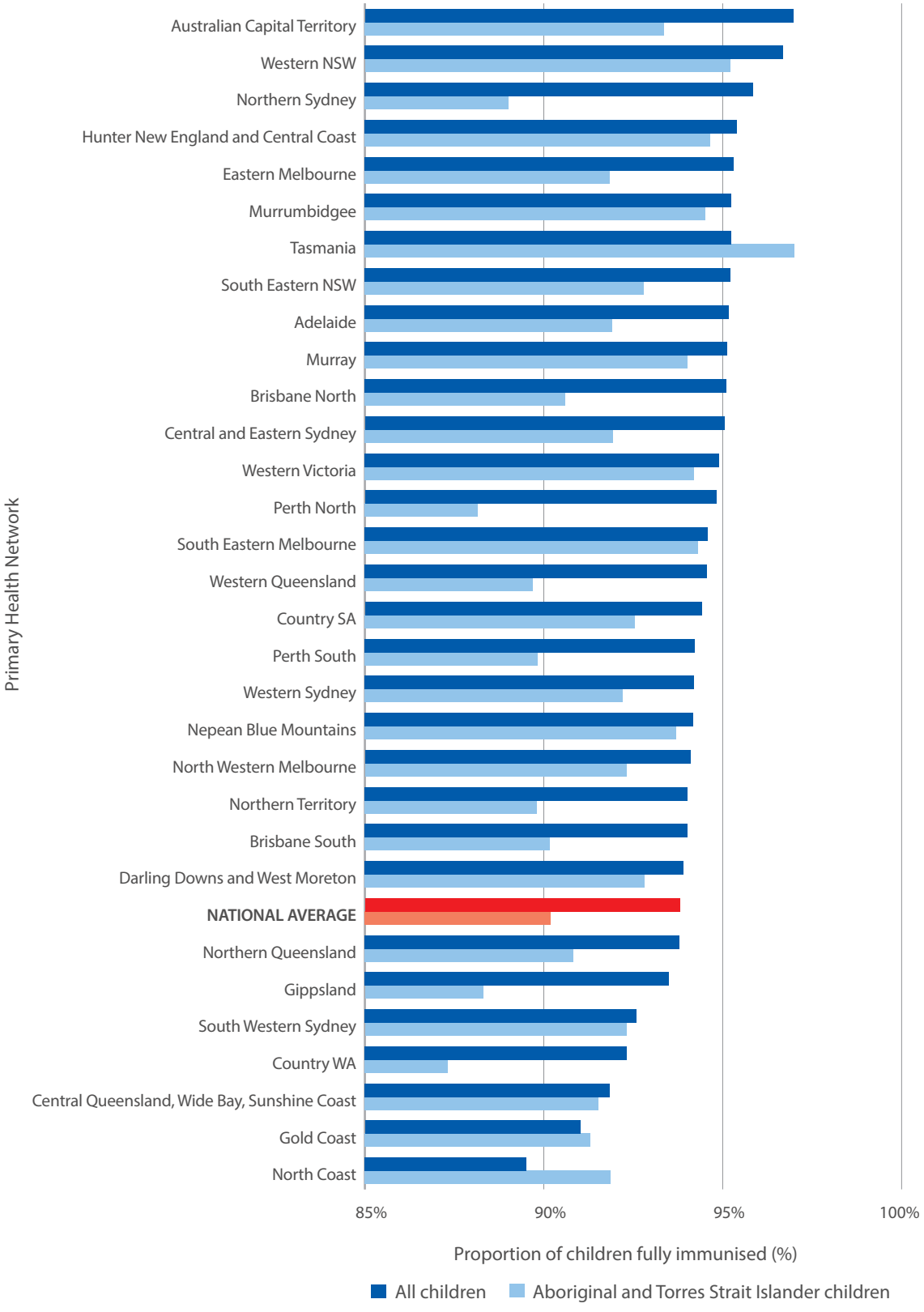
Hepatitis B infant immunisation coverage (the proportion of one-year-old children who received the three infant doses recommended at 2, 4 and 6 months) was 93.8% in 2022, below the National Strategy target of 95%. This represented a decrease since 2020, when coverage was above the target at 95.1%. This decline was reflected across Australia, as all PHNs had a decline between 2021 and 2022 except the **Australian Capital Territory** PHN, which had stable uptake. Of the 31 PHNs, 12 had coverage in 2022 above the target level of 95% (Figure A.20), an increase from nine in 2018 but a substantial decline from 22 PHNs in 2020.

Immunisation coverage has declined during the period of the Third National Hepatitis B Strategy, from 94.3% in 2018. A decline in coverage occurred in 20 PHNs between 2018 and 2022 (Figure A.21). PHNs with the largest decline included **Gold Coast**, **South Western Sydney** and **Gippsland**. Four PHNs that had been above the 95% target in 2018 were below it in 2022 (**Tasmania**, **Western Victoria**, **Murray** and **Nepean Blue Mountains**).

Among Aboriginal and Torres Strait Islander children, coverage at 12 months of age was estimated to be 90.2% in 2022, a reduction from the level in 2020 (91.8%). Most PHNs had a decline between 2021 and 2022 in coverage among Aboriginal and Torres Strait Islander children (24 of 31 PHNs). There was also reduction in the number of PHNs that met the 95% uptake target among 12-month-old Aboriginal and Torres Strait Islander children, from seven PHNs in 2021 to two in 2022. There was also a reduced trend compared to 2018 for Aboriginal and Torres Strait Islander children, when uptake among Aboriginal and Torres Strait Islander children was 93.4% and seven PHNs had already met the 95% target.

Coverage was lower among Aboriginal and Torres Strait Islander children than among all children in all but three PHNs (**Gold Coast**, **North Coast** and **Tasmania**, Figure A.20). These differences may reflect different drivers of immunisation coverage among non-Indigenous and Aboriginal and Torres Strait Islander communities, as well as the enduring traumatic legacy of colonisation, recognising the historical disadvantage perpetuated by institutional racism and systemic failures that collectively contribute to health disparities between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians. However, in many PHNs the Aboriginal and Torres Strait Islander population is small and the differences reflect a low number of infants, so should be interpreted with caution.

Figure A.20: Hepatitis B immunisation coverage for 12-month-olds, among all children and among Aboriginal and Torres Strait Islander children, ordered by immunisation uptake among all children, by PHN, 2022

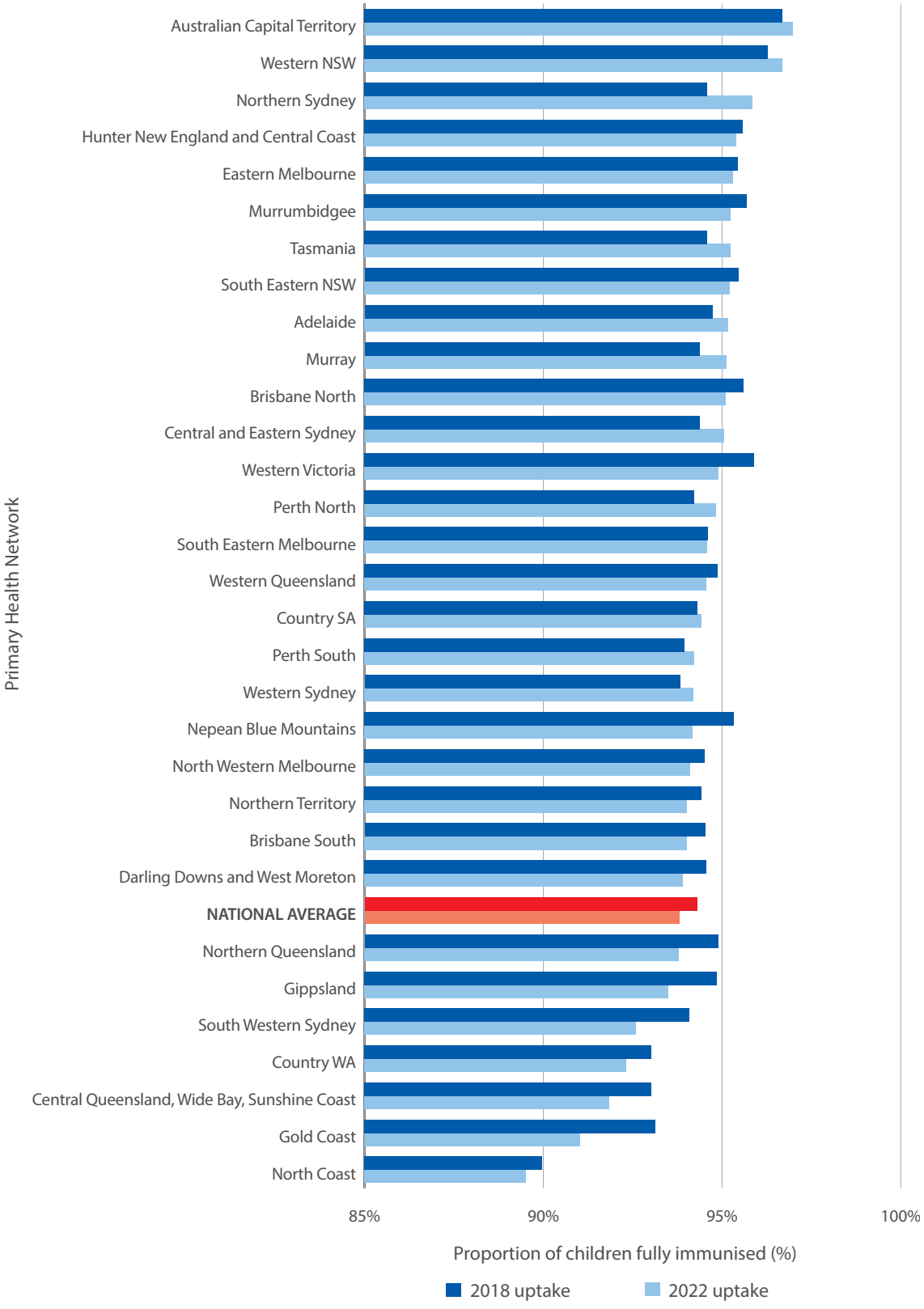


PHN, Primary Health Network.

Data source: Australian Immunisation Register.

(see data for this figure)

Figure A.21: Hepatitis B immunisation coverage for 12-month-olds in 2018 and 2022, ordered by 2022 immunisation uptake, by PHN



PHN, Primary Health Network.

Data source: Australian Immunisation Register.

(see data for this figure)

SECTION A2: GEOGRAPHIC DIVERSITY AND TRENDS IN CHRONIC HEPATITIS B BY STATE AND TERRITORY

IN THIS SECTION

Section A2 includes the following information:

- estimates of CHB prevalence, treatment and care uptake for each PHN and SA3 across Australia
- measurement of progress towards National Strategy targets and geographic trends
- assessment of the drivers of variation at a local level.

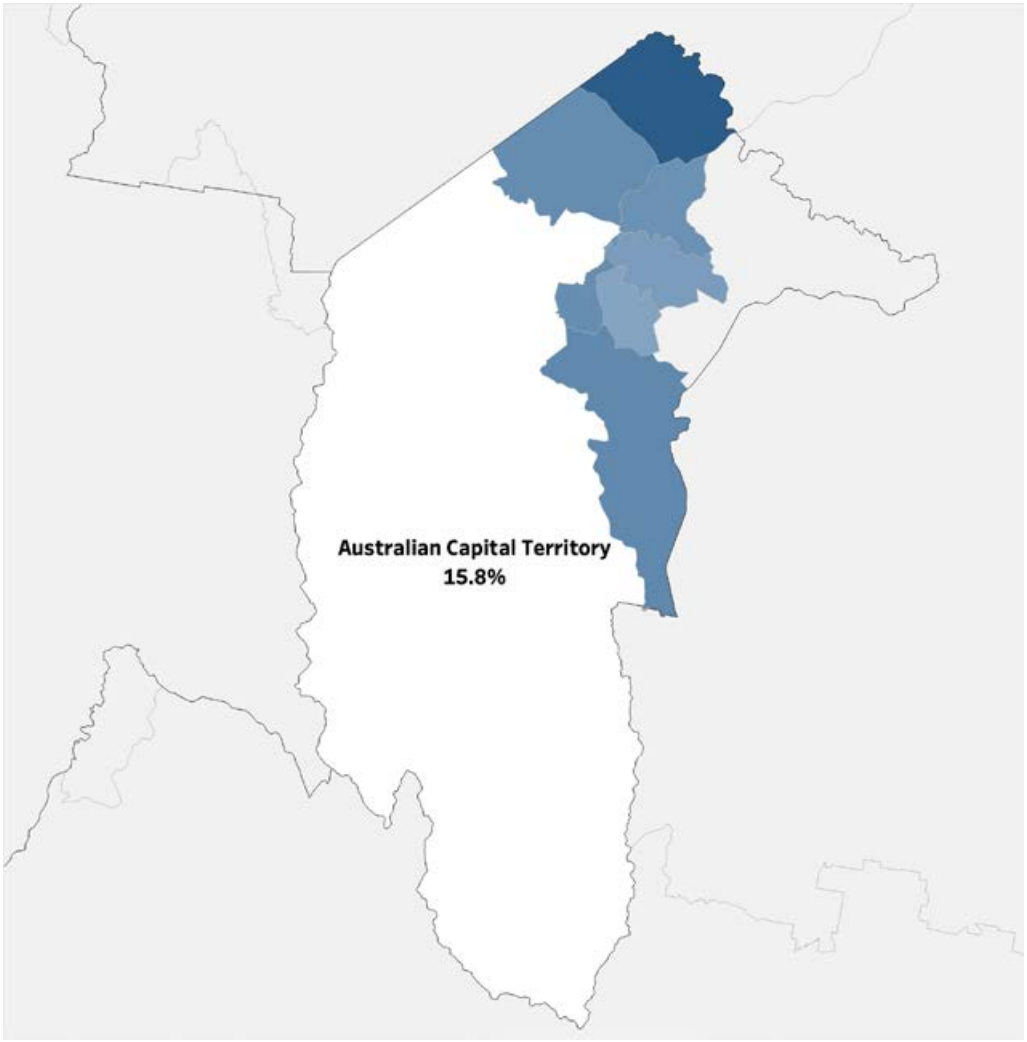
AUSTRALIAN CAPITAL TERRITORY

- An estimated 2,927 people were living with CHB in 2022 in the ACT, 0.63% of the population.
- CHB treatment uptake in the ACT in 2022 was 15.8%, higher than the national average of 12.9%.
- CHB care uptake in the ACT in 2022 was 30.6%, higher than the national average of 25.5%.
- ACT ranked 1st for both CHB treatment uptake and for CHB care uptake of the eight states and territories.
- Treatment uptake in the ACT increased more rapidly than the national average between 2018 and 2022.
- Monitoring trends in the ACT increased more rapidly than the national average between 2018 and 2022, raising its national ranking for care uptake from 4th to 1st.

CHB TREATMENT

CHB treatment uptake in the **Australian Capital Territory** PHN overall in 2022 was 15.8% (Table A.16), higher than the national average of 12.9%. Within the PHN, uptake was highest in the Gungahlin SA3 (23.2%), where it met the National Strategy target of 20%. Treatment uptake was above the national average in the majority of SA3s in the ACT, and was highest in Tuggeranong (14.5%), Belconnen (13.8%) and Weston Creek (13.7%, Figure A.22).

Figure A.22: Geographic variation in CHB treatment uptake in the ACT PHN, by SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

CHB care uptake in the **Australian Capital Territory** PHN in 2022 was 30.6%, higher than the national average of 25.5%. Care uptake was above this national average in all SA3s in the ACT except for Woden Valley.

Table A.16: CHB prevalence, treatment uptake, and care uptake in the ACT, by SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Australian Capital Territory PHN	**462,117**	**2,927**	**0.63%**	**15.8%**	**30.6%**
Belconnen	109,204	737	0.68%	13.8%	27.0%
Gungahlin	90,221	733	0.81%	23.2%	39.7%
North Canberra	61,320	398	0.65%	13.1%	29.1%
South Canberra	31,172	159	0.51%	11.3%	31.5%
Tuggeranong	91,891	441	0.48%	14.5%	29.7%
Weston Creek	37,584	212	0.56%	13.7%	26.9%
Woden Valley	39,903	242	0.61%	10.3%	20.6%

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Note: Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

NEW SOUTH WALES

- An estimated 73,671 people were living with CHB in NSW in 2022, 0.90% of the population.
- CHB treatment uptake in NSW in 2022 was 15.4%, higher than the national average of 12.9%.
- CHB care uptake in NSW in 2022 was 30.5%, higher than the national average of 25.5%.
- NSW ranked 2nd for both CHB treatment uptake and CHB care uptake of the eight states and territories.
- Higher treatment and care uptake were generally seen in PHNs in Sydney, with lower uptake in regional and remote areas.
- Treatment numbers in NSW increased between 2018 and 2022 at a rate similar to the national average, while the number of people receiving monitoring remained stable.

CHB TREATMENT

CHB treatment uptake in NSW overall in 2022 was 15.4%, higher than the national average of 12.9%. Uptake varied across the 10 PHNs in NSW (Figure A.23 and Figure A.24).

Treatment uptake in NSW was highest in the **South Western Sydney** PHN (20.6%), where it reached the National Strategy target of 20%. Treatment uptake varied within the PHN, which covers a diverse range of regions. Uptake was highest within the regions of the PHN closest to central Sydney, including three where uptake met the National Strategy treatment target of 20% – Fairfield (26.9%), Bringelly – Green Valley (20.6%) and Bankstown (21.7%). Uptake was also above the national average in Liverpool (16.8%). Given the 20% target is a conservative estimate for the proportion of people estimated to need treatment,[1] uptake may need to be higher in some regions due to the demographic and clinical characteristics of the people with CHB in that region.

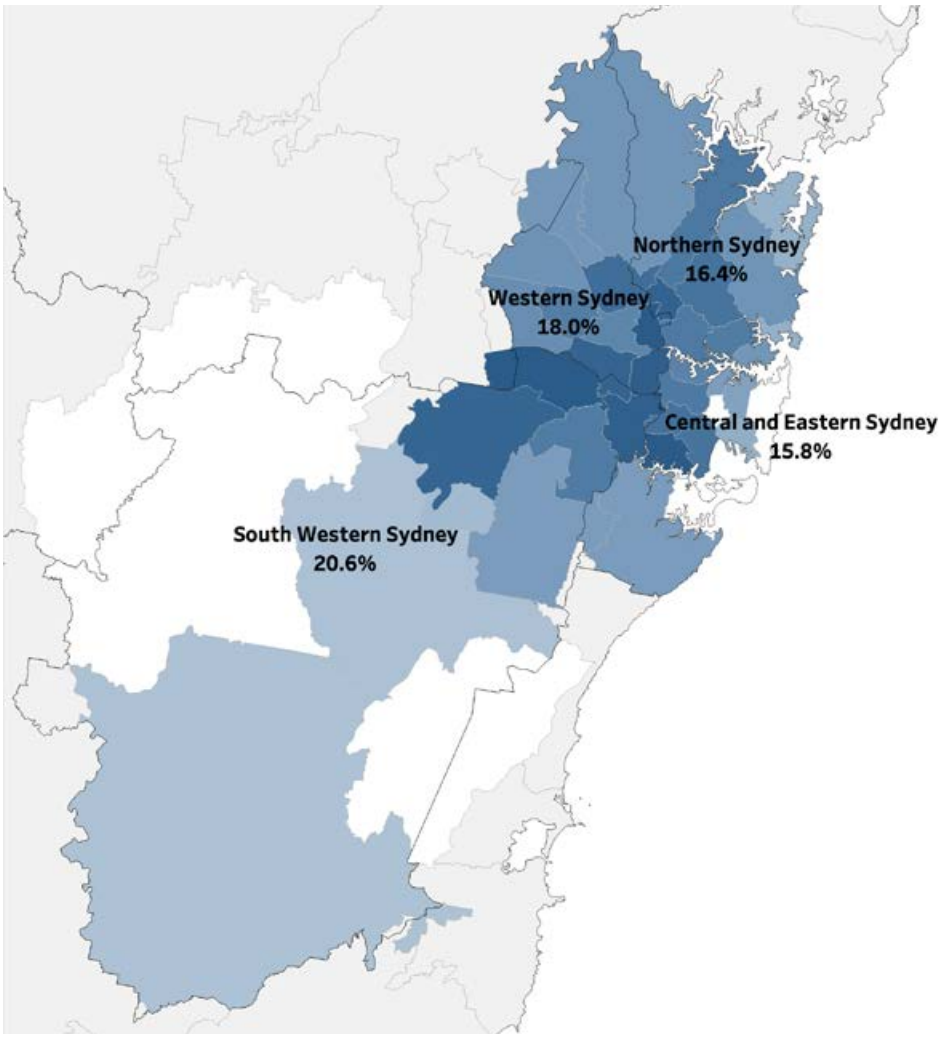
In the **Western Sydney** PHN (overall uptake 18.0%), the areas with higher treatment were also those closer to central Sydney. SA3s where uptake had already reached the 20% National Strategy target included Carlingford (23.1%), Auburn (21.9%) and Merrylands – Guildford (20.9%), and uptake was also above the national average in Baulkham Hills (19.1%), Blacktown (16.3%) and Parramatta (15.0%). The remaining SA3s in the PHN had treatment uptake similar to the national average.

In **Northern Sydney**, treatment uptake was 16.4% overall. Uptake was highest in Pennant Hills – Epping (21.1%), where it reached the National Strategy target of 20%. Uptake was also above the national average in Ku-ring-gai (18.1%), Hornsby (17.3%), Ryde – Hunters Hill (17.0%) and Chatswood – Lane Cove (16.6%).

Treatment uptake in **Central and Eastern Sydney** was 15.8%. Within the PHN, uptake was highest in the SA3 of Hurstville (23.8%), where it reached the 20% National Strategy target. Treatment was also above the national average in Marrickville – Sydenham – Petersham (18.6%), Kogarah – Rockdale (18.1%), Canterbury (18.4%) and Strathfield – Burwood – Ashfield (17.1%).

Treatment uptake was below the NSW average (15.4%) in all non-metropolitan NSW PHNs. The highest uptake occurred in the **Nepean Blue Mountains** (8.9%) and **South Eastern NSW** (8.3%) PHNs. Treatment uptake within these PHNs was highest in the SA3s of St Marys (11.7%) in **Nepean Blue Mountains,** Dapto – Port Kembla (10.3%) and Wollongong (10.0%) in **South Eastern NSW.**

Figure A.23: Geographic variation in CHB treatment uptake in Greater Sydney, by PHN and SA3, 2022

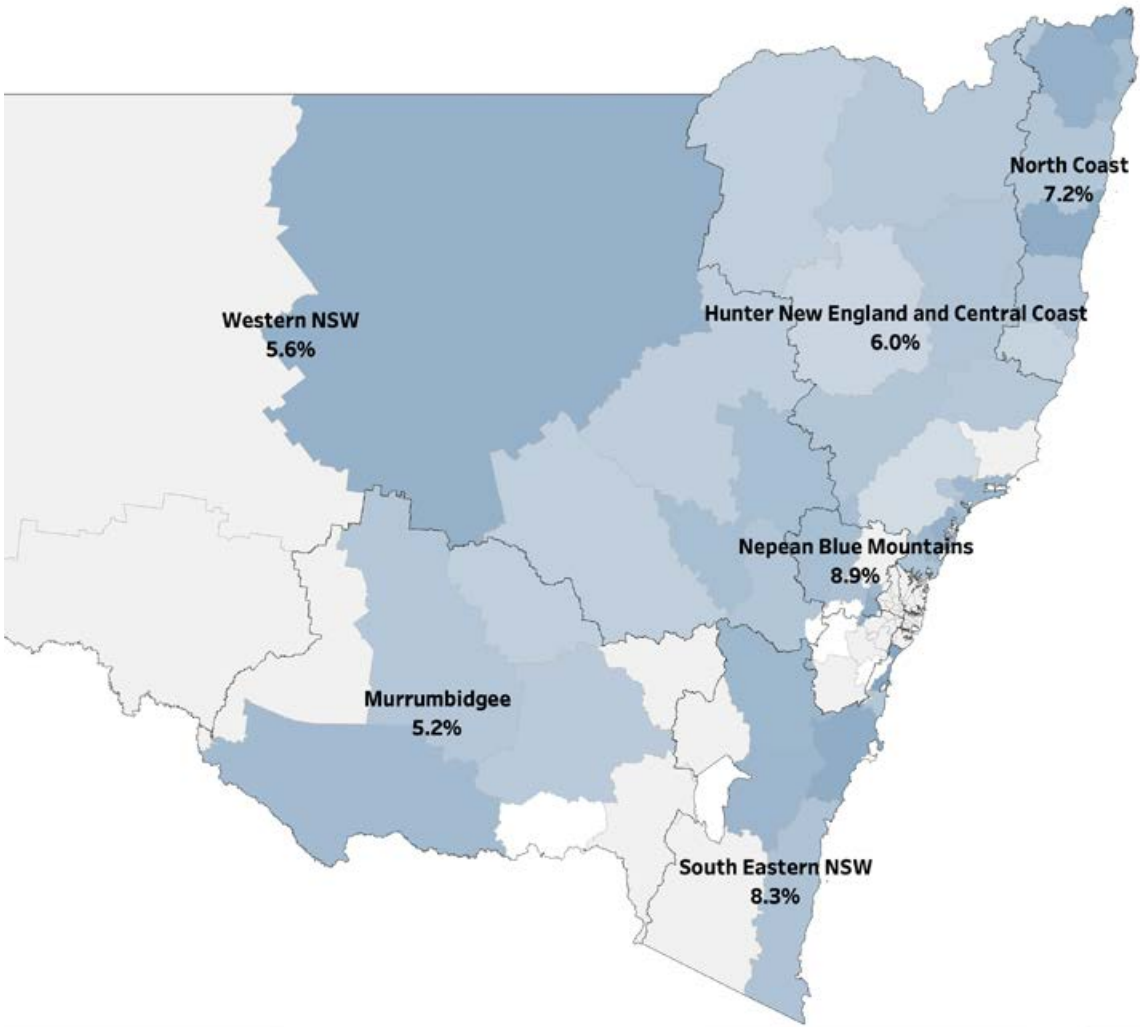


ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Figure A.24: Geographic variation in CHB treatment uptake in NSW (other than Greater Sydney), by PHN and SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

In NSW, care uptake largely reflected treatment uptake, which meant Sydney PHNs ranked higher than those located in non-metropolitan areas. No PHN met the 50% National Strategy care target; however, several SA3s within Sydney PHNs had care uptake that approached this level, including Fairfield (47.8% uptake) in **South Western Sydney**, and Auburn (47.2%) and Carlingford (45.8% uptake) in **Western Sydney**.

In all non-metropolitan NSW PHNs, care uptake was below the national average of 25.5% in 2022; it was highest in **Nepean Blue Mountains** (19.4%) and **South Eastern NSW** (19.2%). This represents a significant increase in uptake relative to the average for **South Eastern NSW**, which increased in ranking from 21st to 13th between 2018 and 2022.

Table A.17: CHB prevalence, treatment uptake, and care uptake in NSW by PHN and SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Central and Eastern Sydney PHN	**1,591,069**	**19,357**	**1.22%**	**15.8%**	**30.5%**
Botany	35,967	499	1.39%	8.8%	16.4%
Canada Bay	90,174	1,165	1.29%	15.3%	30.1%
Canterbury	128,435	2,254	1.75%	18.4%	36.8%
Cronulla – Miranda – Caringbah	120,041	764	0.64%	11.0%	21.1%
Eastern Suburbs – North	129,651	844	0.65%	10.4%	19.0%
Eastern Suburbs – South	153,314	1,396	0.91%	11.5%	23.0%
Hurstville	139,229	2,668	1.92%	23.8%	42.2%
Kogarah – Rockdale	157,599	2,349	1.49%	18.1%	33.7%
Leichhardt	58,273	357	0.61%	11.2%	21.6%
Marrickville – Sydenham – Petersham	56,349	596	1.06%	18.6%	33.7%
Strathfield – Burwood – Ashfield	167,848	2,831	1.69%	17.1%	34.1%
Sutherland – Menai – Heathcote	121,252	710	0.59%	11.4%	22.0%
Sydney Inner City	232,524	2,924	1.26%	10.6%	23.3%
Northern Sydney PHN	**932,221**	**10,720**	**1.15%**	**16.4%**	**33.5%**
Chatswood – Lane Cove	132,095	1,781	1.35%	16.6%	33.3%
Hornsby	90,287	1,088	1.20%	17.3%	33.8%
Ku-ring-gai	146,980	2,044	1.39%	18.1%	37.8%
Manly	55,819	301	0.54%	8.6%	19.3%
North Sydney – Mosman	84,298	674	0.80%	12.3%	26.9%
Pennant Hills – Epping	49,341	942	1.91%	21.1%	44.5%
Pittwater	74,148	322	0.43%	8.4%	13.4%
Ryde – Hunters Hill	154,025	2,590	1.68%	17.0%	35.8%
Warringah	145,229	977	0.67%	12.8%	24.0%
South Western Sydney PHN	**1,034,884**	**13,838**	**1.34%**	**20.6%**	**38.1%**
Bankstown	179,938	2,848	1.58%	21.7%	41.9%
Bringelly – Green Valley	126,957	1,581	1.25%	20.6%	37.5%
Camden	110,005	603	0.55%	7.1%	14.3%
Campbelltown (NSW)	185,593	1,595	0.86%	11.4%	22.5%
Fairfield	199,412	5,075	2.54%	26.9%	47.8%
Liverpool	146,903	1,795	1.22%	16.8%	31.5%
Southern Highlands	52,531	197	0.37%	6.1%	13.7%
Wollondilly	33,545	145	0.43%	6.2%	16.6%

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PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Western Sydney PHN	**1,153,423**	**14,469**	**1.25%**	**18.0%**	**37.1%**
Auburn	110,593	2,447	2.21%	21.9%	47.2%
Baulkham Hills	148,087	1,942	1.31%	19.1%	36.2%
Blacktown	131,668	1,315	1.00%	16.3%	36.3%
Blacktown – North	152,929	1,227	0.80%	13.0%	26.2%
Carlingford	72,812	1,381	1.90%	23.1%	45.8%
Dural – Wisemans Ferry	32,890	215	0.65%	12.6%	21.4%
Merrylands – Guildford	130,797	2,073	1.58%	20.9%	41.7%
Mount Druitt	113,697	1,206	1.06%	13.7%	31.0%
Parramatta	179,369	1,863	1.04%	15.0%	31.7%
Rouse Hill – McGraths Hill	80,580	801	0.99%	12.2%	26.2%
Hunter New England and Central Coast PHN	**1,326,796**	**5,599**	**0.42%**	**6.0%**	**12.4%**
Armidale	36,882	178	0.48%	5.6%	11.3%
Gosford	183,111	924	0.50%	5.8%	12.7%
Great Lakes	32,115	115	0.36%	#	#
Inverell – Tenterfield	34,935	170	0.49%	5.3%	13.5%
Lake Macquarie – East	149,352	500	0.33%	7.6%	15.4%
Lake Macquarie – West	60,190	199	0.33%	8.5%	18.1%
Lower Hunter	89,088	328	0.37%	2.7%	5.2%
Maitland	113,989	386	0.34%	5.4%	11.9%
Moree – Narrabri	22,335	161	0.72%	4.3%	11.8%
Newcastle	180,437	757	0.42%	6.6%	13.5%
Port Stephens	75,851	273	0.36%	7.7%	12.5%
Tamworth – Gunnedah	84,584	451	0.53%	3.5%	8.7%
Taree – Gloucester	56,529	211	0.37%	5.2%	9.5%
Upper Hunter	30,495	143	0.47%	5.6%	11.2%
Wyong	176,904	804	0.45%	7.6%	15.0%
Murrumbidgee PHN	**239,315**	**1,007**	**0.42%**	**5.2%**	**12.0%**
Griffith – Murrumbidgee (West)	46,465	278	0.60%	5.4%	11.5%
Tumut – Tumbarumba	13,751	51	0.37%	#	#
Upper Murray exc. Albury	40,133	126	0.31%	7.1%	13.5%
Wagga Wagga	101,852	426	0.42%	4.9%	13.8%
Young – Yass	37,113	125	0.34%	#	#
Nepean Blue Mountains PHN	**384,276**	**2,209**	**0.57%**	**8.9%**	**19.4%**
Blue Mountains	80,828	354	0.44%	6.2%	14.1%

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PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Hawkesbury	11,476	49	0.43%	#	#
Penrith	165,155	982	0.59%	8.9%	20.2%
Richmond – Windsor	61,853	285	0.46%	7.4%	15.4%
St Marys	64,965	539	0.83%	11.7%	24.0%
North Coast PHN	**542,989**	**2,075**	**0.38%**	**7.2%**	**15.8%**
Clarence Valley	51,041	198	0.39%	5.5%	14.1%
Coffs Harbour	94,532	425	0.45%	9.2%	18.6%
Kempsey – Nambucca	51,563	241	0.47%	5.8%	14.5%
Port Macquarie	88,454	313	0.35%	3.8%	9.3%
Richmond Valley – Coastal	87,118	294	0.34%	6.8%	18.7%
Richmond Valley – Hinterland	74,466	280	0.38%	8.6%	15.7%
Tweed Valley	95,815	323	0.34%	9.3%	18.0%
South Eastern NSW PHN	**638,046**	**2,661**	**0.42%**	**8.3%**	**19.2%**
Dapto – Port Kembla	79,581	358	0.45%	10.3%	24.3%
Goulburn – Mulwaree	40,928	158	0.39%	7.6%	15.2%
Kiama – Shellharbour	105,142	375	0.36%	5.6%	13.6%
Queanbeyan	68,352	284	0.42%	7.8%	16.2%
Shoalhaven	108,333	428	0.40%	9.1%	20.6%
Snowy Mountains	20,347	71	0.35%	#	#
South Coast	75,702	284	0.38%	6.0%	13.4%
Wollongong	139,662	703	0.50%	10.0%	23.5%
Western NSW PHN	**334,708**	**1,737**	**0.52%**	**5.6%**	**14.6%**
Bathurst	50,452	196	0.39%	5.6%	11.2%
Bourke – Cobar – Coonamble	18,504	224	1.21%	8.5%	25.0%
Broken Hill and Far West	19,322	124	0.64%	#	#
Dubbo	71,451	423	0.59%	4.5%	10.9%
Lachlan Valley	53,752	277	0.52%	4.3%	9.0%
Lithgow – Mudgee	46,850	183	0.39%	6.6%	15.9%
Lower Murray	12,278	66	0.54%	#	#
Orange	62,100	242	0.39%	6.6%	16.9%

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

Data suppressed where number receiving treatment or care was <6. SA3s not listed where population was <3000.

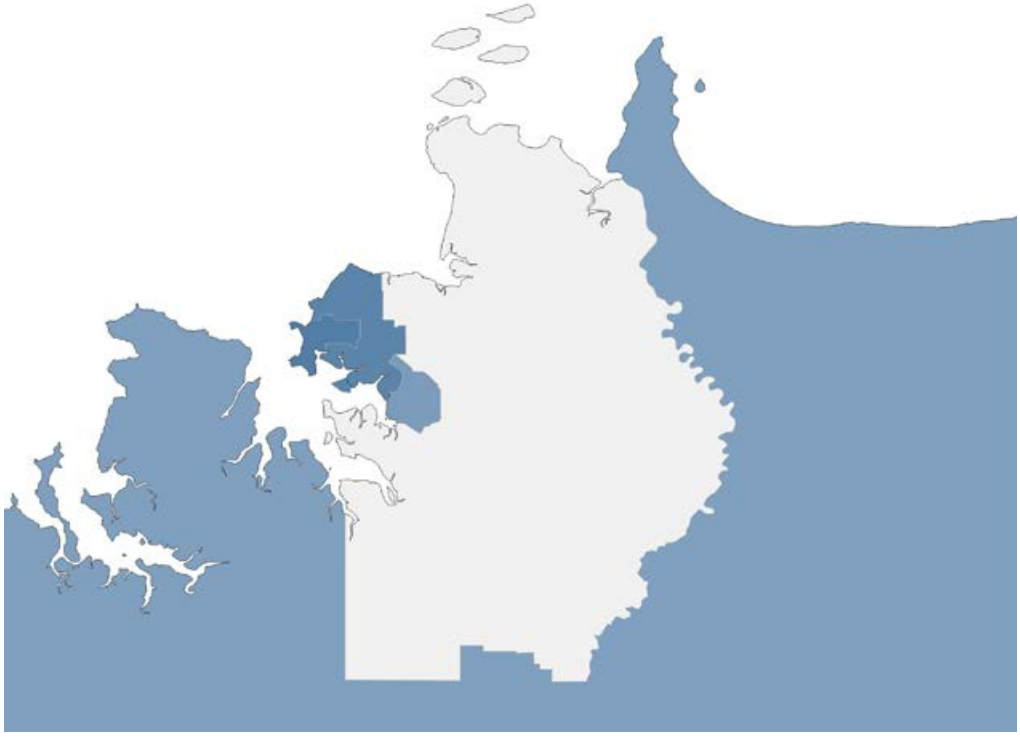
NORTHERN TERRITORY

- CHB treatment uptake in the NT in 2022 was 11.5%, lower than the national average of 12.9%.
- CHB care uptake in the NT in 2022 was 24.2%, similar to the national average of 25.5%.
- NT ranked 4th for both CHB treatment uptake and for CHB care uptake of the eight states and territories.
- Treatment numbers in the NT increased by more than the national average between 2018 and 2022; however, the number of people receiving monitoring declined more rapidly than the national average.

CHB TREATMENT

CHB treatment uptake in 2022 in the **Northern Territory** PHN was 11.5%, below the national average of 12.9%. However, treatment uptake has increased at more than double the average rate in the NT compared to Australia overall. Due to the small populations and the imprecision of postcode regions in the NT, differentiation of treatment and care uptake by region is subject to more uncertainty than in most other jurisdictions, and in some, data need to be suppressed in order to protect confidentiality. Of those able to be assessed, treatment uptake was highest in East Arnhem (31.8%) (Table A.18), above the National Strategy target of 20%. It was also above or similar to the national average in Darwin City (16.6%) and Darwin Suburbs (15.4%) (Figure A.25 and Figure A.26).

Figure A.25: Geographic variation in CHB treatment uptake in Greater Darwin, by SA3, 2022

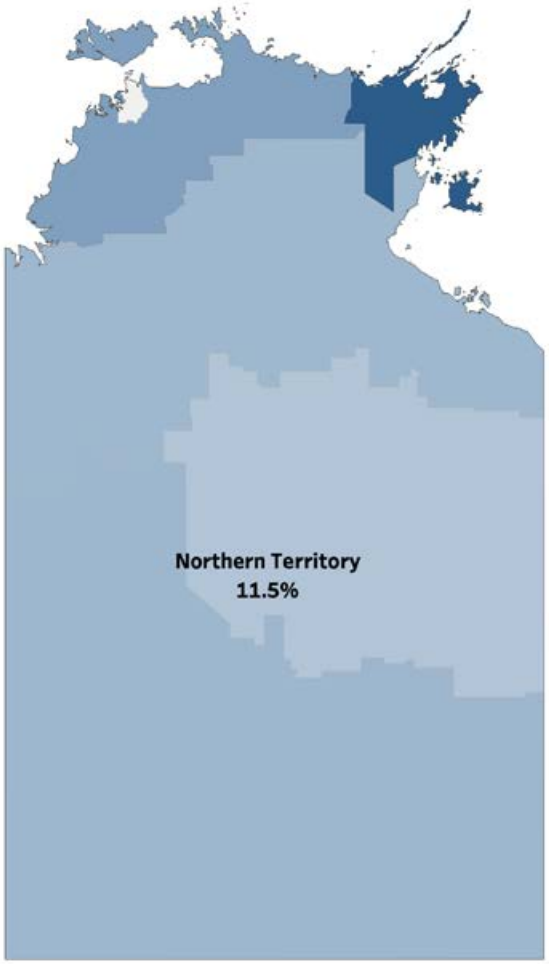


ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Figure A.26: Geographic variation in CHB treatment uptake in the NT by SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

CHB care within the NT was highest in **East Arnhem** (>85%^; see Table A.18 caption), where it had already met the 50% National Strategy target for care uptake. This reflects the impact of the Hep B PAST program, a comprehensive, culturally appropriate education and care coordination program conducted in collaboration with Aboriginal and Torres Strait Islander communities. Uptake was also above the national average in **Darwin City** (26.6%) and **Daly – Tiwi – West Arnhem** (27.6%).

Table A.18: CHB prevalence, treatment uptake, and care uptake in the NT, by SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Northern Territory PHN	**252,823**	**4,360**	**1.72%**	**11.5%**	**24.2%**
Alice Springs	45,574	1,069	2.35%	7.8%	22.3%
Barkly	4,027	123	3.05%	5.7%	10.6%
Daly – Tiwi – West Arnhem	30,391	1,043	3.43%	11.0%	27.6%
Darwin City	29,363	278	0.95%	16.6%	26.6%
Darwin Suburbs	60,489	688	1.14%	15.4%	21.5%
East Arnhem	5,622	113	2.01%	31.8%	>85%^
Katherine	18,967	528	2.78%	7.6%	18.0%
Litchfield	17,922	123	0.68%	#	#
Palmerston	40,468	395	0.98%	11.6%	16.7%

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

Data suppressed where number receiving treatment or care was <6. SA3s not listed where population was <3000.

^ Data subject to imprecision due to low numbers so approximation used.

QUEENSLAND

- CHB treatment uptake in Qld in 2022 was 9.8%, lower than the national average of 12.9%.
- CHB care uptake in Qld in 2022 was 20.1%, lower than the national average of 25.5%.
- Qld ranked 6th for CHB treatment uptake and 5th for CHB care uptake of the eight states and territories.
- Treatment and care uptake were highest in Brisbane South, with SA3 regions of uptake above average also located in Brisbane North and Northern Queensland.
- Treatment numbers in Qld increased more rapidly than the national average change between 2018 and 2022, while and monitoring numbers decreased at a similar rate to the national average.

CHB TREATMENT

Treatment uptake within Qld was highest in the **Brisbane South** PHN (13.8%) (Figure A.27). Within the **Brisbane South** PHN, the Forest Lake – Oxley SA3 met the 20% treatment uptake target (20.9% uptake). Treatment was also above the national average in Sunnybank (17.2%), Nathan (16.5%), Rocklea – Acacia Ridge (15.1%), Springwood – Kingston (14.9%) and Mt Gravatt (14.8%) SA3s (Table A.19).

In the **Brisbane North** PHN, treatment uptake was 8.3% in 2022, and within the PHN was highest in the Sandgate SA3 (13.9%). Uptake ranged between 5 and 10% in the remaining SA3s (Table A.19).

In the **Gold Coast** PHN, treatment uptake was 9.1% overall, and was highest in the SA3s of Gold Coast – North (11.8%), Southport (11.5%), Robina (10.9%) and Nerang (10.2%). In the remaining PHNs, treatment uptake ranged between 4 and 9%.

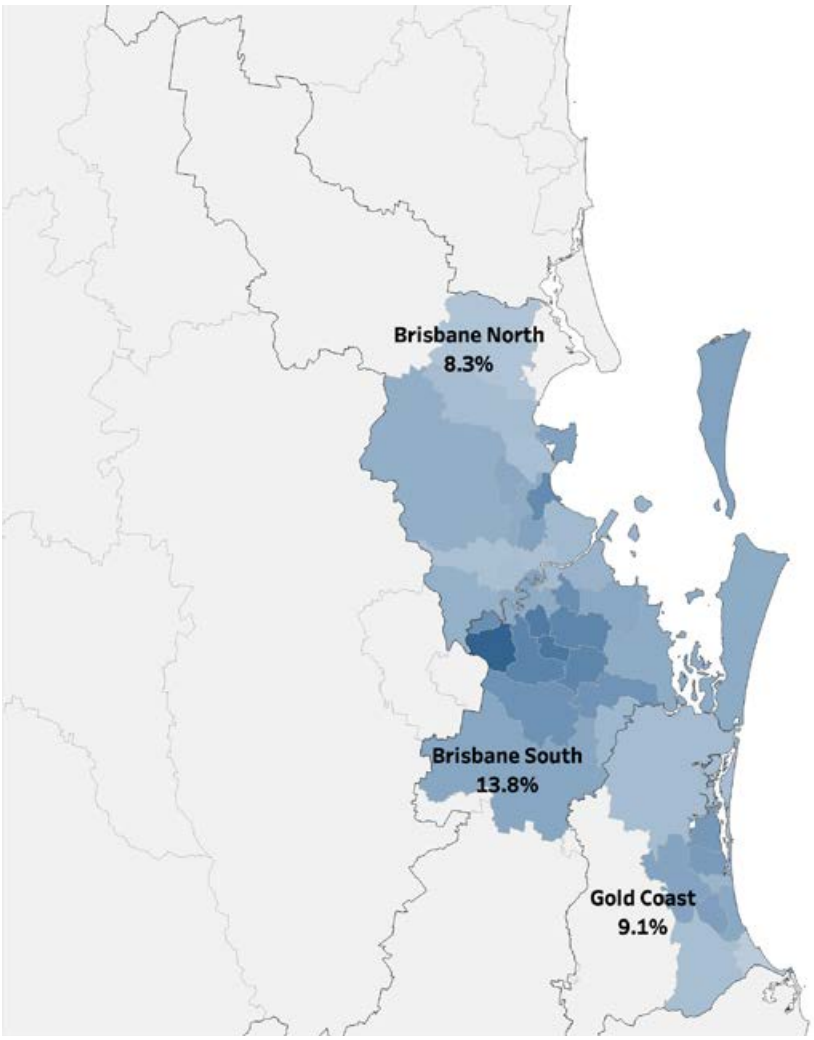
Treatment uptake in the **Darling Downs and West Moreton** PHN was 7.0%, but was higher in the SA3 of Springfield – Redbank (10.9%) (Figure A.28), while treatment uptake in the remaining SA3s varied between 3 and 7%.

In the **Central Queensland, Wide Bay and Sunshine Coast** PHN, uptake in 2022 was 7.6% (Table A.19). This PHN had a much larger increase in the number of people receiving treatment between 2018 and 2022 than the national average, increasing uptake by 76%. Within the PHN, uptake was highest in the Nambour (8.8%), Bundaberg (8.6%), Maryborough (8.6%) and Rockhampton (8.5%) SA3s.

Treatment uptake in the **Northern Queensland** PHN overall in 2022 was 7.0%. This PHN contained the SA3 with the fourth-highest treatment uptake in Qld, Far North (16.1%). Uptake was also above the PHN average in Cairns – South (9.1%), Cairns – North (8.4%) and Innisfail – Cassowary Coast (7.9%) SA3s.

Treatment uptake could not be assessed in **Western Queensland**, as the number of people was too small for reliable estimation.

Figure A.27: Geographic variation in CHB treatment uptake in Greater Brisbane and Gold Coast, by PHN and SA3, 2022

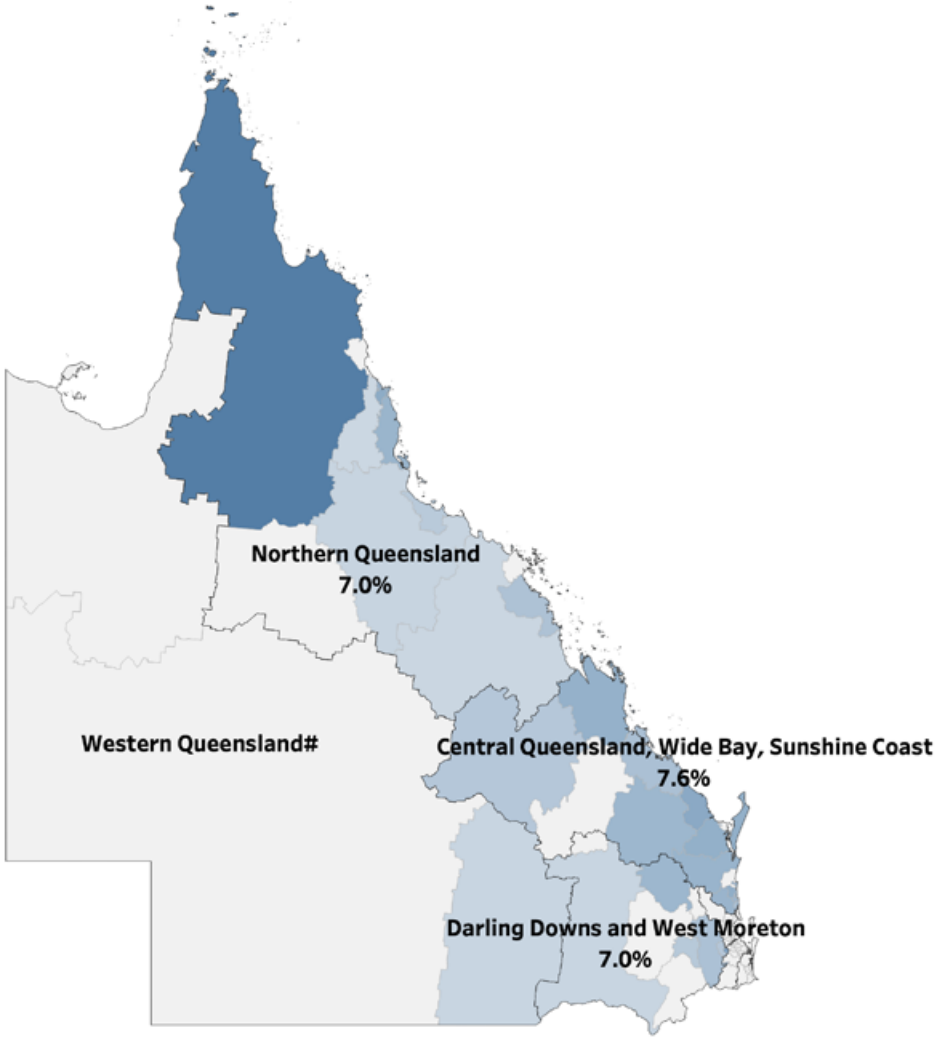


ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Figure A.28: Geographic variation in CHB treatment uptake in Qld (other than Greater Brisbane and Gold Coast), by PHN and SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

In Qld, CHB care uptake generally reflected treatment trends. This was seen in **Brisbane South**, which had the highest care uptake (29.0%) of PHNs in Qld, and which was the only PHN with uptake above the national average. Uptake within **Brisbane South** was highest in Forest Lake – Oxley (48.4%, Table A.19), where it approached the 2022 care uptake target of 50% (see Care across Statistical Area 3 regions).

Northern Queensland PHN ranked 17th nationally for care uptake, well above its rank for treatment uptake of 25th, due to higher-than-average levels of monitoring uptake in those not receiving treatment in this PHN. Care uptake was especially high in in the Far North SA3 (76.2%), one of only two SA3s to meet the 2022 National Strategy target of 50% care uptake (see Care across Statistical Area 3 regions).

The higher levels of CHB care uptake relative to treatment uptake in this region may reflect the

challenges in delivery of treatment in rural and remote areas, which may require more frequent health service access compared to monitoring. It may also be related to a different clinical course of disease in people living with CHB in this region, resulting in fewer people who require treatment. These factors emphasise the importance of assessing progress towards the care uptake target, which is not susceptible to variations in the proportion of people who need treatment.

Care uptake increased between 2018 and 2022 by greater than the national average trend (2.0% increase) in several Qld PHNs, including **Central Queensland, Wide Bay and Sunshine Coast**, **Gold Coast** and **Brisbane North**. These PHNs increased in care uptake rank nationally between 2018 and 2022 from 29th to 26th, 22nd to 19th, and 26th to 21st respectively.

Table A.19: CHB prevalence, treatment uptake, and care uptake in Qld by PHN and SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Brisbane North PHN	**1,192,832**	**7,209**	**0.60%**	**8.3%**	**15.7%**
Bald Hills – Everton Park	58,637	324	0.55%	9.3%	16.0%
Bribie – Beachmere	31,929	141	0.44%	#	#
Brisbane Inner	91,705	856	0.93%	10.2%	22.5%
Brisbane Inner – North	127,485	811	0.64%	6.3%	12.1%
Brisbane Inner – West	58,221	330	0.57%	6.7%	13.3%
Caboolture	92,616	504	0.54%	5.8%	8.9%
Caboolture Hinterland	13,293	71	0.54%	#	#
Chermside	84,290	570	0.68%	10.4%	19.8%
Kenmore – Brookfield – Moggill	51,613	332	0.64%	8.4%	16.0%
Narangba – Burpengary	70,376	341	0.48%	6.7%	11.1%
North Lakes	96,731	563	0.58%	6.4%	12.6%
Nundah	44,652	251	0.56%	7.2%	13.1%
Redcliffe	66,677	333	0.50%	10.5%	13.5%
Sandgate	55,639	316	0.57%	13.9%	20.9%
Sherwood – Indooroopilly	67,924	579	0.85%	9.3%	21.1%
Strathpine	64,469	342	0.53%	9.7%	16.4%
The Gap – Enoggera	58,331	269	0.46%	6.3%	11.9%
The Hills District	58,244	276	0.47%	8.7%	18.1%
Brisbane South PHN	**1,175,854**	**10,716**	**0.91%**	**13.8%**	**29.0%**
Beaudesert	23,556	94	0.40%	#	#
Beenleigh	70,781	427	0.60%	7.5%	14.7%
Brisbane Inner – East	47,867	243	0.51%	7.0%	13.2%
Browns Plains	76,732	721	0.94%	12.8%	26.9%
Capalaba	85,316	432	0.51%	9.7%	17.6%
Carindale	51,573	372	0.72%	13.4%	26.1%
Centenary	36,094	328	0.91%	13.4%	25.6%

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PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Cleveland – Stradbroke	90,626	427	0.47%	9.1%	14.5%
Forest Lake – Oxley	73,866	1,296	1.75%	20.9%	48.4%
Holland Park – Yeronga	92,673	625	0.67%	9.3%	20.5%
Jimboomba	46,937	265	0.56%	9.8%	18.9%
Loganlea – Carbrook	76,125	548	0.72%	12.6%	22.1%
Mt Gravatt	85,581	1,109	1.30%	14.8%	31.5%
Nathan	29,474	242	0.82%	16.5%	34.2%
Rocklea – Acacia Ridge	69,979	1,107	1.58%	15.1%	35.9%
Springwood – Kingston	89,607	982	1.10%	14.9%	27.0%
Sunnybank	49,384	1,078	2.18%	17.2%	36.6%
Wynnum – Manly	79,683	421	0.53%	8.1%	18.5%
Gold Coast PHN	**666,275**	**3,642**	**0.55%**	**9.1%**	**16.8%**
Broadbeach – Burleigh	70,541	334	0.47%	9.6%	15.6%
Coolangatta	62,194	211	0.34%	4.7%	11.8%
Gold Coast – North	41,219	237	0.57%	11.8%	19.8%
Gold Coast Hinterland	16,664	55	0.33%	#	#
Mudgeeraba – Tallebudgera	38,858	154	0.40%	6.5%	13.0%
Nerang	66,429	333	0.50%	10.2%	15.9%
Ormeau – Oxenford	163,063	842	0.52%	6.8%	14.2%
Robina	64,900	433	0.67%	10.9%	19.9%
Southport	97,459	723	0.74%	11.5%	21.4%
Surfers Paradise	44,946	319	0.71%	7.8%	15.0%
Central Queensland, Wide Bay, Sunshine Coast PHN	**913,869**	**3,264**	**0.36%**	**7.6%**	**13.5%**
Biloela	12,029	54	0.45%	#	#
Buderim	71,048	274	0.39%	7.7%	13.2%
Bundaberg	96,594	369	0.38%	8.6%	16.8%
Caloundra	101,876	362	0.36%	6.4%	11.9%
Central Highlands (Qld)	24,622	131	0.53%	5.3%	9.9%
Gladstone	65,264	239	0.37%	6.3%	13.4%
Gympie – Cooloola	56,210	175	0.31%	8.0%	13.1%
Hervey Bay	69,588	251	0.36%	#	#
Maroochy	73,560	263	0.36%	7.2%	12.2%
Maryborough	42,288	128	0.30%	8.6%	16.4%
Nambour	55,683	193	0.35%	8.8%	13.5%
Noosa	36,871	127	0.34%	7.9%	14.9%

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PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Noosa Hinterland	25,740	73	0.29%	#	#
Rockhampton	129,018	460	0.36%	8.5%	16.7%
Sunshine Coast Hinterland	53,478	164	0.31%	7.9%	14.1%
Darling Downs and West Moreton PHN	**650,071**	**3,296**	**0.51%**	**7.0%**	**15.2%**
Burnett	50,192	197	0.39%	7.6%	11.7%
Darling Downs – East	40,117	131	0.33%	#	#
Darling Downs (West) – Maranoa	41,841	199	0.47%	3.5%	9.6%
Granite Belt	40,835	139	0.34%	#	#
Ipswich Hinterland	52,847	211	0.40%	6.2%	11.4%
Ipswich Inner	136,674	675	0.49%	5.3%	12.9%
Springfield – Redbank	111,064	986	0.89%	10.9%	23.8%
Toowoomba	176,502	759	0.43%	5.1%	11.3%
Northern Queensland PHN	**702,833**	**4,310**	**0.61%**	**7.0%**	**17.8%**
Bowen Basin – North	31,571	176	0.56%	3.4%	7.4%
Cairns – North	38,158	203	0.53%	8.4%	17.7%
Cairns – South	127,095	1,006	0.79%	9.1%	23.5%
Charters Towers – Ayr – Ingham	37,785	193	0.51%	3.6%	8.3%
Far North	25,771	323	1.25%	16.1%	54.5%
Innisfail – Cassowary Coast	37,135	303	0.82%	7.9%	18.1%
Mackay	123,015	482	0.39%	6.0%	15.8%
Port Douglas – Daintree	11,746	63	0.54%	#	#
Tablelands (East) – Kuranda	46,001	300	0.65%	3.3%	10.3%
Townsville	201,683	1,162	0.58%	5.0%	9.6%
Whitsunday	22,873	98	0.43%	#	#
Western Queensland PHN	**45,148**	**298**	**0.67%**	**#**	**#**
Outback – North	29,290	225	0.77%	#	#
Outback – South	16,565	82	0.50%	#	#

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

Data suppressed where number receiving treatment or care was <6. SA3s not listed where population was <3000.

SOUTH AUSTRALIA

- CHB treatment uptake in SA in 2022 was 11.1%, lower than the national average of 12.9%.
- SA ranked 5th for CHB treatment uptake of the eight states and territories.
- Treatment uptake was highest in Adelaide and lower in more remote regions.
- Treatment numbers in SA increased between 2018 and 2022 more rapidly than the national average change.
- CHB care uptake assessment in SA was limited by data reliability (see below).

CHB TREATMENT

Treatment uptake in SA overall was 11.1%, below the national average of 12.9%. Treatment uptake was higher in the **Adelaide** PHN (12.0%), and within the PHN was highest in the Port Adelaide – West SA3 (17.8%). Treatment uptake was also above the national average in the Salisbury (15.6%), Charles Sturt (14.3%), West Torrens (14.1%) and Norwood – Payneham – St Peters (13.6%) SA3s (Figure A.29, Table A.20).

Assessing variation in treatment uptake within the **Country SA** PHN is difficult, as most SA3s in the region have a small population, leading to high uncertainty within the data. However, the available data does not suggest substantial variation in uptake within the PHN.

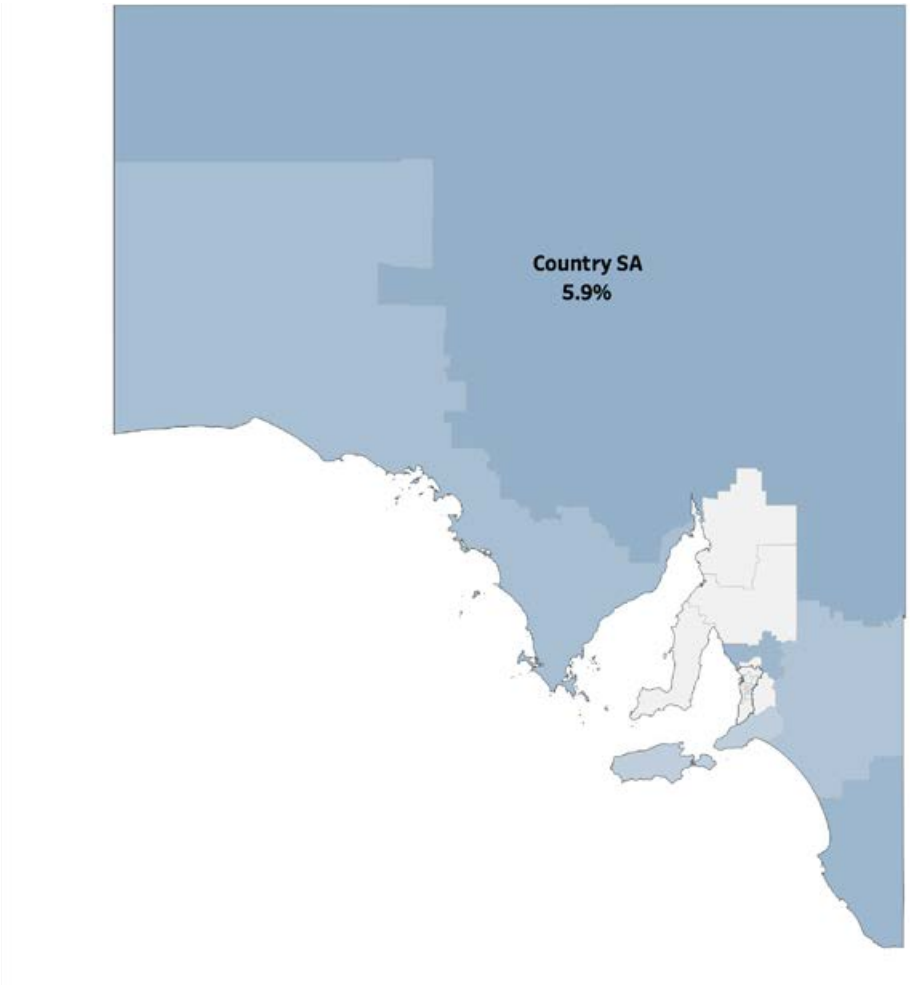
Figure A.29: Geographic variation in CHB treatment uptake in Greater Adelaide, by PHN and SA3, 2022

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Figure A.30: Geographic variation in CHB treatment uptake in SA (other than Greater Adelaide), by PHN and SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

Estimates of CHB care are subject to significant uncertainty and robust analysis of trends cannot be conducted, due to evidence that a substantial proportion of all viral load tests conducted in SA are performed outside of Medicare and thus not included in the data used (see Section A1 – Care across states and territories). It is estimated that this may represent up to 50% of tests conducted in 2022 (personal communication, SA Health); however, it is not known whether this proportion is consistent across geographic areas. If this underestimation is consistent for monitoring tests specifically and is representative across geographic regions, care uptake in the **Adelaide** PHN could be as high as 24.0% and in the **Country SA** PHN could be as high as 15.8%, and estimates by SA3 could by underestimated by a similar proportion. Further detail regarding these testing patterns will be available in future reports.

Table A.20: CHB prevalence, treatment uptake, and care uptake* in SA by PHN and SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Adelaide PHN	**1,315,715**	**8,896**	**0.68%**	**12.0%**	**18.0%**
Adelaide City	24,893	255	1.03%	8.2%	15.7%
Burnside	48,827	399	0.82%	12.5%	16.5%
Campbelltown (SA)	68,862	577	0.84%	12.1%	17.7%
Charles Sturt	111,784	785	0.70%	14.3%	20.9%
Holdfast Bay	44,916	191	0.42%	#	#
Marion	77,563	433	0.56%	11.1%	15.7%
Mitcham	81,177	427	0.53%	11.5%	16.1%
Norwood – Payneham – St Peters	35,719	250	0.70%	13.6%	20.8%
Onkaparinga	175,205	664	0.38%	5.7%	8.7%
Playford	100,065	669	0.67%	9.1%	15.1%
Port Adelaide – East	78,859	676	0.86%	11.4%	17.4%
Port Adelaide – West	65,311	679	1.04%	17.8%	26.7%
Prospect – Walkerville	35,589	253	0.71%	13.0%	20.2%
Salisbury	145,319	1,361	0.94%	15.6%	24.1%
Tea Tree Gully	99,003	446	0.45%	4.9%	8.1%
Unley	40,862	250	0.61%	10.4%	14.8%
West Torrens	81,760	580	0.71%	14.1%	20.0%
Country SA PHN	**501,429**	**1,617**	**0.32%**	**5.9%**	**10.8%**
Adelaide Hills	79,415	259	0.33%	#	#
Barossa	37,396	93	0.25%	7.5%	14.0%
Eyre Peninsula and South West	56,437	184	0.33%	6.5%	12.5%
Fleurieu – Kangaroo Island	54,420	136	0.25%	4.4%	11.0%
Gawler – Two Wells	40,457	148	0.37%	#	#
Limestone Coast	66,715	223	0.33%	7.6%	14.8%
Lower North	22,264	53	0.24%	#	#
Mid North	26,637	75	0.28%	#	#
Murray and Mallee	69,545	259	0.37%	5.8%	11.2%
Outback – North and East	22,062	117	0.53%	8.5%	16.2%
Yorke Peninsula	26,081	70	0.27%	#	#

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

Data suppressed where number receiving treatment or care was <6. SA3s not listed where population was <3000.

* Data relating to SA may underestimate monitoring by up to 50% from 2020 onwards due to the provision of services outside of Medicare.

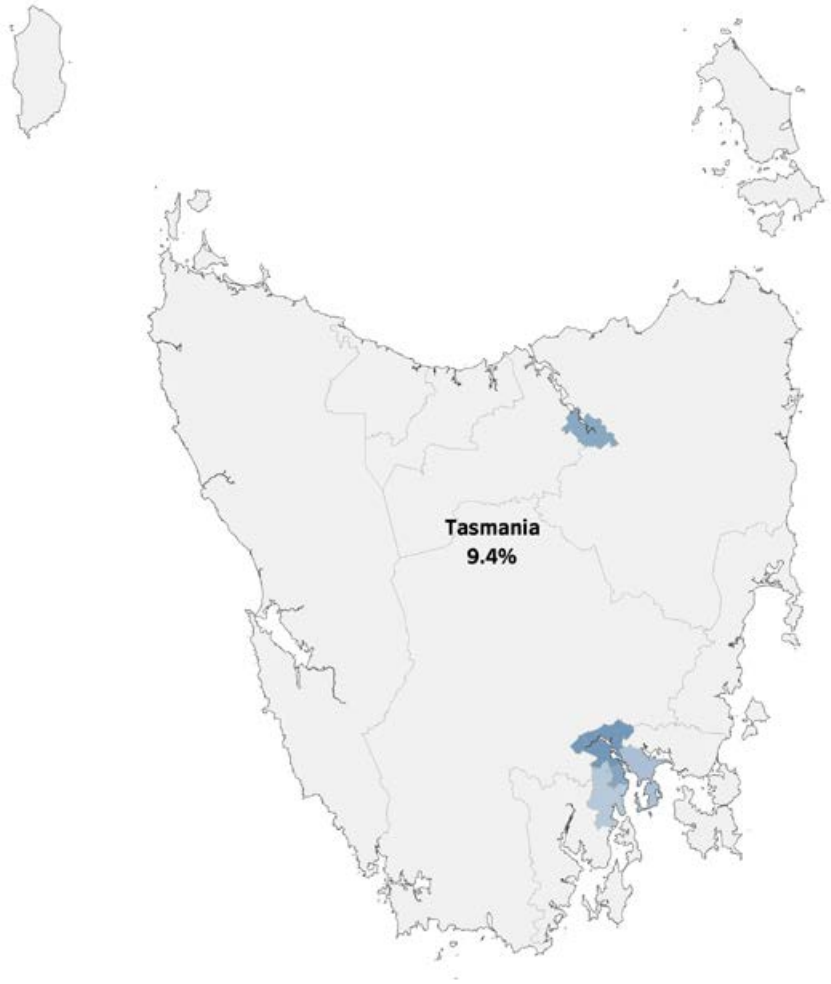
TASMANIA

- CHB treatment uptake in Tas in 2022 was 9.4%, lower than the national average of 12.9%.
- CHB care uptake in Tas in 2022 was 17.0%, lower than the national average of 25.5%.
- Tas ranked 7th for CHB treatment uptake and 6th for CHB care uptake of the eight states and territories.
- Treatment numbers in Tas increased more rapidly than the national average between 2018 and 2022, while monitoring numbers increased at a rate similar to the national average.

CHB TREATMENT

Treatment uptake in the **Tasmania** PHN overall was 9.4%, below the national average of 12.9%. Assessment of variations in treatment uptake in the **Tasmania** PHN is limited by the small number of people with CHB in most SA3s, and there was no apparent pattern of uptake variation that could be assessed (Figure A.31, Table A.21). No SA3 with data able to be assessed reached or approached the National Strategy treatment uptake target of 20%, or had uptake above the national average level.

Figure A.31: Geographic variation in CHB treatment uptake in Tas, by SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

The variation in care uptake across the **Tasmania** PHN largely reflected treatment uptake, in the regions with sufficient population to allow assessment of variation. No SA3 had care uptake above the national average level.

Table A.21: CHB prevalence, treatment uptake, and care uptake in Tas, by SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Tasmania PHN	**573,657**	**1,621**	**0.28%**	**9.4%**	**17.0%**
Brighton	26,810	67	0.25%	12.0%	20.9%
Burnie – Ulverstone	58,680	112	0.19%	#	#
Central Highlands	3,281	#	#	#	#
Devonport	47,586	107	0.23%	#	#
Hobart – North East	61,578	191	0.31%	6.3%	12.6%
Hobart – North West	62,967	225	0.36%	12.0%	22.7%
Hobart – South and West	38,370	139	0.36%	5.0%	12.9%
Hobart Inner	56,768	279	0.49%	10.0%	21.1%
Huon – Bruny Island	23,103	44	0.19%	#	#
Launceston	94,157	259	0.28%	9.6%	17.7%
Meander Valley – West Tamar	21,735	40	0.18%	#	#
North East	41,403	72	0.17%	#	#
Sorell – Dodges Ferry	18,772	44	0.24%	#	#
South East Coast	5,855	#	#	#	#
West Coast	12,593	25	0.20%	#	#

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

Data suppressed where number receiving treatment or monitoring was <6 and/or people living with CHB was <20. SA3s not listed where population was <3000.

VICTORIA

- CHB treatment uptake in Vic in 2022 was 13.5%, similar to the national average of 12.9%.
- CHB care uptake in Vic in 2022 was 28.7%, higher than the national average of 25.5%.
- Vic ranked 3rd for both CHB treatment uptake and CHB care uptake of the eight states and territories.
- Treatment and care uptake were highest in PHNs in the Melbourne metropolitan region, with lower uptake in the more regional areas.
- Care uptake was also highest in Melbourne PHNs, with SA3 regions of above-average uptake also located in the **Murray** and **Western Victoria** PHNs.
- Treatment numbers in Vic increased and monitoring levels decreased between 2018 and 2022 by levels similar to the national average change.

CHB TREATMENT

CHB treatment in Vic overall was 13.5%, similar to the national average of 12.9%. Uptake was similar across the three Melbourne PHNs; however, considerable variation was seen within the PHNs.

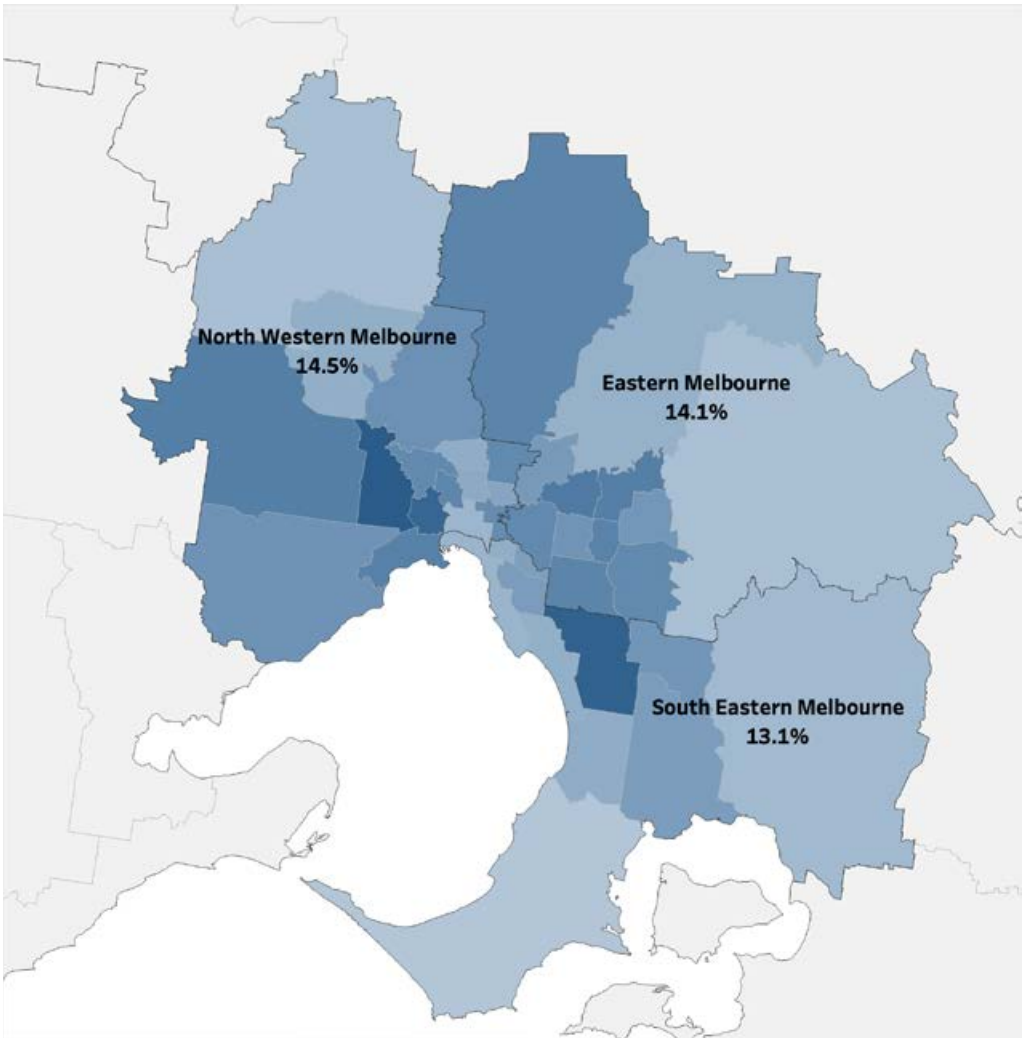
In the **North Western Melbourne** PHN (overall uptake 14.5%), uptake was highest in Brimbank (22.5%) and Maribyrnong (20.5%), where it met the National Strategy target of 20%. Treatment uptake was also above the PHN average of 14.5% in the Melton – Bacchus Marsh (16.0%) and Hobsons Bay (15.7%) SA3s (Figure A.32, Table A.22). The lower uptake observed in Melbourne City may reflect the younger and more temporarily resident population, which is more likely to be Medicare-ineligible.[17]

Uptake in the **South Eastern Melbourne** PHN overall was 13.1%. This was driven by the Dandenong SA3 (21.4% uptake) which had the highest uptake in the PHN and which met the 2022 National Strategy target. Uptake was below or similar to the Vic average in all remaining SA3s, ranging between 7 and 13%.

In contrast, in the **Eastern Melbourne** PHN (overall uptake 14.1%), treatment uptake was above the state average in almost all SA3s, but none met the target level of 20%. Treatment uptake was generally lower in more regional parts of the PHN.

Treatment uptake was approximately 9% in all three non-metropolitan Victorian PHNs, with variation within PHNs according to SA3. Uptake was highest in the SA3s of Bendigo (13.4%), Heathcote – Castlemaine – Kyneton (12.6%), and Murray River – Swan Hill SA3 (12.4%) in the **Murray** PHN; and in Geelong (11.6%) in the **Western Victoria** PHN (Figure A.33). The number of people receiving treatment in **Western Victoria** increased between 2018 and 2022 by 82%, a larger increment than any other PHN in Australia. This has had a substantive impact on its position in national rankings, where it increased from 25th to 18th.

Figure A.32: Geographic variation in CHB treatment uptake in Greater Melbourne, by PHN and SA3, 2022

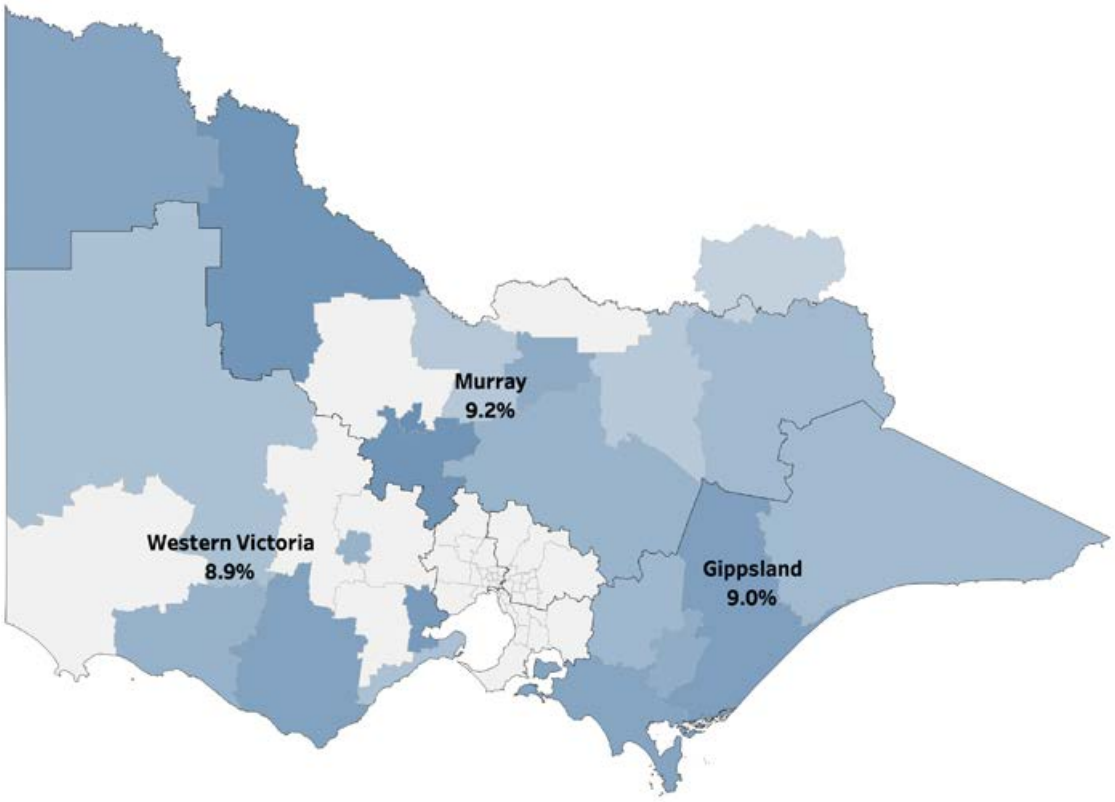


ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Figure A.33: Geographic variation in CHB treatment uptake in Vic (other than Greater Melbourne), by PHN and SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

Care uptake in Vic largely reflected treatment uptake according to region. The substantial increase in treatment uptake observed for **Western Victoria** also occurred for monitoring, increasing care uptake in this PHN by 46% between 2018 and 2022, and improving its rank from 24th to 14th. Care uptake within the PHN was highest in Geelong (25.9%). This was also reflected in SA3s with above-average treatment uptake in **Murray**, which also had higher care uptake (Bendigo [36.3%], Heathcote – Castlemaine – Kyneton [25.9%] and Murray River – Swan Hill [25.4%] SA3s).

Care uptake was highest in the three Melbourne PHNs, reflecting treatment uptake. In two SA3s, uptake approached the 50% National Strategy care uptake target: Brimbank (45.7%) in **North Western Melbourne** and Dandenong (45.2%) in **South Eastern Melbourne** (Table A.22).

Table A.22: CHB prevalence, treatment uptake, and care uptake in Vic, by PHN and SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Eastern Melbourne PHN	**1,598,097**	**17,891**	**1.12%**	**14.1%**	**30.8%**
Banyule	125,857	1,006	0.80%	11.7%	25.9%
Boroondara	182,425	2,205	1.21%	14.4%	32.2%
Knox	176,856	1,832	1.04%	14.4%	32.9%
Manningham – East	29,759	261	0.88%	16.1%	26.8%
Manningham – West	101,899	1,878	1.84%	16.9%	37.3%
Maroondah	105,692	910	0.86%	12.3%	28.6%
Monash	189,943	3,185	1.68%	15.1%	32.8%
Nillumbik – Kinglake	59,461	274	0.46%	8.4%	20.4%
Whitehorse – East	65,345	981	1.50%	15.4%	34.7%
Whitehorse – West	122,019	2,012	1.65%	12.7%	30.5%
Whittlesea – Wallan	276,728	2,571	0.93%	15.1%	28.7%
Yarra Ranges	162,113	777	0.48%	6.4%	15.1%
North Western Melbourne PHN	**1,841,384**	**20,142**	**1.09%**	**14.5%**	**30.1%**
Brimbank	138,510	2,980	2.15%	22.5%	45.7%
Brunswick – Coburg	90,748	728	0.80%	9.5%	20.6%
Darebin – North	86,552	976	1.13%	14.3%	29.6%
Darebin – South	58,407	431	0.74%	10.2%	20.4%
Essendon	74,960	764	1.02%	14.9%	30.1%
Hobsons Bay	91,177	747	0.82%	15.7%	27.7%
Keilor	65,351	591	0.91%	14.4%	26.7%
Macedon Ranges	32,405	124	0.38%	6.5%	13.7%
Maribyrnong	75,445	1,138	1.51%	20.5%	38.2%
Melbourne City	148,855	2,241	1.51%	7.7%	18.4%
Melton – Bacchus Marsh	250,964	2,625	1.05%	16.0%	32.5%
Moreland – North	80,970	694	0.86%	9.1%	20.0%
Sunbury	46,487	228	0.49%	8.8%	17.6%
Tullamarine – Broadmeadows	211,861	1,899	0.90%	13.2%	24.9%
Wyndham	300,008	3,147	1.05%	12.8%	29.3%
Yarra	88,683	828	0.93%	13.9%	33.8%
South Eastern Melbourne PHN	**1,585,571**	**14,364**	**0.91%**	**13.1%**	**27.9%**
Bayside	104,620	701	0.67%	8.0%	16.6%

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PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Cardinia	118,015	652	0.55%	7.2%	19.6%
Casey – North	109,867	1,065	0.97%	12.5%	27.7%
Casey – South	274,474	2,361	0.86%	11.2%	23.8%
Dandenong	193,178	4,119	2.13%	21.4%	45.2%
Frankston	126,350	698	0.55%	9.0%	17.9%
Glen Eira	149,843	1,453	0.97%	11.4%	22.2%
Kingston	127,220	934	0.73%	8.7%	18.4%
Mornington Peninsula	173,902	743	0.43%	5.5%	12.4%
Port Phillip	105,679	751	0.71%	7.9%	20.0%
Stonnington – East	35,440	307	0.87%	11.1%	23.1%
Stonnington – West	66,982	579	0.86%	8.8%	20.9%
Gippsland PHN	**296,944**	**984**	**0.33%**	**9.0%**	**17.9%**
Baw Baw	55,143	173	0.31%	7.5%	17.9%
Gippsland – East	47,039	152	0.32%	7.2%	18.4%
Gippsland – South West	72,683	225	0.31%	10.2%	19.5%
Latrobe Valley	78,428	288	0.37%	9.0%	17.0%
Wellington	43,651	146	0.33%	11.0%	16.4%
Murray PHN	**645,534**	**2,461**	**0.38%**	**9.2%**	**20.8%**
Albury	68,227	272	0.40%	4.0%	14.0%
Bendigo	113,809	419	0.37%	13.4%	36.3%
Campaspe	37,812	113	0.30%	5.3%	14.1%
Heathcote – Castlemaine – Kyneton	45,833	135	0.29%	12.6%	25.9%
Loddon – Elmore	8,232	23	0.28%	#	#
Mildura	55,464	291	0.53%	10.3%	18.9%
Moira	31,171	96	0.31%	#	#
Murray River – Swan Hill	36,688	193	0.53%	12.4%	25.4%
Shepparton	67,259	344	0.51%	9.3%	15.1%
Upper Goulburn Valley	57,586	173	0.30%	8.1%	16.1%
Wangaratta – Benalla	47,504	136	0.29%	5.2%	19.9%
Wodonga – Alpine	75,950	264	0.35%	7.2%	14.4%
Western Victoria PHN	**690,272**	**2,425**	**0.35%**	**8.9%**	**18.3%**
Ballarat	131,546	441	0.34%	8.2%	12.9%
Barwon – West	20,256	51	0.25%	#	#
Colac – Corangamite	36,737	113	0.31%	10.7%	19.5%

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PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Creswick – Daylesford – Ballan	23,985	65	0.27%	#	#
Geelong	223,107	983	0.44%	11.6%	25.9%
Glenelg – Southern Grampians	37,131	103	0.28%	#	#
Grampians	58,789	191	0.32%	6.3%	12.0%
Maryborough – Pyrenees	18,651	51	0.27%	#	#
Surf Coast – Bellarine Peninsula	87,672	259	0.30%	6.2%	10.8%
Warrnambool	52,398	168	0.32%	8.3%	15.5%

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

Data suppressed where number receiving treatment or care was <6. SA3s not listed where population was <3000.

WESTERN AUSTRALIA

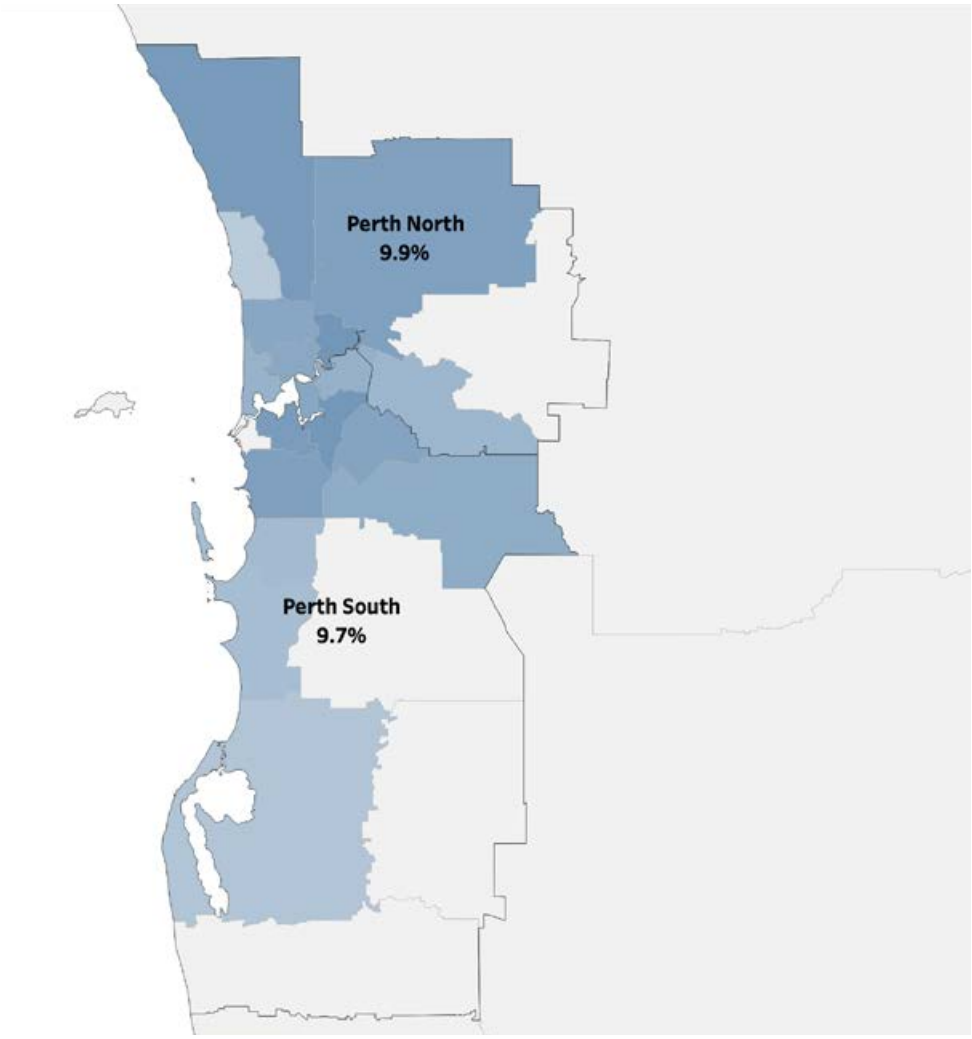
- CHB treatment uptake in WA in 2022 was 8.6%, lower than the national average of 12.9%.
- CHB care uptake in WA in 2022 was 12.7%, lower than the national average of 25.5%.
- WA ranked 8th for both CHB treatment uptake and for CHB care uptake of the eight states and territories.
- Treatment and care uptake were highest in the two PHNs in the Perth metropolitan region, with lower uptake in more regional areas.
- Treatment numbers in WA increased between 2018 and 2022 by an amount similar to the national average, while monitoring increased slightly in contrast with a national declining trend.

CHB TREATMENT

CHB treatment in WA overall was 8.6%, lower than the national average of 12.9%. Treatment uptake was similar in the **Perth North** (9.9%) and **Perth South** (9.7%) PHNs (Figure A.34, Table A.23). Treatment uptake was highest in the Bayswater – Bassendean (12.3%) and Wanneroo (11.6%) SA3s in **Perth North**, and in Canning (12.1%) and Melville (11.4%) SA3s in **Perth South** (Table A.23).

Treatment uptake in the **Country WA** PHN, where more than half of all people living with CHB live in remote areas (Figure A.4), was 3.7%, lower than the state average. Treatment uptake appeared to be similar across SA3s, ranging from 3 to 5%; however, low numbers limited robust comparisons across these regions (Figure A.35).

Figure A.34: Geographic variation in CHB treatment uptake in Greater Perth, by PHN and SA3, 2022

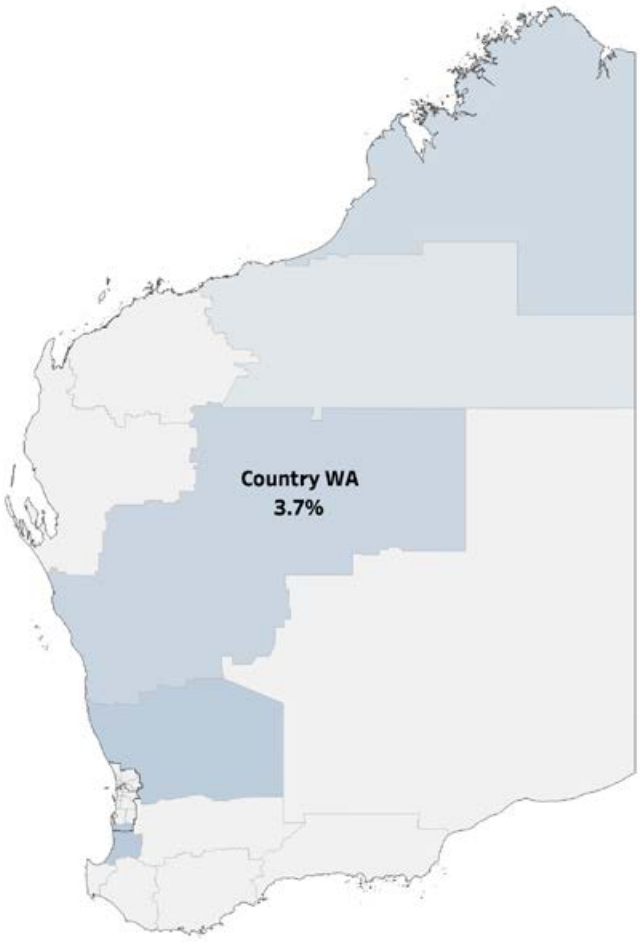


ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Figure A.35: Geographic variation in CHB treatment uptake in WA (other than Greater Perth), by PHN and SA3, 2022



ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Key: Darker shade of blue denotes higher treatment uptake. PHN outlines, names and overall treatment estimates are denoted in black. Grey areas represent SA3 regions outside the boundary of the PHN, or those with data suppressed due to low treatment numbers (<6).

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

CHB CARE

Care uptake within WA was higher in the **Perth North** and **Perth South** (both 14.2%) PHNs than in **Country WA** (6.2%), reflecting treatment trends. Care uptake within WA generally reflected treatment uptake, being higher in metropolitan compared to rural areas. Although some metropolitan regions had lower uptake, care uptake generally ranged between 10 and 20% within these PHNs. Care uptake in **Perth North** and **Perth South** ranked disproportionately low compared to the national average for care uptake (24th and 25th) compared to treatment uptake (12th and 13th respectively). This may reflect testing occurring outside of Medicare which is leading to underestimation of monitoring uptake.

Within **Country WA**, it was not possible to fully assess variation due to the number of SA3s with populations too low for accurate estimation.

Table A.23: CHB prevalence, treatment uptake, and care uptake in WA by PHN and SA3, 2022

PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Perth North PHN	**1,177,546**	**8,930**	**0.76%**	**9.9%**	**14.2%**
Bayswater – Bassendean	89,982	870	0.97%	12.3%	16.9%
Cottesloe – Claremont	67,837	454	0.67%	8.2%	12.6%
Joondalup	164,833	839	0.51%	4.9%	8.2%
Kalamunda	56,473	287	0.51%	7.7%	12.2%
Mundaring	26,678	113	0.42%	#	#
Perth City	137,320	1,124	0.82%	9.7%	14.3%
Stirling	230,275	2,118	0.92%	9.8%	13.0%
Swan	178,634	1,391	0.78%	10.7%	16.9%
Wanneroo	225,514	1,735	0.77%	11.6%	16.3%
Perth South PHN	**1,103,335**	**8,292**	**0.75%**	**9.7%**	**14.2%**
Armadale	101,338	714	0.70%	9.1%	14.2%
Belmont – Victoria Park	79,306	760	0.96%	8.4%	13.4%
Canning	163,098	1,919	1.18%	12.1%	18.2%
Cockburn	142,867	990	0.69%	10.8%	15.1%
Fremantle	34,969	157	0.45%	#	#
Gosnells	87,536	819	0.94%	10.3%	14.5%
Kwinana	49,209	356	0.72%	7.0%	11.8%
Mandurah	113,788	530	0.47%	5.7%	7.2%
Melville	105,522	817	0.77%	11.4%	17.3%
Rockingham	144,520	689	0.48%	6.7%	8.0%
Serpentine – Jarrahdale	34,518	168	0.49%	#	#
South Perth	46,665	374	0.80%	9.9%	14.4%
Country WA PHN	**530,469**	**4,224**	**0.80%**	**3.7%**	**6.2%**
Albany	64,217	330	0.51%	#	#
Augusta – Margaret River – Busselton	59,953	200	0.33%	#	#
Bunbury	114,172	446	0.39%	4.9%	9.6%
East Pilbara	22,966	403	1.76%	1.5%	4.5%
Esperance	15,823	83	0.52%	#	#
Gascoyne	8,935	127	1.42%	#	#
Goldfields	36,245	357	0.99%	#	#
Kimberley	33,941	1,137	3.35%	3.0%	5.9%
Manjimup	23,819	90	0.38%	#	#

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PHN and SA3	Total population	People living with CHB	CHB prevalence (%)	Treatment uptake (%)	Care uptake (%)
Mid West	54,212	394	0.73%	3.6%	5.6%
West Pilbara	27,494	331	1.20%	#	#
Wheat Belt – North	50,101	239	0.48%	4.6%	7.1%
Wheat Belt – South	18,593	85	0.46%	#	#

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. PHN, Primary Health Network. SA3, Statistical Area 3.

Data source: CHB prevalence estimates based on mathematical modelling incorporating population-specific prevalence and ABS population data. Treatment data sourced from Medicare statistics.

Totals may not add up due to inclusion of people without an SA3 of residence recorded in source data.

Data suppressed where number receiving treatment or care was <6. SA3s not listed where population was <3000.

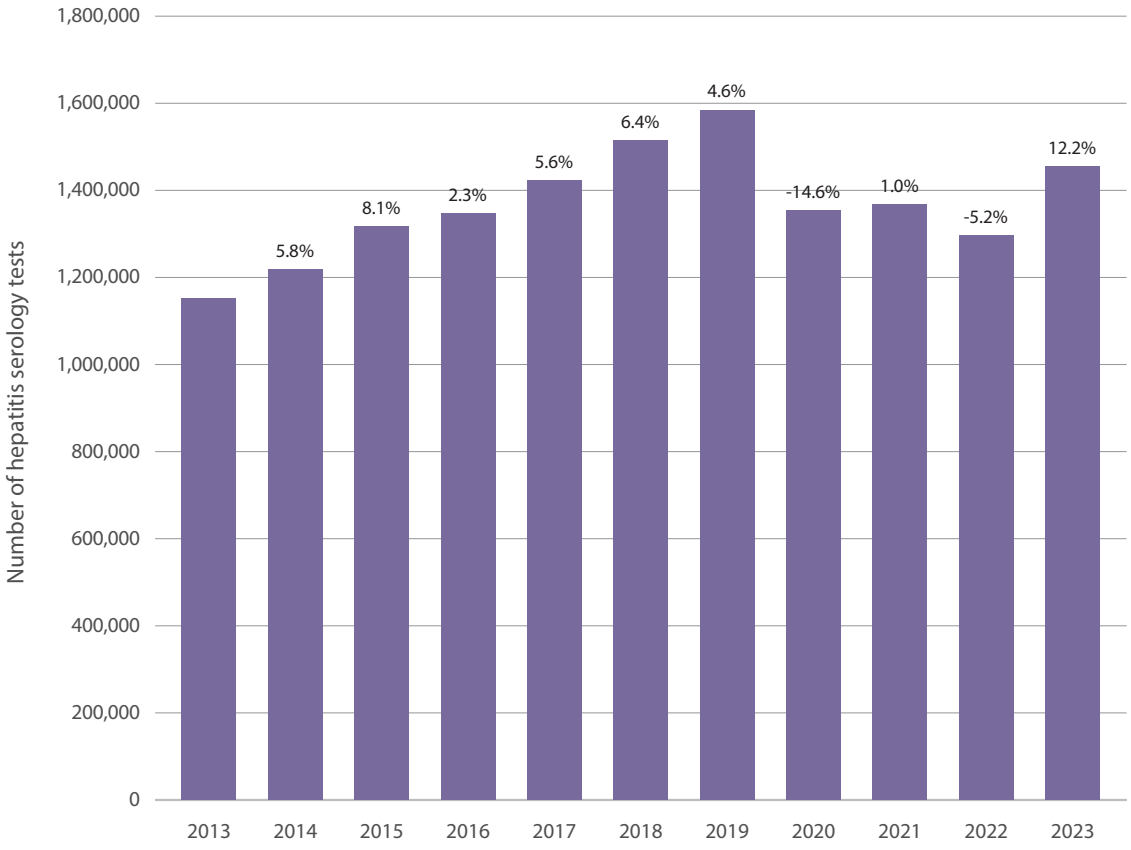
SECTION B: VIRAL HEPATITIS SEROLOGY TESTING TRENDS

The essential first step in the cascade of care for hepatitis B and hepatitis C is diagnosis, which requires serological testing to identify a person's status. Data are available from Medicare regarding the number of viral hepatitis serology tests conducted. Trends in these data can provide evidence about the level of testing, which needs to increase if National Strategy targets for hepatitis B and C diagnosis are to be met. Although the Medicare item for these tests does not distinguish which hepatitis serology test is being conducted, it is likely that the majority of tests are for diagnosing hepatitis B and C, and for monitoring hepatitis B.

The number of hepatitis serology tests had previously been consistently increasing over time, by an average of 6.3% per year between 2013 and 2019 (Figure B.1). This increase occurred in all states and territories, with an average yearly increase of between 2 and 8%.

However, in 2020, the number of viral hepatitis serology test items declined by 14.6%, reducing from 1,584,349 in 2019 to 1,353,508 in 2020 (Figure B.1). The number of tests declined rapidly from April 2020 onwards, during the first period of widespread social distancing and travel restrictions in response to the COVID-19 pandemic in Australia. After stable numbers in 2021 and further declines in 2022, there was a substantial increase in serology testing in 2023 (Figure B.1). May 2023 represented the first month in which the number of tests occurring was higher than the level in March 2020. Despite this upward trend, the number of tests in 2023 was still 8.2% lower than the number in 2019. This represents 1,922,661 fewer hepatitis serology tests occurring during 2020–2023 than would have been expected if trends had remained stable from 2019 onwards.

Figure B.1: Number of hepatitis serology test items (bars) and proportional change from previous year (labels), by year, 2013–2023



Data source: Testing data sourced from Medicare statistics.

(see data for this figure)

EFFECT ON DIAGNOSIS

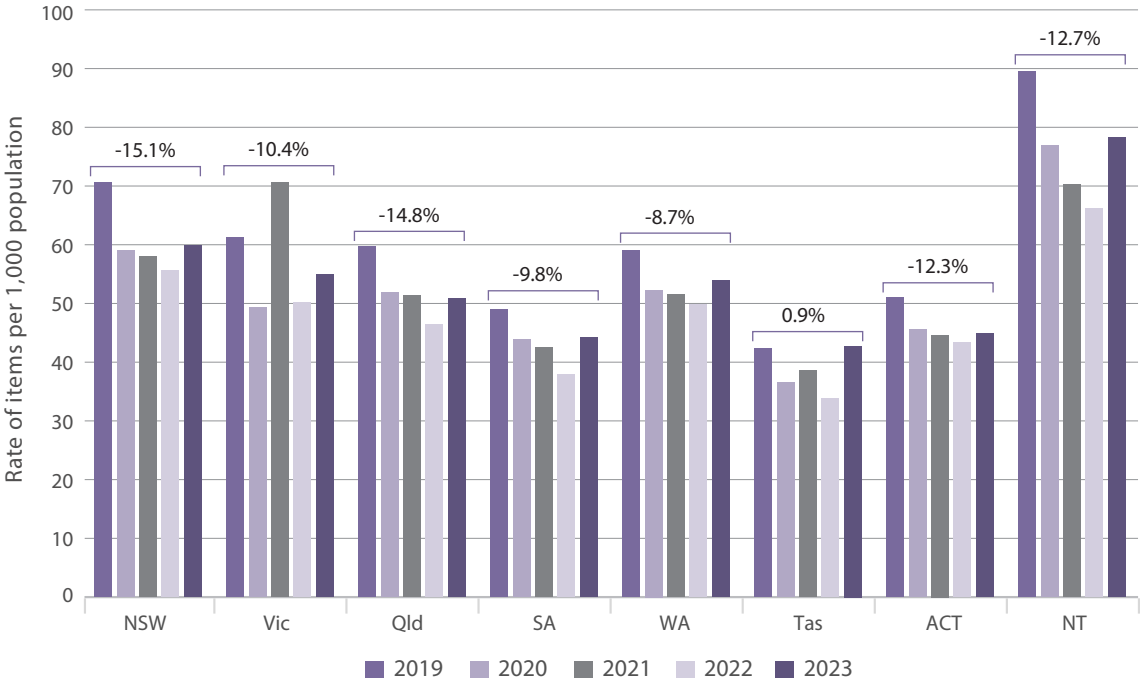
This trend in testing was reflected in unspecified (chronic) hepatitis B notifications, which declined by 12.0% in 2020 and a further 6.2% in 2021, much more rapid than the average decline of 2.8% per year during 2013–2019. Hepatitis B notifications increased in 2022 and 2023, but remained well below the number in 2019. As Australia has not reached the 2022 National Strategy target for diagnosis and the number of people living with CHB continues to increase over time, notifications need to increase in order to meet this goal.

Conversely, the decline in unspecified (chronic) hepatitis C notifications during 2020 (12.6%) was lower than the decline during 2019 (22.5%). Notifications declined by 7.6% in 2021 and 9.2% in 2022. This more stable ongoing trend is consistent with estimates that the proportion undiagnosed for hepatitis C is lower than for hepatitis B and that the number of people estimated to be living with hepatitis C is declining over time with continued treatment uptake.[18]

TRENDS BY STATE AND TERRITORY

The observed decline in the number of hepatitis serology tests between 2019 and 2023 occurred in all states and territories except Tas (Figure B.2), with an average decline in the rate of tests of 20.2%. The decline ranged from 15.2% in the ACT to 26.1% in the NT. In most states and territories, the largest decline occurred between 2019 and 2020; however, in SA and Qld there were similar declines in both 2019–2020 and 2021–2022 (Figure B.2). Testing rates increased between 2022 and 2023 in all states and territories; however, they remained below the 2019 level in all except for Tas, where they were equivalent to 2019 (Figure B.2).

Figure B.2: Rate of hepatitis serology items per 1,000 population, by state/territory and year, 2019–2023 (labels show total proportional change between 2019 and 2023)



ABS, Australian Bureau of Statistics.

Data source: Testing data sourced from Medicare statistics. Population denominator sourced from ABS Estimated Resident Population.

(see data for this figure)

SECTION C: LIVER CANCER

LIVER CANCER IN AUSTRALIA

Liver cancer remains the fastest-increasing cause of cancer death in Australia, with most cases being preventable and linked to identifiable risk factors.[19] This makes assessment of geographic variations in incidence particularly important, as it can identify regions where the burden of disease is especially high and interventions should be prioritised. Modifiable risk factors include CHB and CHC, which together are the predominant cause of liver cancer in Australia, as well as alcohol consumption, smoking, obesity, and other causes of chronic liver disease which all contribute to the incidence of liver cancer.[20, 21] Previous analyses have demonstrated the strong geographic pattern of liver cancer incidence,[22] and previous versions of the Mapping Report have presented data on incidence compared to these risk factors. Updated data are not yet available due to the delays in cancer registry reporting, and so the most recent data available (data to 2016, which were presented in the 2020 Mapping Report) are included below.

AUSTRALIAN CANCER ATLAS

The Australian Cancer Atlas is a collaborative project, led by Cancer Council Queensland, Queensland University of Technology, and FrontierSI, which aims to provide a national perspective of how the burden of cancer varies by geographical area. It draws source data from each state and territory cancer registry, which collect all cancer diagnoses through mandatory reporting requirements. It uses spatial models to generate 'smoothed' estimates at the Statistical Area 2 (SA2) level to assess variation from the national average and quantifies the certainty of these estimates. These models allow highly granular and robust measurement of variation in cancer incidence and survival, while preserving confidentiality of the data.

Permission has been given for the use of modelled estimates for liver cancer incidence from the Australian Cancer Atlas. For more detail on the Australian Cancer Atlas and to interact with the online mapping, visit atlas.cancer.org.au. The 2020 Viral Hepatitis Mapping Report assessed the proportion of SA2s which had an above-average incidence rate of liver cancer during the period 2012–2016 in each PHN, using a 60% probability cut-off for inclusion, as this suggests the area is genuinely above the Australian average (see Section D – Data sources and methodology). This analysis has been regenerated here with updated estimates of CHB and CHC prevalence. Cancer data availability is limited due to the extensive delays for many cancer registries in reporting cases; it is anticipated that in future reports, more up-to-date liver cancer data will be available.

VARIATION IN LIVER CANCER INCIDENCE ACROSS AUSTRALIA

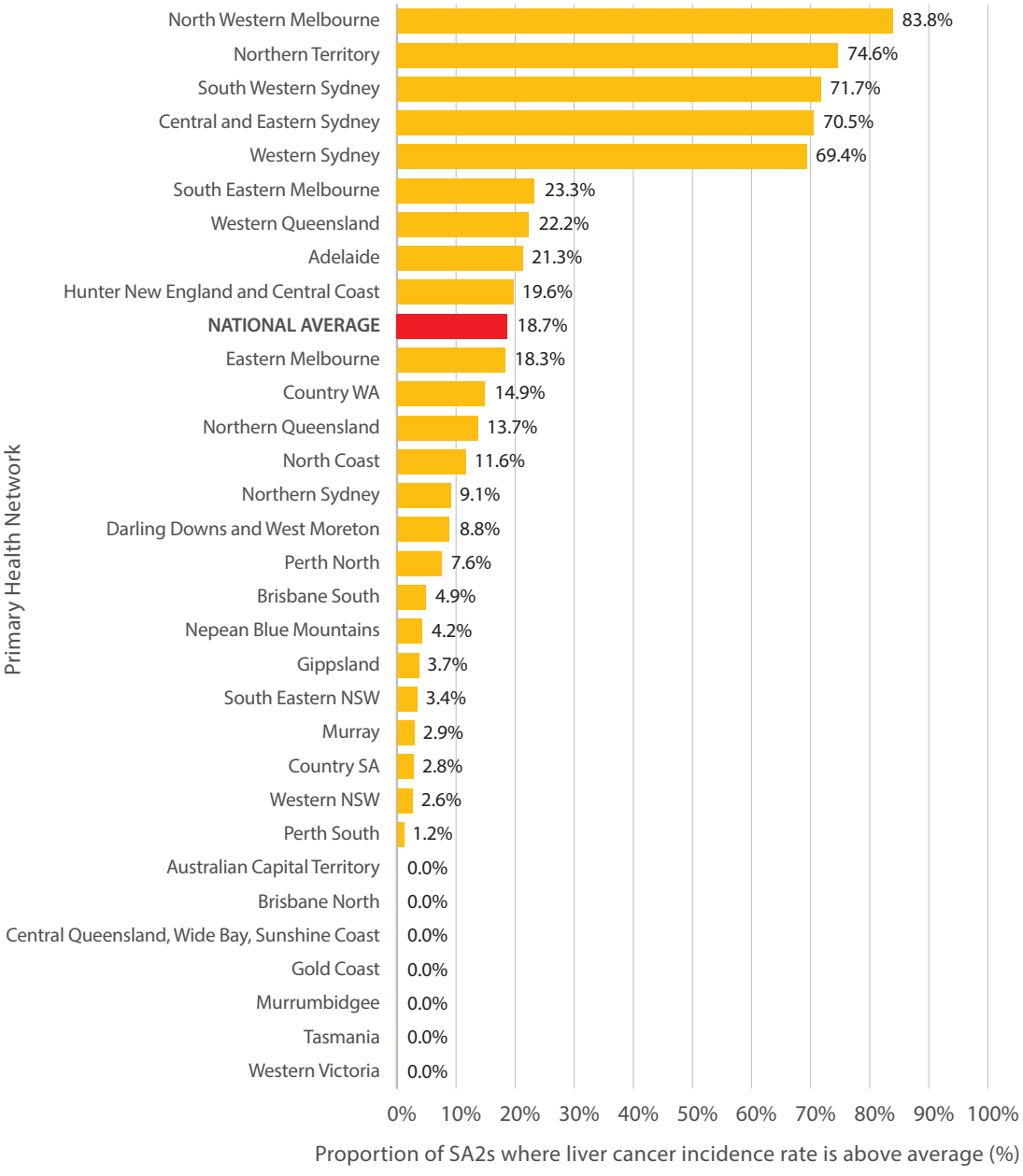
Liver cancer incidence in Australia varied widely according to region, and in some areas reached more than three times the national incidence rate. Overall in Australia, 18.7% of SA2s are estimated to have a liver cancer rate that is genuinely above the national average. As shown in Figure C.1, in the **North Western Melbourne**, **Northern Territory**, **South Western Sydney**, **Central and Eastern Sydney** and **Western Sydney** PHNs, the majority of SA2s had liver cancer rates well above average. In **South Eastern Melbourne**, **Western Queensland**, **Adelaide** and **Hunter New England and Central Coast**, the proportion of elevated-incidence SA2s was also above the national average of 18.7%.

All five PHNs where liver cancer rates were highest had above-average prevalence of CHB (**North Western Melbourne** and **Western Sydney**) or both CHB and CHC (**Northern Territory**, **Central and Eastern Sydney** and **South Western Sydney**).

The heat map below (Table C.1) shows the distribution of liver cancer rates by PHN in relation to prevalence of CHB and CHC relative to the national average, as well as other risk factors for liver cancer. A correlation between liver cancer and higher CHB prevalence is evident, with the five PHNs that had the highest proportion of high-incidence SA2s also ranking highest for CHB prevalence. In contrast, the prevalence of CHC is more evenly distributed according to region, and there are fewer regions with very high CHC prevalence. For more information about the generation of CHC prevalence variation estimates, see the Viral Hepatitis Mapping Project: Hepatitis C National Report 2021–2023.

This association between liver cancer and geography is influenced by the population distribution of people living with CHB, given that people born overseas in countries with high prevalence of CHB most often live in particular areas of capital cities such as Sydney and Melbourne. The **Northern Territory** PHN has the highest prevalence of CHB in Australia, and the majority of those affected are Aboriginal and Torres Strait Islander people.[23] There is also evidence of variation in the strain of CHB prevalent in Aboriginal and Torres Strait Islander people in the NT, which may be associated with a more severe clinical course and increased risk of liver cancer,[24] as well as poorer outcomes after diagnosis of liver cancer for Aboriginal and Torres Strait Islander people and those living in rural and remote regions.[25, 26] The ongoing impact of the legacy of colonisation, institutional racism and systemic disadvantage has a substantial impact on these geographic disparities.

Figure C.1: Proportion of SA2s within a PHN where the rate of liver cancer was above the Australian average, 2012–2016



PHN, Primary Health Network. SA2, Statistical Area 2.

Data source: Modelled estimates based on cancer registry records, produced for the Australian Cancer Atlas.

(see data for this figure)

Table C.1: Heat map of liver cancer incidence during 2012–2016 and related factors in Australia, by PHN

PHN	LIVER CANCER: Proportion of SA2s where rate was above average	CHB: Relative prevalence of CHB compared to the national average	CHC: Relative prevalence of CHC compared to the national average	OBESITY: Proportion of the adult population who were obese	SMOKING: Proportion of the adult population who were current smokers	ALCOHOL: Proportion of the adult population who consumed of ≥2 alcoholic drinks per day
NATIONAL AVERAGE	**18.7%**	-	-	**32.0**	**15.7**	**16.8**
North Western Melbourne	83.8%	+39.2%	-6.8%	32.7	16.2	11.1
Northern Territory	74.6%	+123.0%	+98.3%	29.3	21.1	21.0
South Western Sydney	71.7%	+69.9%	+7.3%	33.3	15.7	10.6
Central and Eastern Sydney	70.5%	+54.6%	+16.6%	24.3	12.3	14.3
Western Sydney	69.4%	+59.4%	-13.4%	28.9	12.8	8.3
South Eastern Melbourne	23.3%	+15.3%	-14.1%	28.7	14.6	14.4
Western Queensland	22.2%	-15.2%	+64.3%	*	*	*
Adelaide	21.3%	-14.9%	-35.5%	31.3	14.5	13.8
Hunter New England and Central Coast	19.6%	-46.4%	+17.6%	37.5	18.1	19.5
Eastern Melbourne	18.3%	+42.5%	-43.5%	26.7	12.4	13.9
Country WA	14.9%	+1.6%	+22.8%	32.8	19.9	23.7
Northern Queensland	13.7%	-22.6%	+40.4%	36.2	19.7	23.0
North Coast	11.6%	-51.5%	+64.6%	35.1	17.4	20.0
Northern Sydney	9.1%	+46.1%	-53.3%	20.1	7.9	16.6
Darling Downs and West Moreton	8.8%	-36.0%	+22.8%	37.4	17.7	17.2
Perth North	7.6%	-3.2%	-15.5%	27.0	12.5	16.9
Brisbane South	4.9%	+15.1%	+4.6%	31.1	14.2	15.3
Nepean Blue Mountains	4.2%	-27.0%	+2.8%	36.2	15.7	16.8
Gippsland	3.7%	-57.8%	+3.6%	38.2	20.3	19.7
South Eastern NSW	3.4%	-47.0%	+25.3%	35.0	16.2	18.1

Continued next page

PHN	LIVER CANCER: Proportion of SA2s where rate was above average	CHB: Relative prevalence of CHB compared to the national average	CHC: Relative prevalence of CHC compared to the national average	OBESITY: Proportion of the adult population who were obese	SMOKING: Proportion of the adult population who were current smokers	ALCOHOL: Proportion of the adult population who consumed of ≥2 alcoholic drinks per day
Murray	2.9%	-51.5%	+3.5%	38.0	19.4	19.0
Country SA	2.8%	-59.4%	-29.4%	36.5	17.8	19.2
Western NSW	2.6%	-34.1%	+78.4%	42.5	19.6	21.0
Perth South	1.2%	-4.1%	-12.5%	28.7	14.0	16.0
Australian Capital Territory	0.0%	-19.4%	-11.1%	28.6	10.1	15.0
Brisbane North	0.0%	-23.7%	+6.8%	30.9	13.2	17.1
Central Qld, Wide Bay, Sunshine Coast	0.0%	-54.9%	+12.1%	32.7	17.6	19.5
Gold Coast	0.0%	-31.0%	+13.1%	30.4	16.3	18.8
Murrumbidgee	0.0%	-46.5%	+36.9%	36.1	17.9	20.4
Tasmania	0.0%	-64.7%	+8.9%	33.6	17.9	19.0
Western Victoria	0.0%	-55.3%	-14.3%	36.1	18.4	18.7

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

Legend: Green denotes lowest proportion, relative prevalence, or rate; with a colour gradient through to red denoting highest proportion, relative prevalence, or rate.

Data source: Cancer data based on modelled estimates from the Australian Cancer Atlas. CHB prevalence variation based on mathematical modelling incorporating population-specific prevalence and ABS population data.[23] CHC prevalence variation based on published national estimates and notifications distribution. Smoking, obesity and alcohol use sourced from the Social Health Atlas produced by the Public Health Information Data Unit, and represent modelled estimates for 2018–2019, the most recent period available.

* Western Queensland data not available due to low numbers.

SECTION D: 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 D.1: Summary of data sources

Indicator	Method of estimation	Source	Basis of geographic data
CHB prevalence	Calculated using prevalence data according to population group (e.g. country of birth)	Published seroprevalence surveys 2021 ABS Census data according to population 2022 ABS estimated resident population	Postcode of residence when a person completed the 2021 Census
CHB prevalence in Aboriginal and Torres Strait Islander people	Calculated using seroprevalence study data according to state/territory, supplemented with notifications data	Published seroprevalence surveys 2021 ABS Census data according to population 2022 ABS estimated resident population NNDSS data	Postcode of residence when a person completed the 2021 Census
CHB treatment	Number of people prescribed antiviral medications indicated for hepatitis B (adefovir, entecavir, lamivudine, pegylated interferon alfa-2a or tenofovir)	PBS data	Postcode of residence when a person was dispensed treatment (as recorded in Medicare data)
CHB monitoring	Number of people who received a viral load test during the specified time period	MBS data	Postcode of residence when a person was tested (as recorded in Medicare data)
CHB care (treatment or monitoring)	Number of people who *either* received treatment *or* were provided with monitoring in the past year	MBS data	Postcode of residence when a person was tested or dispensed treatment (as recorded in Medicare data)
Hepatitis B immunisation	Proportion of children fully immunised for hepatitis B (doses at 2, 4 and 6 months) at 12 months of age	Australian Immunisation Register data	Postcode of residence for the immunised child at one year of age
Number of hepatitis serology MBS items	Number of items for hepatitis serology testing items provided through Medicare (non-specific item used for any hepatitis test)	MBS	State/territory of residence when a person was tested (as recorded in Medicare data)
Liver cancer above average	In each PHN, the proportion of SA2 regions where the incidence rate of liver cancer during 2012–2016 was 'genuinely'^ above the national average	Australian Cancer Atlas, a statistical model of cancer incidence based on data from cancer registries	Where a person was living when they were diagnosed with cancer

ABS, Australian Bureau of Statistics. CHB, chronic hepatitis B. MBS, Medicare Benefits Schedule. NNDSS, National Notifiable Diseases Surveillance System. PBS, Pharmaceutical Benefits Scheme. PHN, Primary Health Network. SA2, Statistical Area 2 (see Table D.2).

^ Thresholds for average based on 95% confidence intervals.

Table D.2: Common data terms

Term	Definition
Data suppression	Data are not reported when the number of people is fewer than six, indicated in tables using '#'. Suppression is to protect confidentiality, in accordance with data access agreements. Data are also suppressed for care uptake when the number of people is so low or the estimated proportion so high that it reduces the reliability of estimates; the threshold applied is 85%, and uptake in these areas is indicated as '>85%'.
Incidence	The number of new cases of a health condition occurring in a given time period. For example, the incidence of liver cancer refers to the number of new cases of liver cancer that have occurred.
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. Each PHN contains multiple SA3s.
Prevalence	The proportion of the total population living with a health condition. For example, if chronic hepatitis B prevalence is 1%, this means 1% of people in a given population have chronic hepatitis B.
Provider specialty	Specialty of the practitioner prescribing treatment, using the registered specialty available in Medicare data. This approach has been updated since the last report, when specialty was derived by the Department of Health and Aged Care using the practitioner's qualifications and service history (see Treatment providers).
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 used the 2016 Remoteness Area Structure as 2021 concordances were not available at the time of the generation of these prevalence estimates.
SA2	Geographic area defined by the ABS. These are smaller than SA3s; populations usually range between 3,000 to 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.
SA3	Geographic area defined by the ABS. These are larger than SA2s; populations usually range between 30,000 and 130,000 residents. This report used 2021 ABS SA3 boundaries, and excluded SA3s with a population smaller than 3,000 residents to ensure reliable reporting. There were 358 SA3s in Australia in 2021, of which 330 are included in this report as they contained sufficient total population. Treatment and care metrics are not reported if the number of individuals who have received treatment and/or care was <6. For Section A, this meant reporting was restricted to 284 SA3s.

ABS, Australian Bureau of Statistics. GP, general practitioner. PHN, Primary Health Network. SA2, Statistical Area 2. SA3, Statistical Area 3.

DETAILED STATISTICAL METHODOLOGY

Hepatitis B prevalence

Data sources

The data sources used were:

- a mathematical model of hepatitis B in Australia
- Census data according to country of birth, age, year of migration and Aboriginal and Torres Strait Islander status
- published estimates of seroprevalence.

Prevalence model

The overall number of people living with CHB in Australia and in each state and territory was estimated using a deterministic compartmental mathematical model of hepatitis B virus infection in the Australian population from 1951 to 2050, which incorporates existing mathematical models, surveillance notifications, epidemiological research, clinical studies, and demographic and mortality data.[27] Further information regarding the model can be found in the associated paper[28] and report.[5] This model is also used to estimate the proportion of people who would be eligible for hepatitis B treatment, based on the natural history and current clinical guidelines.[15, 16]

The number of people living with CHB in each region within a given state or territory was modelled based on the distribution of priority populations in that region, namely people born overseas and Aboriginal and Torres Strait Islander people. Although men who have sex with men and people who inject drugs are also priority populations for CHB, region-specific estimates for these populations are not available, so they are apportioned equally in each region using the national model.

The number of people living with CHB born in each country (including Australia) is derived using local antenatal seroprevalence data,[11, 12, 29] which were adjusted upwards to correct for the discrepancy in CHB prevalence by sex, according to the differential between males and females observed in published serosurveys.[30] Prevalence estimates for countries for which data were not available from local source estimates were generated from global systematic review papers[31, 32] These prevalence data are combined with data according to country of birth obtained from the 2021 Census. Country-of-birth designations use the most recent Australian Bureau of Statistics (ABS) Standard Australian Classification of Countries, which adopts a broad definition of 'country' that includes sovereign nation states, administrative subdivisions, external territories, and regions under disputed ownership or control.[33] This report follows ABS naming conventions for such countries.[34]

These data were extracted at the level of postcode and then assigned to each remoteness area, SA3 and PHN using the postcode of residence and concordances published by the ABS[35] and the Department of Health and Aged Care.[36] This ensured consistency with other measures used in conjunction with these estimates (such as treatment and care) which use postcode to derive geography. The total population obtained using the Census in each area was adjusted up to meet the total Australian Estimated Resident Population for December 2022.

Prevalence data for Aboriginal and Torres Strait Islander people are also derived predominantly using antenatal seroprevalence data, which were available according to birth cohort and remoteness area of residence for several states and territories.[37-39] Population-level data were also available for Queensland within the Far North region,[40, 41] and these were used to generate prevalence estimates in this area as well as in the very remote regions of Western Queensland.

For jurisdictions and regions with no seroprevalence data, notifications data were used to estimate differential prevalence according to region. These were sourced from the National Notifiable Diseases

Surveillance System (NNDSS). The remoteness classifications used were established by the ABS, and are based on measures of relative access to services. Specific Aboriginal and Torres Strait Islander population data are available from the ABS for each of these regions.[35] These data sources were combined to generate tailored figures for estimated hepatitis B prevalence in each rurality classification, within each state/territory. These estimates are available in the *2021 Mapping Report Supplement*.

CHB prevalence in men who have sex with men was estimated based on population-level data generated in Australia.[42-44] The number of men who have sex with men was estimated using age-specific data available from the Second Australian Study of Health and Relationships.[45] The prevalence of CHB in people who inject drugs in Australia was derived from a global systematic review.[46] The number of people who inject drugs was estimated using age-specific data obtained from the 2019 National Drug Strategy Household Survey.[47] Acknowledging the impact of immunisation on CHB prevalence in people born in Australia since the implementation of universal coverage policies in 2000, prevalence was reduced for both groups to the baseline for Australian-born people without specified risk factors (0.2%) for relevant age groups.

Differentiation of priority populations

Estimates according to priority population are derived as described above in the Prevalence model section, using a combination of population and prevalence data. Although a person may belong to more than one of the priority groups used to calculate prevalence, they are considered mutually exclusive for the purposes of this report due to the lack of available estimates to allow calculation of these crossover subgroups. The model prioritises country of birth and Indigenous status due to the higher risk of chronic infection in people exposed early in life, the most common route in these groups. For example, prevalence estimates for people born overseas will likely include a proportion of people who acquired their infection through injecting drug use or through sexual transmission. However, given the far greater risk of chronic infection associated with mother-to-child transmission, their country of birth is considered to be the more relevant characteristic for the purposes of identifying priority populations. For the purposes of deriving these estimates, due to the very small number of people who are in both categories, people born overseas and Aboriginal and Torres Strait Islander people are considered mutually exclusive.

Hepatitis B proportion diagnosed

Data sources

The data sources used were:

- a mathematical model incorporating hepatitis B prevalence
- notifications from the NNDSS.

The number of people living with CHB who have been diagnosed is a direct output of the model, and calibrated using NNDSS notifications data. It was calculated by summing diagnosed health states and treatment health states within the model, to give the yearly total number of people living with CHB who have been diagnosed. The proportion of people living with CHB in Australia who have been diagnosed is the number of people living with CHB who have ever been diagnosed divided by the total number of people living with CHB in Australia in a given year. More information on source information and methodology can be found in the referenced report and publication.[5, 22, 28]

- Based on evidence from linkage studies conducted in Vic and NSW, 8% of notified cases of CHB were presumed to be duplicates across jurisdictions, and the number of people estimated to be diagnosed was reduced accordingly.

Hepatitis B testing, treatment and care

Data sources

The data sources used were:

- MBS records
- PBS records.

These sources include 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. Analysis of hepatitis B treatment and care uptake is done for each year. For most analyses, the period to 31 December 2022 was used to capture a full year of data; 2023 data are included in Section B.

Regions of residence were assigned using the postcode of a person's residence at the time of the prescription dispensing or service provision. Postcodes were assigned to each SA3 using the concordances published by the ABS.[30,40,41] These SA3s were then assigned to each remoteness area and PHN using the postcode of residence and concordances published by the ABS[30] and the Department of Health and Aged Care.[36] These residential details depend on a person updating their information with Medicare, so they may not have been up to date for all people. All time periods are based on the date of supply/date of service, which represents the date the patient was supplied with their medication by a pharmacy (for treatment) or the date a test was performed (for testing).

These data do not include services that were not provided by Medicare, such as those paid for out-of-pocket or subsidised by state government services (including services provided to hospital inpatients). Previous analyses and comparison with other source data demonstrated that the vast majority of viral load testing and treatment services for patients with hepatitis B are provided through Medicare and included in these estimates;[48] however, this is not the case in some regions, such as SA (see Care across states and territories). The data will also not include those ineligible for Medicare; for example, due to their visa status.

Ascertainment of age and sex in Medicare

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

Provider specialty

Requesting provider (for ordering of tests) and prescriber (for treatment) specialty is provided in Medicare data, and reflects the registered specialty. Complete data regarding prescriber specialty for hepatitis B treatment was available for the period January 2020 – December 2022. Previous analysis used the derived provider specialty generated by the Department of Health and Aged Care; however, this is subject to imprecision, and underestimated prescribing by nurse practitioners (NPs) in particular due to misclassification.[13] 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). Proportions by provider are of the total who received treatment or testing.

Two measures of GP prescribing uptake were used: GP only, where all treatment prescriptions in a given year were prescribed by a GP, and shared care, where both a GP and another provider (non-GP specialist or other provider such as an NP) prescribed treatment prescriptions during the given year.

These two groups were combined to assess the total proportion where a GP was involved in treatment prescribing, i.e. prescribed one or more of the prescriptions.

Treatment

Treatment data for CHB represent the number of people prescribed any drug listed on the PBS for the treatment of CHB (adefovir, entecavir, lamivudine, pegylated interferon alfa-2a and tenofovir).[49]

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

Hepatitis B monitoring and care

Hepatitis B monitoring is measured using viral load testing (MBS items 68482 and 69483), which is an essential component of the recommended care for people with CHB regardless of whether or not they are receiving treatment.

The main measure of hepatitis B monitoring used is the composite 'in care' indicator, which is defined as receiving either treatment or a viral load test in the past 12 months. This indicator includes viral load tests only for people who have not been prescribed any hepatitis B treatment in the past 12 months.

Three other hepatitis B viral load measures are used in reporting, which assess longitudinal engagement: the proportion who had at least one viral load test in the past seven years, the proportion who had three or more tests (reflecting testing approximately every two years), and the proportion who had six or more tests (representing testing at least annually). These measures include people who had a viral load test and are receiving treatment, as well as people who are not receiving treatment.

Hepatitis B projections

Future projections for hepatitis B at the national and state/territory level were derived from the National Hepatitis B Indicators Report 2022.[5] These projections incorporate population, demographic, migration, vaccine uptake and mortality data.

PHN-level projections were not generated in this report because of the extremely high uncertainty in future total population, CHB prevalence, and treatment and care uptake trends, as well as anticipated future changes to targets in the upcoming Fourth National Strategy 2023–2030.

Immunisation coverage

Data source

The data source used was the Australian Immunisation Register (AIR).

The immunisation schedule for hepatitis B includes three doses of vaccine at two, four and six months, and the AIR records data regarding what proportion of children received complete immunisation by the age of 12 months. The AIR is a national register that includes all children registered with Medicare, and coverage is estimated to be 99% of all Australian children.

Publicly available coverage data were obtained by PHN for all children and for Aboriginal and Torres Strait Islander children.[50] Data for overall coverage at the national level were obtained from reporting by the National Centre for Immunisation Research and Surveillance.[51]

Viral hepatitis serology testing – national, state and territory trends

Data source

The data source used was MBS records.

Data were extracted from the publicly available data reported by Services Australia regarding MBS items 69475, 69478 and 69481, which provide for hepatitis serology testing (hepatitis A–E included, but predominantly hepatitis B and C). The items provide for one, two or three hepatitis serology tests, respectively. The aggregate number of items provided through the MBS was assessed for each month from January 2013 to December 2023. The proportional change each year was calculated during this period, as well as the expected number for 2020–2023 based on linear projection of the trend observed during 2013–2019.

Data were extracted for each state and territory, and analysed as rates per 1,000 population using ABS Estimated Resident Population for June of each year from 2013 to 2023.

Unlike other estimates presented in this report derived from Medicare data, these data are not disaggregated to the individual level, so may represent the same person tested multiple times.

Trends in serology testing were contextualised using unspecified (chronic) hepatitis B and C notification rates by state and territory, extracted from the publicly available data provided by the NNDSS.

LIVER CANCER

Data source

The data source used was Australian Cancer Atlas.

The Australian Cancer Atlas is a collaborative project led by Cancer Council Queensland, Queensland University of Technology and FrontierSI, which aims to provide a national perspective of how the burden of cancer varies by geographical area. It uses spatial models to generate estimates at the SA2 level, allowing highly robust and granular measurement of variation in cancer incidence and survival while preserving data privacy and confidentiality. The Atlas assesses variation in the cancer incidence and survival between 2,148 SA2 areas across Australia for 20 different cancers.

The Australian Cancer Atlas estimates are produced using Bayesian statistical model methods on cancer incidence data supplied by Australia's state and territory cancer registries through the Australian Cancer Database (held by the Australian Institute of Health and Welfare). Modelling is used to generate 'smoothed' estimates of the risk of being diagnosed with cancer, and the excess deaths associated with a cancer diagnosis. These models generate smoothed estimates by assuming that the average risk of cancer diagnosis or the average excess death rate due to cancer in any one area is likely to be similar to the corresponding risk in its neighbouring areas.

Therefore, this modelling allows researchers to make stable estimates by small geographical areas, while also reflecting and quantifying the uncertainty of estimates. The estimates in the Australian Cancer Atlas then allow for more accurate and appropriate comparisons to be made between different geographic areas in Australia, based on comparisons against the Australian averages. The model enables decision-making by clearly identifying areas that are genuinely different from the national average (defined as a probability >60%).[52]

All modelled estimates are age-standardised, which accounts for variations in the age structure between regions of Australia, and means that differences in rates are not due to these variations.

Permission has been given for use of the modelled liver cancer incidence estimates in the National Viral Hepatitis Mapping Report. For more detail on the methods of the Australian Cancer Atlas and the Bayesian statistical model they use for their estimates, visit atlas.cancer.org.au.

In this report, we assessed the proportion of SA2s which had an above-average incidence rate of liver cancer in each PHN, using the 60% probability cut-off for inclusion, as this suggests the area's incidence rate is genuinely above the Australian average. PHNs were then ranked according to the proportion of SA2s that had above-average rates.

Liver cancer risk factors

Data regarding the rates of obesity, smoking and alcohol were obtained from the Social Health Atlases of Australia 2018, which is published by the Public Health Information Development Unit of Torrens University Australia.[53] These indicators are generated based on data gathered from the Australian National Health Survey 2014–15, which was conducted during 2014–2015 among approximately 19,000 participants.[54]

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DATA TABLES TO ACCOMPANY FIGURES

Figure A.1: CHB cascade of care, Australia, 2022

Cascade category	Number of people	Proportion of total living with CHB
Living with chronic hepatitis B infection	205,549	
Diagnosed	148,159	72.1%
Undiagnosed	57,390	27.9%
Engaged in care	52,515	25.5%
Not in care	153,034	74.5%
2018–2022 Treatment target	41,110	20.0%
Receiving treatment	26,504	12.9%
Not receiving treatment	14,606	7.1%

Return to figure in text

Figure A.2: Estimated prevalence of CHB by PHN, 2022

Primary Health Network	Proportion of the population living with CHB (%)
Northern Territory	1.72%
South Western Sydney	1.34%
Western Sydney	1.25%
Central and Eastern Sydney	1.22%
Northern Sydney	1.15%
Eastern Melbourne	1.12%
North Western Melbourne	1.09%
Brisbane South	0.91%
South Eastern Melbourne	0.91%
Country WA	0.80%
NATIONAL AVERAGE	**0.78%**
Perth North	0.76%
Perth South	0.75%
Adelaide	0.68%
Western Queensland	0.67%
Australian Capital Territory	0.63%
Northern Queensland	0.61%
Brisbane North	0.60%
Nepean Blue Mountains	0.57%
Gold Coast	0.55%
Western NSW	0.52%
Darling Downs and West Moreton	0.51%
Hunter New England and Central Coast	0.42%
Murrumbidgee	0.42%
South Eastern NSW	0.42%
North Coast	0.38%
Murray	0.38%
Central Queensland, Wide Bay, Sunshine Coast	0.36%
Western Victoria	0.35%
Gippsland	0.33%
Country SA	0.32%
Tasmania	0.28%

Return to figure in text

Figure A.3: Estimated number of people living with CHB by PHN (prevalence in brackets), 2022

Primary Health Network	Estimated number of people living with CHB, 2022
North Western Melbourne (1.09%)	20,142
Central and Eastern Sydney (1.22%)	19,357
Eastern Melbourne (1.12%)	17,891
Western Sydney (1.25%)	14,469
South Eastern Melbourne (0.91%)	14,364
South Western Sydney (1.34%)	13,838
Northern Sydney (1.15%)	10,720
Brisbane South (0.91%)	10,716
Perth North (0.76%)	8,930
Adelaide (0.68%)	8,896
Perth South (0.75%)	8,292
Brisbane North (0.6%)	7,209
Hunter New England and Central Coast (0.42%)	5,599
Northern Territory (1.72%)	4,360
Northern Queensland (0.61%)	4,310
Country WA (0.8%)	4,224
Gold Coast (0.55%)	3,642
Darling Downs and West Moreton (0.51%)	3,296
Central Queensland, Wide Bay, Sunshine Coast (0.36%)	3,264
Australian Capital Territory (0.63%)	2,927
South Eastern NSW (0.42%)	2,661
Murray (0.38%)	2,461
Western Victoria (0.35%)	2,425
Nepean Blue Mountains (0.57%)	2,209
North Coast (0.38%)	2,075
Western NSW (0.52%)	1,737
Tasmania (0.28%)	1,621
Country SA (0.32%)	1,617
Murrumbidgee (0.42%)	1,007
Gippsland (0.33%)	984
Western Queensland (0.67%)	308

Return to figure in text

Figure A.4: Proportion of people living with CHB according to remoteness of residence, by PHN, ordered by CHB prevalence (in brackets), 2022

Primary Health Network	Major cities	Inner regional	Outer regional	Remote	Very remote
Northern Territory (1.72%)	0.0%	0.0%	34.0%	36.6%	29.3%
South Western Sydney (1.34%)	97.5%	2.5%	0.0%	0.0%	0.0%
Western Sydney (1.25%)	100.0%	0.0%	0.0%	0.0%	0.0%
Central and Eastern Sydney (1.22%)	100.0%	0.0%	0.0%	0.0%	0.0%
Northern Sydney (1.15%)	100.0%	0.0%	0.0%	0.0%	0.0%
Eastern Melbourne (1.12%)	100.0%	0.0%	0.0%	0.0%	0.0%
North Western Melbourne (1.09%)	99.4%	0.6%	0.0%	0.0%	0.0%
Brisbane South (0.91%)	99.1%	0.9%	0.0%	0.0%	0.0%
South Eastern Melbourne (0.91%)	100.0%	0.0%	0.0%	0.0%	0.0%
Country WA (0.8%)	0.0%	21.0%	29.8%	19.3%	29.9%
NATIONAL AVERAGE (0.78%)	**83.8%**	**8.2%**	**5.0%**	**1.5%**	**1.4%**
Perth North (0.76%)	100.0%	0.0%	0.0%	0.0%	0.0%
Perth South (0.75%)	100.0%	0.0%	0.0%	0.0%	0.0%
Adelaide (0.68%)	100.0%	0.0%	0.0%	0.0%	0.0%
Western Queensland (0.67%)	0.0%	0.0%	0.0%	73.2%	26.8%
Australian Capital Territory (0.63%)	100.0%	0.0%	0.0%	0.0%	0.0%
Northern Queensland (0.61%)	0.0%	11.2%	81.3%	0.0%	7.5%
Brisbane North (0.6%)	97.1%	2.9%	0.0%	0.0%	0.0%
Nepean Blue Mountains (0.57%)	97.8%	2.2%	0.0%	0.0%	0.0%
Gold Coast (0.55%)	98.5%	1.5%	0.0%	0.0%	0.0%
Western NSW (0.52%)	0.0%	60.1%	27.0%	12.9%	0.0%
Darling Downs and West Moreton (0.51%)	50.4%	43.6%	6.0%	0.0%	0.0%
Hunter New England and Central Coast (0.42%)	63.8%	30.3%	5.9%	0.0%	0.0%
Murrumbidgee (0.42%)	0.0%	72.3%	27.7%	0.0%	0.0%
South Eastern NSW (0.42%)	64.6%	22.0%	13.3%	0.0%	0.0%
North Coast (0.38%)	15.6%	72.8%	11.6%	0.0%	0.0%
Murray (0.38%)	0.0%	80.3%	19.7%	0.0%	0.0%
Central Queensland, Wide Bay, Sunshine Coast (0.36%)	37.4%	57.0%	5.7%	0.0%	0.0%
Western Victoria (0.35%)	40.5%	47.3%	12.1%	0.0%	0.0%
Gippsland (0.33%)	0.0%	84.5%	15.5%	0.0%	0.0%
Country SA (0.32%)	9.1%	33.5%	46.0%	11.4%	0.0%
Tasmania (0.28%)	0.0%	80.9%	19.1%	0.0%	0.0%

Return to figure in text

Figure A.5: People living with CHB in Australia, by priority population,* 2022

Priority population	Proportion of total
People who inject drugs	3.1%
Men who have sex with men	4.1%
Aboriginal and/or Torres Strait Islander people	6.7%
Australian-born non-Indigenous people outside priority populations	16.1%
People born in North East Asia	23.0%
People born in South East Asia	22.5%
People born in Sub-Saharan Africa	4.3%
People born in Southern & Eastern Europe	5.9%
People born in North Africa & Middle East	3.4%
People born in Oceania (excluding Australia)	4.6%
People born in the Americas	1.0%
People born in Southern & Central Asia	3.1%
People born in North West Europe	2.3%

Return to figure in text

Figure A.6: Number (bars) and proportion (labels) of people born overseas and living with CHB in Australia, by country of birth (top 30 countries), 2022

Country of birth	Number of people living with CHB (%)
China	18.3%
Vietnam	10.3%
Philippines	4.0%
New Zealand	2.5%
Malaysia	1.9%
Greece	1.8%
Thailand	1.7%
Cambodia	1.6%
Italy	1.5%
Hong Kong (SAR of China)	1.5%
Taiwan	1.4%
England	1.4%
Korea, Republic of (South)	1.2%
India	1.2%
Myanmar	1.0%
Indonesia	0.94%
Turkey	0.63%
Mauritius	0.60%
Singapore	0.58%
Samoa	0.56%
Afghanistan	0.51%
Lebanon	0.51%
Kenya	0.50%
Somalia	0.48%
Nigeria	0.48%
Tonga	0.47%
Papua New Guinea	0.47%
Sudan	0.44%
Nepal	0.43%
Laos	0.39%

Return to figure in text

Figure A.7: Proportion of people living with CHB according to priority population, by PHN, ordered by CHB prevalence (in brackets), 2022

Primary Health Network and CHB prevalence	Proportion Aboriginal and/or Torres Strait Islander people	Proportion Australian-born non-Indigenous people	Proportion People born overseas
Northern Territory (1.72%)	66.8%	8.3%	24.9%
South Western Sydney (1.34%)	1.2%	13.3%	85.5%
Western Sydney (1.25%)	0.8%	12.4%	86.8%
Central and Eastern Sydney (1.22%)	0.6%	14.8%	84.6%
Northern Sydney (1.15%)	0.3%	16.3%	83.4%
Eastern Melbourne (1.12%)	0.4%	18.7%	80.9%
North Western Melbourne (1.09%)	0.5%	17.3%	82.2%
South Eastern Melbourne (0.91%)	0.5%	22.8%	76.7%
Brisbane South (0.91%)	3.8%	21.9%	74.2%
Country WA (0.80%)	57.0%	18.0%	25.0%
NATIONAL AVERAGE (0.78%)	**6.7%**	**23.3%**	**70.0%**
Perth North (0.76%)	2.4%	24.8%	72.8%
Perth South (0.75%)	3.2%	24.9%	72.0%
Adelaide (0.68%)	3.3%	27.8%	69.0%
Western Queensland (0.67%)	57.2%	19.4%	23.4%
Australian Capital Territory (0.63%)	1.5%	27.6%	70.9%
Northern Queensland (0.61%)	39.7%	23.1%	37.2%
Brisbane North (0.60%)	5.3%	36.2%	58.5%
Nepean Blue Mountains (0.57%)	5.5%	41.1%	53.4%
Gold Coast (0.55%)	4.9%	24.3%	70.7%
Western NSW (0.52%)	49.4%	31.3%	19.3%
Darling Downs and West Moreton (0.51%)	13.6%	37.7%	48.7%
Hunter New England and Central Coast (0.42%)	19.1%	44.6%	36.3%
Murrumbidgee (0.42%)	25.2%	40.3%	34.4%
South Eastern NSW (0.42%)	11.9%	38.3%	49.8%
North Coast (0.38%)	23.1%	42.9%	34.0%
Murray (0.38%)	6.0%	46.5%	47.4%
Central Queensland, Wide Bay, Sunshine Coast (0.36%)	11.7%	43.4%	44.9%
Western Victoria (0.35%)	3.0%	50.3%	46.6%
Gippsland (0.33%)	4.2%	53.9%	42.0%
Country SA (0.32%)	16.0%	51.4%	32.6%
Tasmania (0.28%)	7.4%	45.2%	47.4%

Return to figure in text

Figure A.8: Number of people receiving treatment for CHB, 2016–2022, compared to National Strategy 2022 target level

Year	Total people on treatment
2016	17,714
2017	19,510
2018	21,237
2019	22,828
2020	24,014
2021	25,410
2022	26,504

Return to figure in text

Figure A.9: Number of people receiving treatment for CHB, by year and past treatment history status, 2016–2022 (note separate truncated axes)

Year	Total people treated in previous year	Total people not treated in previous year
2016	14,572	3,126
2017	16,178	3,332
2018	17,675	3,562
2019	19,268	3,560
2020	20,505	3,509
2021	21,832	3,578
2022	23,002	3,502

Return to figure in text

Figure A.10: CHB treatment uptake (bars and in brackets) and ranking (label) by PHN, 2022

Primary Health Network	Treatment uptake 2022	Treatment uptake rank 2022
South Western Sydney	20.6%	1st
Western Sydney	18.0%	2nd
Northern Sydney	16.4%	3rd
Central and Eastern Sydney	15.8%	4th
Australian Capital Territory	15.8%	5th
North Western Melbourne	14.5%	6th
Eastern Melbourne	14.1%	7th
Brisbane South	13.8%	8th
South Eastern Melbourne	13.1%	9th
NATIONAL AVERAGE	**12.9%**	
Adelaide	12.0%	10th
Northern Territory	11.5%	11th
Perth North	9.9%	12th
Perth South	9.7%	13th
Tasmania	9.4%	14th
Murray	9.2%	15th
Gold Coast	9.1%	16th
Gippsland	9.0%	17th
Western Victoria	8.9%	18th
Nepean Blue Mountains	8.9%	19th
South Eastern NSW	8.3%	20th
Brisbane North	8.3%	21st
Central Queensland, Wide Bay, Sunshine Coast	7.6%	22nd
North Coast	7.2%	23rd
Darling Downs and West Moreton	7.0%	24th
Northern Queensland	7.0%	25th
Hunter New England and Central Coast	6.0%	26th
Country SA	5.9%	27th
Western NSW	5.6%	28th
Murrumbidgee	5.2%	29th
Country WA	3.7%	30th
Western Queensland	#	#

Return to figure in text

Figure A.11: CHB treatment uptake by remoteness area, 2022

Remoteness	Treatment uptake
Major Cities	14.0%
Inner Regional	6.9%
Outer Regional	7.4%
Remote	5.8%
Very Remote	8.6%
AUSTRALIA	**12.9%**

Return to figure in text

Figure A.12: Proportion of people with a GP involved^ in CHB treatment prescribing, by state and territory, 2020–2022

State	2020	2021	2022
ACT	20.5%	19.3%	23.6%
NSW	14.5%	16.0%	17.4%
NT	38.9%	32.2%	30.5%
QLD	26.8%	29.0%	30.5%
SA	19.1%	21.4%	23.2%
TAS	26.2%	33.1%	32.2%
VIC	19.0%	20.9%	23.1%
WA	23.0%	23.2%	28.2%
NATIONAL AVERAGE	**18.7%**	**20.2%**	**22.1%**

Return to figure in text

Figure A.13: Proportion of people with a GP involved^ in CHB treatment prescribing, by PHN, 2022

Primary Health Network	GP only prescribing	Shared prescribing (GP + specialist or other provider)
Northern Queensland	42.0%	8.7%
Country WA	37.3%	12.0%
Country SA	32.6%	12.6%
Western NSW	23.7%	20.6%
North Coast	28.0%	12.7%
Gold Coast	17.6%	20.6%
Darling Downs and West Moreton	20.8%	15.6%
Central Queensland, Wide Bay, Sunshine Coast	18.5%	14.5%
South Eastern NSW	16.2%	16.7%
Tasmania	20.4%	11.8%
Murray	17.3%	14.6%
Gippsland	19.1%	12.4%
Northern Territory	20.7%	9.8%
Perth North	20.7%	7.6%
Hunter New England and Central Coast	15.7%	11.3%
Brisbane South	16.6%	10.3%
North Western Melbourne	14.2%	12.5%
Nepean Blue Mountains	15.7%	9.6%
Perth South	17.9%	6.2%
Australian Capital Territory	17.7%	5.8%
Murrumbidgee	15.4%	7.7%
Brisbane North	14.9%	7.3%
NATIONAL AVERAGE	**13.5%**	**8.6%**
Adelaide	10.7%	10.6%
Eastern Melbourne	11.0%	10.2%
Western Sydney	13.6%	7.5%
Western Victoria	13.4%	7.4%
South Eastern Melbourne	10.6%	8.5%
Central and Eastern Sydney	10.6%	5.6%
Northern Sydney	10.9%	5.0%
South Western Sydney	6.4%	4.6%
Western Queensland	#	#

Return to figure in text

Figure A.14: Metrics of ongoing engagement in care for people living with CHB, 2016–2022

Ongoing engagement in care		
People living with CHB	205,549	
Had any viral load tests in the past seven years	106,128	51.6%
Had three or more viral load tests in the past seven years (~one per two years)	50,157	24.4%
Had six or more viral load tests in the past seven years (~one per year)	22,525	11.0%

Return to figure in text

Figure A.15: CHB care uptake, ranked by PHN, 2022

Primary Health Network	Treatment uptake 2022	Treatment uptake rank 2022
South Western Sydney	38.1%	1st
Western Sydney	37.1%	2nd
Northern Sydney	33.5%	3rd
Eastern Melbourne	30.8%	4th
Australian Capital Territory	30.6%	5th
Central and Eastern Sydney	30.5%	6th
North Western Melbourne	30.1%	7th
Brisbane South	29.0%	8th
South Eastern Melbourne	27.9%	9th
NATIONAL AVERAGE	**25.5%**	
Northern Territory	24.2%	10th
Murray	20.8%	11th
Nepean Blue Mountains	19.4%	12th
South Eastern NSW	19.2%	13th
Western Victoria	18.3%	14th
Adelaide	18.0%	15th
Gippsland	17.9%	16th
Northern Queensland	17.8%	17th
Tasmania	17.0%	18th
Gold Coast	16.8%	19th
North Coast	15.8%	20th
Brisbane North	15.7%	21st
Darling Downs and West Moreton	15.2%	22nd
Western NSW	14.6%	23rd
Perth North	14.2%	24th
Perth South	14.2%	25th
Central Queensland, Wide Bay, Sunshine Coast	13.5%	26th
Hunter New England and Central Coast	12.4%	27th
Murrumbidgee	12.0%	28th
Country SA	10.8%	29th
Country WA	6.2%	30th
Western Queensland	#	#

Return to figure in text

Figure A.16: Number of people receiving CHB monitoring over time by PHN, 2018, 2020 and 2022, ordered by care uptake in 2022 (in brackets)

Primary Health Network	2018	2020	2022
South Western Sydney	2,705	2,474	2,417
Western Sydney	2,976	2,745	2,772
Northern Sydney	1,847	1,701	1,843
Eastern Melbourne	3,091	2,872	2,993
Australian Capital Territory	391	427	435
Central and Eastern Sydney	3,222	3,051	2,850
North Western Melbourne	3,580	3,254	3,126
Brisbane South	1,904	1,762	1,629
South Eastern Melbourne	2,300	2,158	2,137
Northern Territory	922	727	554
Murray	276	279	286
Nepean Blue Mountains	213	244	231
South Eastern NSW	225	278	288
Western Victoria	180	246	227
Gippsland	90	90	87
Northern Queensland	558	536	466
Tasmania	147	135	124
Gold Coast	223	254	281
North Coast	166	179	178
Brisbane North	470	547	532
Darling Downs and West Moreton	276	289	270
Western NSW	161	170	157
Perth North	371	382	391
Perth South	401	336	375
Central Queensland, Wide Bay, Sunshine Coast	171	203	194
Hunter New England and Central Coast	385	383	359
Murrumbidgee	65	64	69
Country WA	71	75	103
Western Queensland			
Adelaide			
Country SA			

Return to figure in text

Figure A.17: Number of people living with CHB in care (blue bars) and not in care (grey bars and labels), by PHN, ordered by proportional care uptake (in brackets), 2022

Primary Health Network	In care	Not in care
South Western Sydney (38.1%)	5,273	8,565
Western Sydney (37.1%)	5,375	9,094
Northern Sydney (33.5%)	3,596	7,124
Eastern Melbourne (30.8%)	5,512	12,379
Australian Capital Territory (30.6%)	897	2,030
Central and Eastern Sydney (30.5%)	5,907	13,450
North Western Melbourne (30.1%)	6,054	14,088
Brisbane South (29.0%)	3,111	7,605
South Eastern Melbourne (27.9%)	4,013	10,351
Northern Territory (24.2%)	1,056	3,304
Murray (20.8%)	512	1,949
Nepean Blue Mountains (19.4%)	428	1,781
South Eastern NSW (19.2%)	510	2,151
Western Victoria (18.3%)	444	1,981
Gippsland (17.9%)	176	808
Adelaide (18.0%) (*)	*	*
Northern Queensland (17.8%)	766	3,544
Tasmania (17.0%)	276	1,345
Gold Coast (16.8%)	611	3,031
North Coast (15.8%)	328	1,747
Brisbane North (15.7%)	1,131	6,078
Darling Downs and West Moreton (15.2%)	501	2,795
Western NSW (14.6%)	254	1,483
Perth North (14.2%)	1,272	7,658
Perth South (14.2%)	1,181	7,111
Central Queensland, Wide Bay, Sunshine Coast (13.5%)	442	2,822
Hunter New England and Central Coast (12.4%)	696	4,903
Murrumbidgee (12.0%)	121	886
Country SA (10.8%) (*)	*	*
Country WA (6.2%)	261	3,963
Western Queensland (4.2%)	#	#

Return to figure in text

Figure A.18: CHB treatment and care uptake by remoteness area, 2022

Remoteness	Treatment uptake	Care uptake
Major Cities	27.6%	14.0%
Inner Regional	14.2%	6.9%
Outer Regional	14.3%	7.4%
Remote	15.0%	5.8%
Very Remote	22.6%	8.6%
AUSTRALIA	**25.5%**	**12.9%**

Return to figure in text

Figure A.19: Proportion of CHB monitoring provided by a GP, by PHN, 2022

Primary Health Network	Proportion of all people who received monitoring (%)
Northern Territory	69.2%
Perth South	56.3%
Country WA	54.1%
Northern Queensland	53.0%
Perth North	53.0%
Adelaide	51.9%
Western Sydney	51.8%
Northern Sydney	50.7%
Brisbane South	47.9%
South Western Sydney	46.7%
Central and Eastern Sydney	44.4%
NATIONAL AVERAGE	**43.3%**
Gold Coast	42.6%
Western NSW	41.5%
Country SA	38.9%
North Western Melbourne	38.8%
Hunter New England and Central Coast	38.7%
Brisbane North	38.1%
Nepean Blue Mountains	37.7%
North Coast	36.9%
Darling Downs and West Moreton	35.9%
Eastern Melbourne	35.3%
South Eastern Melbourne	34.4%
Australian Capital Territory	31.4%
Tasmania	30.8%
Gippsland	30.4%
Murrumbidgee	29.7%
Murray	24.8%
South Eastern NSW	23.6%
Western Victoria	19.7%
Central Queensland, Wide Bay, Sunshine Coast	19.5%
Western Queensland	#

Return to figure in text

Figure A.20: Hepatitis B immunisation coverage for 12-month-olds, among all children and among Aboriginal and Torres Strait Islander children, ordered by immunisation uptake among all children, by PHN, 2022

Primary Health Network	All children	Aboriginal and Torres Strait Islander children
Australian Capital Territory	97.0%	93.4%
Western NSW	96.7%	95.2%
Northern Sydney	95.9%	89.0%
Hunter New England and Central Coast	95.4%	94.7%
Eastern Melbourne	95.3%	91.8%
Murrumbidgee	95.2%	94.5%
Tasmania	95.2%	97.0%
South Eastern NSW	95.2%	92.8%
Adelaide	95.2%	91.9%
Murray	95.1%	94.0%
Brisbane North	95.1%	90.6%
Central and Eastern Sydney	95.0%	91.9%
Western Victoria	94.9%	94.2%
Perth North	94.8%	88.2%
South Eastern Melbourne	94.6%	94.3%
Western Queensland	94.6%	89.7%
Country SA	94.4%	92.5%
Perth South	94.2%	89.8%
Western Sydney	94.2%	92.2%
Nepean Blue Mountains	94.2%	93.7%
North Western Melbourne	94.1%	92.3%
Northern Territory	94.0%	89.8%
Brisbane South	94.0%	90.2%
Darling Downs and West Moreton	93.9%	92.8%
NATIONAL AVERAGE	**93.8%**	**90.2%**
Northern Queensland	93.8%	90.8%
Gippsland	93.5%	88.3%
South Western Sydney	92.6%	92.3%
Country WA	92.3%	87.3%
Central Queensland, Wide Bay, Sunshine Coast	91.8%	91.5%
Gold Coast	91.0%	91.3%
North Coast	89.5%	91.9%

Return to figure in text

Figure A.21: Hepatitis B immunisation coverage for 12-month-olds in 2018 and 2022, ordered by 2022 immunisation uptake, by PHN

Primary Health Network	2022	2018
Australian Capital Territory	96.6%	96.7%
Western NSW	96.5%	96.3%
Northern Sydney	95.0%	94.6%
Hunter New England and Central Coast	94.7%	95.6%
Eastern Melbourne	94.2%	95.4%
Murrumbidgee	95.7%	95.7%
Tasmania	96.9%	94.6%
South Eastern NSW	93.9%	95.5%
Adelaide	92.7%	94.7%
Murray	93.7%	94.4%
Brisbane North	94.7%	95.6%
Central and Eastern Sydney	92.4%	94.4%
Western Victoria	96.2%	95.9%
Perth North	87.8%	94.2%
South Eastern Melbourne	90.8%	94.6%
Western Queensland	92.2%	94.9%
Country SA	92.0%	94.3%
Perth South	86.4%	94.0%
Western Sydney	89.9%	93.8%
Nepean Blue Mountains	94.6%	95.3%
North Western Melbourne	95.3%	94.5%
Northern Territory	91.7%	94.4%
Brisbane South	92.5%	94.5%
Darling Downs and West Moreton	93.7%	94.6%
NATIONAL AVERAGE	**91.8%**	**94.3%**
Northern Queensland	91.4%	94.9%
Gippsland	91.1%	94.9%
South Western Sydney	95.0%	94.1%
Country WA	88.6%	93.0%
Central Queensland, Wide Bay, Sunshine Coast	94.3%	93.0%
Gold Coast	94.2%	93.1%
North Coast	93.3%	90.0%

Return to figure in text

Figure B.1: Number of hepatitis serology test items (bars) and proportional change from previous year (labels), by year, 2013–2023

Year	Number of hepatitis serology tests
2013	1,151,957
2014	1,218,633
2015	1,316,761
2016	1,346,927
2017	1,422,844
2018	1,514,247
2019	1,584,349
2020	1,353,508
2021	1,366,601
2022	1,295,841
2023	1,453,908

Return to figure in text

Figure B.2: Rate of hepatitis serology items per 1,000 population, by state/territory and year, 2019–2023 (labels show total proportional change between 2019 and 2023)

Rates	NSW	Vic	Qld	SA	WA	Tas	ACT	NT
2019	70.6	61.3	59.8	49.0	59.0	42.4	51.1	89.6
2020	59.1	49.3	51.9	43.9	52.3	36.5	45.6	76.9
2021	58.0	53.6	51.3	42.5	51.5	38.7	44.6	70.2
2022	55.6	50.1	46.5	38.0	49.9	33.8	43.3	66.2
2023	59.9	54.9	50.9	44.2	53.9	42.7	44.8	78.2

Return to figure in text

Figure C.1: Proportion of SA2s within a PHN where the rate of liver cancer was above the Australian average, 2012–2016

Primary Health Network	Proportion of SA2s where liver cancer incidence rate is above average (%)
North Western Melbourne	83.8%
Northern Territory	74.6%
South Western Sydney	71.7%
Central and Eastern Sydney	70.5%
Western Sydney	69.4%
South Eastern Melbourne	23.3%
Western Queensland	22.2%
Adelaide	21.3%
Hunter New England and Central Coast	19.6%
NATIONAL AVERAGE	**18.7%**
Eastern Melbourne	18.3%
Country WA	14.9%
Northern Queensland	13.7%
North Coast	11.6%
Northern Sydney	9.1%
Darling Downs and West Moreton	8.8%
Perth North	7.6%
Brisbane South	4.9%
Nepean Blue Mountains	4.2%
Gippsland	3.7%
South Eastern NSW	3.4%
Murray	2.9%
Country SA	2.8%
Western NSW	2.6%
Perth South	1.2%
Australian Capital Territory	0.0%
Brisbane North	0.0%
Central Queensland, Wide Bay, Sunshine Coast	0.0%
Gold Coast	0.0%
Murrumbidgee	0.0%
Tasmania	0.0%
Western Victoria	0.0%

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