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Review of epidemiology, prevention and management of blood-borne viruses experienced by Aboriginal and Torres Strait Islander peoples

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Review of epidemiology, prevention and management of blood-borne viruses experienced by Aboriginal and Torres Strait Islander peoples

Abstract

This review examines the epidemiology, prevention, and management of blood-borne viruses (BBVs) experienced by Aboriginal and Torres Strait Islander peoples in Australia with a focus on hepatitis B, hepatitis C, and HIV. The review highlights the disproportionate burden of BBVs among Aboriginal and Torres Strait Islander peoples in Australia, influenced by historical, social, and cultural factors stemming from colonisation. Key findings include higher prevalence rates of hepatitis B and C compared to non-Indigenous Australians, with some progress in reducing new infections through vaccination and treatment programs. However, significant gaps remain in screening, linkage to care, and treatment uptake. The review discusses successful culturally appropriate interventions which have improved engagement with health services. Barriers to care include stigma, lack of culturally safe services, and competing health priorities. The review emphasises the need for community-led initiatives, integration of BBV care into primary health services, and addressing social determinants of health to improve outcomes. Future directions include expanding access to culturally safe healthcare, scaling up peer-based interventions, and enhancing data collection to inform targeted strategies. This review provides insights to guide public health responses and policy development aimed at reducing the impact of BBVs among Aboriginal and Torres Strait Islander peoples.

This review is part of a suite of knowledge exchange products that includes a summary, a video and a fact sheet.

Acknowledgements

We acknowledge that this research has taken place on Country across Western Australia and pay our respects to Elders past and present. Our research team is based in Boorloo (Perth) on the lands of the Whadjuk Noongar people, who have been custodians of this boodjar since time immemorial. We acknowledge all Traditional Custodians and their continuing connection to culture, community, land, sea, and rivers.

We extend our sincere thanks to Amanda Sibosado and Tania Harris for their invaluable strategic advice and content expertise that they have contributed to this review.

Special thanks are also extended to the anonymous peer reviewer whose comments assisted in the finalisation of this review, the staff at the Australian Indigenous Health*InfoNet* for their assistance and support and the Australian Government Department of Health and Aged Care for its ongoing support of the work of the Australian Indigenous Health*InfoNet*.

Keywords

HIV, Hepatitis C, Hepatitis B, Blood-borne viruses

About this review

The purpose of this review is to provide a synthesis of key information on blood-borne viruses (BBVs) experienced by Aboriginal and Torres Strait Islander peoples in Australia to:

- inform those involved, or interested in Aboriginal and Torres Strait Islander health
- provide the evidence for those involved in policy, strategy and program development and delivery.

The review focuses primarily on hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) experienced by Aboriginal and Torres Strait Islander peoples. It provides general information on the social and cultural context of Aboriginal and Torres Strait Islander peoples and BBVs, and the historical, behavioural and biomedical factors that contribute to BBVs experienced by Aboriginal and Torres Strait Islander peoples. This review provides detailed information on the extent of BBVs, including incidence, prevalence, health service utilisation, hospitalisation, mortality, and burden of disease. This review discusses the prevention and management of BBVs and provides information on relevant programs, services, policies and strategies that address the health issue of BBVs experienced by Aboriginal and Torres Strait Islander peoples. This review concludes by suggesting possible future directions for addressing BBV disparities for Aboriginal and Torres Strait Islander peoples.

This review uses information from journal articles, research reports, government reports, national data collections and national surveys that are available and can be accessed through the Australian Indigenous Health*InfoNet*'s publication database https://healthinfonet.ecu.edu.au/key-resources/publications/.

The Health*InfoNet*, consistent with its nomenclature guide, prefers the term 'Aboriginal and Torres Strait Islander' rather than 'Indigenous Australian' for its publications. Also, some sources may only use the terms 'Aboriginal only' or 'Torres Strait Islander only'. However, when referencing information from other sources, authors may use the terms from the original source. As a result, readers may see these terms used interchangeably in some instances. If they have any concerns, they are advised to contact the Health*InfoNet* for further information.

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Key facts

- Colonisation and historical trauma continue to impact Aboriginal and Torres Strait Islander health outcomes related to BBVs, including higher rates of HBV, HCV, and HIV.
- Cultural safety and community-led approaches are critical for effective BBV prevention, testing, and treatment programs with Aboriginal and Torres Strait Islander communities.
- Incarceration is a significant risk factor for BBV transmission among Aboriginal and Torres Strait Islander peoples, who experience over-policing due to systemic racism resulting in an overrepresentation of Aboriginal and Torres Strait Islander peoples in custodial settings
- Stigma and shame associated with BBVs create barriers to testing and treatment, particularly for Aboriginal and Torres Strait Islander peoples who may experience compounded discrimination.
- Peer-education and support programs have shown promise in improving BBV knowledge and encouraging testing/treatment uptake among Aboriginal and Torres Strait Islander communities.
- Access to culturally appropriate healthcare, including Aboriginal Community Controlled Health Services, is essential for improving BBV outcomes.
- HBV vaccination programs have reduced HBV prevalence in younger cohorts, but gaps remain in adult vaccination coverage for Aboriginal and Torres Strait Islander peoples.
- Addressing social determinants of health and taking holistic approaches that consider the broader context of Aboriginal and Torres Strait Islander wellbeing are necessary for effective BBV prevention and management.

Introduction

Blood-borne viruses (BBVs) are transmitted through infected blood entering the bloodstream of another person via a break in the skin or mucous membrane (Australian Government Department of Health and Aged Care, 2018). Transmission routes for BBVs vary; however, they commonly include contact with blood, sharing needles and syringes, sexual contact, transmission from mother to child during pregnancy, childbirth, or breastfeeding, close household contact and unsterilised tattoos and piercings. BBVs include human immunodeficiency viruses (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV), which are all nationally notifiable infections in Australia.

BBVs pose a significant public health challenge in the Australian community. Aboriginal and Torres Strait Islander peoples face unique risk factors related to BBV infections due to a complex interplay of historical, social and cultural factors. Colonisation, systemic racism, incarceration, shame and stigma, and lack of culturally appropriate health care experienced by Aboriginal and Torres Strait Islander peoples contributes to a high prevalence and transmission of BBVs. Addressing the spread of BBVs requires investment in culturally appropriate public health interventions and services such as Aboriginal Community Controlled Health Services, peer-education programs, community-led health initiatives, harm reduction, and alcohol and other drug (AOD) treatment programs.

HIV is an infection which attacks the body's immune system, specifically white blood cells called CD4 cells (World Health Organization, 2024a). With decreased CD4 cells, the body has lowered immunity and is more susceptible to infection.

- If left untreated, HIV can result in the development of serious infections and cancers which can be fatal over time.
- Individuals diagnosed with HIV can take antiretroviral treatment (ART) which assists with maintaining a normal range of CD4 cells.
- HIV viral load measures the amount of HIV virus present in an individual's blood. Testing for CD4 cell count and HIV viral load helps monitor the effect of ART on the virus.
- When taken consistently, ART can prevent the transmission of HIV to others through lowering the HIV viral load. When someone has an undetectable viral load (defined as less than 50 copies/ml) HIV is untransmissible to other HIV-negative individuals.
- Furthermore, pre-exposure prophylaxis (PrEP) is a Pharmaceutical Benefits Scheme (PBS) subsidised medication that can be taken daily by HIV-negative individuals to significantly reduce the likelihood of contracting HIV (Australian Government Department of Health and Aged Care, 2018).

HBV and HCV are both infections of the liver that can result in acute (short-term) and chronic (long-term) illness and can be life-threatening (World Health Organization, 2024b, 2024c). If left untreated, HBV and HCV can result in liver damage, cirrhosis, liver failure and liver cancer which can be fatal.

- HBV is a vaccine-preventable virus, with vaccinations routinely administered through childhood vaccination programs.
- There is no specific treatment for acute HBV and cases of infection may resolve within a few months.
- If the virus develops into chronic hepatitis B (CHB) it can be managed through antiviral medications however, HBV infection is not curable.
- Unlike HBV, HCV is not a vaccine-preventable virus; however, direct-acting antivirals (DAAs) can cure most people with HCV infection within a short treatment period ranging from 12 -24 weeks.

This narrative review aims to provide insights into the context and epidemiology of BBVs experienced by Aboriginal and Torres Strait Islander peoples in Australia as well as the current prevention, management and policy landscape to inform future directions in this space.

The context of Aboriginal and Torres Strait Islander health and BBVs

Historical, social, and cultural factors

In Australia, Aboriginal peoples have been caretakers and custodians of their respective traditional lands for over 60,000 years, remaining the oldest continuing culture in the world (Dudgeon et al., 2014). Aboriginal and Torres Strait Islander peoples are diverse and comprise what was once over 260 language groups. Torres Strait Islander (Zenadh Kes) peoples have lived and occupied 17 islands of the Torres Strait, above the Cape York Peninsula, for thousands of years, as well as living on the mainland of Australia (Dudgeon et al., 2014). There are a diverse mix of language groups, and nations of Aboriginal and Torres Strait Islander peoples to this day (Griffiths et al., 2019).

Colonisation by the British in 1788 created significant disruption to the way of life for Aboriginal and Torres Strait Islander peoples (Elias et al., 2021), leading to devastating impacts still felt by these communities today. Prior to colonisation in Australia, Aboriginal and Torres Strait Islander peoples enjoyed 'relatively good health' (Elias et al., 2021, p. 40). Colonisation has been argued as the most severe contributing factor to the health and wellbeing of Aboriginal and Torres Strait Islander peoples (Paradies, 2016; Sherwood, 2013). Globally, colonisation of Indigenous peoples contributes to poor experiences of social and cultural health determinants (Paradies, 2016), and high rates of morbidity and early mortality (Sherwood, 2013; Verbunt et al., 2021). The ongoing impact of colonisation is compounded in communities through intergenerational trauma, racism, oppression, poverty, discrimination, incarceration, and loss of connection to family, culture, and community (Dudgeon et al., 2014). These social factors will be discussed further throughout this review; however, there will also be a focus on cultural resilience and strengths based approaches. Historically, research often framed Aboriginal and Torres Strait Islander communities and people negatively and as lacking in comparison to non-Indigenous populations through a 'deficit discourse' (Fforde et al., 2013). This review aims to use a strengths based approach which acknowledges the assets of Aboriginal and Torres Strait Islander communities.

Social determinants of health are non-medical factors that influence health outcomes involving the conditions in which people are born, raised, live and grow old in (World Health Organization [WHO],n.d.). These determinants are governed by wider systems which influence the environments and daily life for communities (WHO, n.d.). There is extensive evidence identifying the role of determinants of health towards outcomes in population health patterns (Baum, 2007). Literature on Indigenous social determinants acknowledges that Indigenous health is directly linked to processes of colonisation (Anderson, 1988; Vickery et al., 2007). Social and cultural factors are significant in shaping the health outcomes of Aboriginal and Torres Strait Islander peoples (Dudgeon et al., 2022) and mitigating the impacts of colonisation. Vickery et al. (2007) outlines this based on the work of the determinants of health for Aboriginal and Torres Strait Islander peoples from (Australians for Native Title and Reconciliation, 2004; Couzos & Murray, 2008; Dixon et al., 2001; Eades, 2000; Tsey et al., 2003):

- cultural survival
- affirming cultural ceremony
- oral history
- family support and connection
- spiritual and emotional wellbeing
- native title
- sites recognition
- self-determination
- community control.

Notably, these affirmative determinants are contingent on cultural survival, self-determination, and the leadership and action of Aboriginal and Torres Strait Islander peoples (Eckerman et al., 2010). Vickery et al. (2007) supports this by discussing decolonisation achieving positive outcomes for Aboriginal and Torres Strait Islander communities. Decolonisation has been described as the undoing of colonisation, and the righting of past and current injustices experienced by Indigenous peoples (Smith, 1999; Vickery et al., 2007). To understand the social and cultural factors of Aboriginal and Torres Strait Islander health it is essential to learn this community's worldview of health, which underpins these protective factors (Dudgeon et al., 2014). The Aboriginal and Torres Strait Islander community's worldview on health contrasts Western concepts of health by incorporating not just the physical wellbeing of the individual, but also the social, emotional, and cultural wellbeing of the community (National Aboriginal Health Strategy Working Party, 1989). This holistic view of health celebrates and acknowledges the strengths of Aboriginal and Torres Strait Islander peoples and communities.

Cultural determinants of health are influential to the health and wellbeing of Aboriginal and Torres Strait Islander peoples (Dudgeon et al., 2022). These cultural determinants involve family and kinship, culture, country, language, identity, and self-determination (Verbunt et al., 2021). This recognises the balance that is needed to achieve optimal wellbeing for Aboriginal and Torres Strait Islander peoples. Notably, access to culturally appropriate health care is crucial for Aboriginal and Torres Strait Islander peoples to achieve good health (Dudgeon et al., 2014).

The need for culturally appropriate care saw the development of Aboriginal Community Controlled Health Services (ACCHS) in the 1970s (NACCHO, n.d.). ACCHS were developed by their local communities in response to Aboriginal and Torres Strait Islander peoples receiving inadequate care from mainstream services. ACCHS are primary health care services that are governed and delivered by their local Aboriginal and Torres Strait Islander community practising self-determination. ACCHS deliver their services according to the Aboriginal holistic understanding of health. Each service is unique and moulded to the needs of their local community to provide essential culturally appropriate health care. These services work to address not only health inequities but also social inequities that communities experience, by addressing social determinants of health and structural injustices (Pearson et al., 2020).

Demographic factors

According to the 2021 Australian census, 983,700 people identified as Aboriginal and/or Torres Strait Islander, accounting for 3.8% of the total population in Australia (Australian Bureau of Statistics [ABS], 2021). The Aboriginal and Torres Strait Islander population consists of a predominantly young cohort, with nearly a third (33%) being under the age of fifteen years, factors driving this demographic pattern include higher rates of birth, and lower life expectancy (ABS, 2021). In the 2020-2022 period, the life expectancy for Aboriginal and Torres Strait Islander peoples was 71.9 years for males and 75.6 years for females[1], this is a national estimate and differs across jurisdictions. (Australian Bureau of Statistics, 2023a).

Notably, the life expectancy is nearly ten years lower for Aboriginal and Torres Strait Islander peoples who live remotely than those in major cities. An alarming reality given that Aboriginal and Torres Strait Islander peoples are more likely to live in remote and very remote areas than non-Indigenous people (15% to 1.0%). A majority (41%) of Aboriginal and/or Torres Strait Islander peoples reside in major cities, with a quarter (25%) living in inner regional areas, a fifth (19%) outer regional and 15% living remotely (6.0%) or very remotely (9.4%) (ABS, 2021).

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[1] ABS data for life expectancy from the national census is currently only available by a female and male sex basis, therefore this has been presented as such.

Factors contributing to BBV risk and transmission in Australia

Risk factors

Risk factors involve anything that can lead to an increase in the possibility of a person developing a health condition (Powell et al., 2023). Risk factors that are likely to lead to the acquisition of a BBV such as HBV, HCV, or HIV will be discussed. Risk factors may be modifiable or non-modifiable (Powell et al., 2023), and psychological, circumstantial or systems based. BBVs are a communicable disease, and therefore only transmitted from person to person, transmission will be discussed individually for HBV, HCV and HIV. This review will further discuss colonial history, systemic racism, incarceration and lack of culturally appropriate care as risk factors of BBVs.

Colonisation

Colonisation has been recognised as a key determinant of health for Aboriginal and Torres Strait Islander peoples in Australia (Paradies, 2016), as well as for Indigenous people worldwide (Allan & Smylie, 2015). Colonisation “involves a range of practices (primarily historical) involving war, displacement, forced labour, removal of children, ecological destruction, massacres, genocide, slavery, spread of diseases, banning of Indigenous languages, regulation of marriage, assimilation and eradication of social, cultural and spiritual practices” (Paradies, 2016, p. 83). Poor health outcomes experienced by Indigenous people across the globe can be attributed to past and ongoing colonial processes and systems (Czyzewski, 2011; Griffiths et al., 2016). This colonial history influences the use of substances in Aboriginal and Torres Strait Islander communities today (Krakouer et al., 2022). Colonisation has also impacted Indigenous people's experiences of sexual health and sexuality in Australia, Aotearoa/New Zealand, and the United States (Evans et al., 2024; Le Grice & Braun, 2017; Sullivan, 2017).

Systemic racism

Historically, Aboriginal and Torres Strait Islander people’s lives have been controlled by state and commonwealth legislation as an ongoing act of colonisation. Systemic racism refers to the ingrained discrimination and inequity faced by Aboriginal and Torres Strait Islander peoples, as well as other minority groups, across various systems such as employment, education, health, and justice (Elias et al., 2021). Structural racism is preserved through policy, practice, and cultural norms that disadvantage and exclude Aboriginal and Torres Strait Islander peoples (Dudgeon et al., 2014). Aboriginal and Torres Strait Islander peoples’ experience of higher rates of unemployment, lower educational outcomes, poor experiences with health care and health outcomes, and overrepresentation in custodial settings can be considered indicators of systemic racism (Dudgeon et al., 2000).

Incarceration

Aboriginal and Torres Strait Islander peoples are over-represented in the prison population of Australia (Australian Institute of Health and Welfare [AIHW], 2024b) and experience high levels of recidivism (78%) (Australian Bureau of Statistics [ABS], 2023b). In 2023, Aboriginal and Torres Strait Islander peoples accounted for 33% of the population that were incarcerated (ABS, 2023b), despite only making up 3.8% of the total population in Australia (ABS, 2021). Aboriginal and Torres Strait Islander peoples experience unjust rates of incarceration due to structural racism (Blagg & Anthony, 2019), over-policing and racial profiling (Blagg & Anthony, 2019; Cunneen & Tauri, 2016), discriminatory sentencing practices (Blagg & Anthony, 2019; Cunneen & Tauri, 2016; Weatherburn & Snowball, 2019), limited access to legal support (Law Council of Australia, 2018) and healthcare (Atkinson, 2020), criminalisation of addiction (Gray & Wilkes, 2017), lack of diversionary and culturally appropriate rehabilitation programs (Baldry et al., 2018; Cunneen & Tauri, 2016; Marchetti & Daly, 2017), child removal (Bamblett et al., 2017), intergenerational trauma (Atkinson, 2020) and socioeconomic disadvantage (Baldry et al., 2018) driven by colonial legacy (Atkinson, 2020).

There is an expectation that healthcare provided to Aboriginal and Torres Strait Islander peoples in prisons is culturally safe, however, this is seldom the case (AIHW, 2024b). Rates of BBVs are reportedly higher in custodial settings, due to a lack of harm reduction initiatives such as Needle and Syringe Programs (NSPs), and a cohort that are more likely to engage in risk-taking behaviours such as sharing injecting drug use (IDU) equipment. Over-incarceration of Indigenous people, inadequate access to culturally appropriate care, lack of harm reduction methods, high levels of recidivism, and higher likelihood of risk-taking behaviours multiply the possibility of acquiring a BBV for Aboriginal and Torres Strait Islander peoples in prison settings.

Shame and stigma

Stigma is a multilevel construct involving negative stereotyping resulting in the 'othering' of minority groups (Cook et al., 2014; Hatzenbuehler et al., 2013). Stigma can affect access to resources (Link & Phelan, 2006), ability to interact with others (Blascovich et al., 2001), and self-perception (Crocker et al., 1998). Aboriginal and Torres Strait Islander peoples are a highly stigmatised population in Australia due to historical social exclusion (Treloar et al., 2016b). Furthermore, BBVs such as HCV and HIV that are associated with unprotected sex, and IDU, have long been stigmatised (Treloar et al., 2016b). Aboriginal and Torres Strait Islander peoples living with a BBV are likely to experience further discrimination due to intersecting identities. Therefore, this results in distrust, and apprehension to engage with health services (Treloar & Cao, 2005; Treloar et al., 2016b), and contributes to confidentiality concerns (Puljević et al., 2022).

Lack of culturally appropriate health care

Access to culturally appropriate health care is essential for Aboriginal and Torres Strait Islander peoples to achieve optimal health and wellbeing (Dudgeon et al., 2014). Culturally appropriate health care is dependent on the ability to provide cultural safety. Cultural safety has been defined as an 'ongoing learning process of self-reflection, through one's own cultural self-awareness' (Australian Health Practitioners Registration Agency [AHPRA], 2020; Indigenous Allied Health Australia, 2024; Muller et al., 2024) and ability to sensitively acknowledge cultural differences in service delivery (Muller et al., 2024). Culturally appropriate care recognises and takes culture and cultural sensitivities into account when working with Aboriginal and Torres Strait Islander clients. Without access to culturally appropriate care, Aboriginal and Torres Strait Islander peoples may not engage with a service due to cultural insensitivities (Durey, 2010). Implementing culturally appropriate health care helps to address health disparities and promotes equity through elimination of racism in the health system (AHPRA, 2020). Ensuring cultural sensitivity in service delivery is essential to reduce the burden of disease in Aboriginal and Torres Strait Islander communities (Mooney-Somers et al., 2009).

BBV transmission modes

In addition to the risk factors discussed above, transmission risks for HBV, HCV and HIV include:

- HBV is transmitted via blood-to-blood contact, sexual contact without a barrier method, and from mother to baby during birth. Historically in Australia, HBV has primarily been passed on from mother to child during birth or between children and family members (Australian Indigenous Health*Info*Net, 2024). Low uptake of antenatal care among Aboriginal mothers may also contribute to transmission via breastfeeding.

- HCV is transmitted through blood-to-blood contact. In Australia, most cases of HCV have reportedly been transmitted via sharing used drug-injecting equipment (Australian Indigenous Health*Info*Net, 2024).

- HIV is transmitted via blood-to-blood contact and unprotected sexual contact. This is inclusive of sexual contact without a condom (anal or vaginal) (ASHM, 2023), having a sexually transmissible infection (STI), sharing used drug injecting equipment, using unsterile body modification tools, or needle stick injuries (Australian Indigenous Health*Info*Net, 2024).

Protective factors

Protective factors of Aboriginal and Torres Strait Islander health are embedded in decolonising practice (Vickery et al., 2007). In the context of BBVs, protective factors involve any form of intervention that either reduces the acquisition of a BBV, or the burden of disease that can be linked to BBVs. The burden of disease can relate to feelings of shame, discrimination, and isolation. Noting our previously mentioned social and cultural factors of health, embedding holistic health in practice is key (Dudgeon et al., 2014). This review will discuss ACCHS, peer-based programs, culture, harm reduction, and AOD treatment programs further as protective factors of BBVs among Aboriginal and Torres Strait Islander peoples.

Aboriginal Community Controlled Health Services (ACCHS)

ACCHS are primary health care services delivered by their local Aboriginal and Torres Strait Islander community, for community (NACCHO, n.d.). ACCHS are uniquely placed to deliver healthcare due to a deep understanding of community needs. A key strength of the ACCHS model of care is recognising clients' health needs holistically (NACCHO, n.d.) and responding to social determinants of health (Campbell et al., 2018). The ACCHS sector has long argued that it plays a key role in improving outcomes in Aboriginal and Torres Strait Islander health (Campbell et al., 2018). ACCHS have reported to be favoured by Aboriginal and Torres Strait Islander peoples due to established relationships, trust, flexibility, cultural sensitivity, and empowerment of community (Dimer et al., 2013; Jan et al., 2004). Similar findings have also been accounted for in accessing ACCHS for BBV and STI testing and treatment (Graham et al., 2023; Mooney-Somers et al., 2009; Ward et al., 2020).

Peer-education programs

Peer-education involves the sharing of health information and initiatives between individuals belonging to the same social group (Newland & Treloar, 2013). Peer-based programs have proven to be a successful method of intervention in sexual health and BBV risk reduction and education, particularly so for underserved populations (Australian Injecting & Illicit Drug Users League [AIVL], 2006). This success can be linked back to the fact that peer educators are credible sources of information (Turner & Shepherd, 1999). Peer-based programs have been used in Aboriginal and Torres Strait Islander communities through BBV education, and sexual health education (Sexual Health and Blood-Borne Virus Applied Research & Evaluation Network, 2020).

Community-led health initiatives

Historically, mainstream health promotion often failed to consider broader social and cultural determinants in Aboriginal and Torres Strait Islander communities, resulting in facilitating deficit based narratives and thus enforcing the onus of poor health on community (Pyett et al., 2008). Health promotion in Aboriginal and Torres Strait Islander communities calls for a ground up, strengths based approach, that is community driven and owned, allowing for sustainability (McRae et al., 2023). Health promotion that is community driven, and based on a holistic understanding of health can ensure cultural sensitivity and community acceptance (Hulme Chambers et al., 2018). Many diverse health promotion programs have achieved desirable outcomes in Aboriginal and Torres Strait Islander communities by taking these initiatives (Fehring et al., 2019; Hulme Chambers et al., 2018; McRae et al., 2023; Treloar et al., 2023)., such as the ‘Healthy Communities Project’ and the ‘Smart and Deadly initiative’ (Fehring et al., 2019; Hulme Chambers et al., 2018; McRae et al., 2023; Treloar et al., 2023).

Harm reduction

> *‘Harm reduction refers to policies, programmes and practices that aim to minimise the negative health, social and legal impacts associated with drug use, drug policies and drug laws. Harm reduction is grounded in justice and human rights’* (Harm Reduction International, n.d.).

Australia's harm reduction methods include NSPs, Medically Supervised Injecting Centres, drug checking, smoke-free laws, drink and drug driving laws, and take-home naloxone programs (Australian Institute of Health and Welfare [AIHW], 2024a). Family has also been recognised as an essential resource in harm reduction of IDU in Aboriginal and Torres Strait Islander communities. Gendera et al. (2022) discuss the role of family in harm reduction, and ability to link family members who IDU back to family, community and culture. Gendera et al. (2022) also discuss the lack of professional support available for families, and the need for a holistic all of community approach. Harm reduction has proven to be a useful prevention tool of BBVs; however, multiple barriers have been identified in engaging Aboriginal and Torres Strait Islander peoples in NSPs (Lobo & Coci, 2021). Lobo and Coci (2021) discuss the need for increased cultural security, community awareness, use of peers, holistic model of care and expansion of NSP service delivery to engage Aboriginal peoples who inject drugs (PWID).

Alcohol and other drug treatment (AOD) programs

In Australia, a range of AOD support and treatment options are available across peer-based community services, primary health care and intensive specialist treatment in hospitals (Australian Government Department of Health and Aged Care, 2017). It has been identified that AOD treatment programs must deliver culturally appropriate responses to work effectively with Aboriginal and Torres Strait Islander peoples (Krakouer et al., 2022). However, a barrier to ensuring this, is the inadequate amount of specialist AOD services designed and delivered by Aboriginal and Torres Strait Islander peoples (Toombs et al., 2021). Effective AOD treatment programs require cultural safety, Aboriginal and Torres Strait Islander AOD workers, involvement of family, outreach, group support, holistic psychosocial support, engagement of local community, consistent funding and partnerships (Krakouer et al., 2022).

Extent of BBVs experienced by Aboriginal and Torres Strait Islander peoples in Australia

The data presented below describes the current extent of BBVs among Aboriginal and Torres Strait Islander peoples. Significantly, incomplete information regarding the identification of Aboriginal and Torres Strait Islander individuals means that current data has the potential to inaccurately represent the extent of BBVs and STIs within these communities. The data below will show high rates of BBVs in remote Aboriginal and Torres Strait Islander communities, however in this context, it is important to note how increased healthcare accessibility issues, age structure of the Aboriginal and Torres Strait Islander population, and BBV risk factors are compounded (Ward et al., 2020) in remote areas. Additionally, the COVID-19 pandemic has influenced testing, diagnosis, and treatment of STIs and BBVs through the period of 2019-2022 (Naruka et al., 2023).

Incidence and prevalence

Incidence and prevalence are key epidemiological terms used to measure the occurrence of disease in a population. Incidence refers to the number of new cases of a disease or condition that occur in a specific population over a defined period. Prevalence refers to the total number of cases (both new and existing) of a disease or condition present in a population at a given time. Legislation mandates that all Australian states and/or territories notify BBV infections, such as HBV, HCV and HIV (Australian Institute of Health and Welfare National Indigenous Australians Agency, 2024a). Incidence and prevalence data included in this review are derived from the recent 2023 annual surveillance report on BBVs and STIs in Aboriginal and Torres Strait Islander peoples produced by Kirby Institute and the University of New South Wales. The data are derived from state and/or territory jurisdictions where Aboriginal and Torres Strait Islander status is available for at least 50% of all notifications of infection in every one of the previous five years (from 2018-2022) (Naruka et al., 2023).

Hepatitis B

HBV incidence and prevalence data are reported from five included jurisdictions [Australian Capital Territory (ACT), Northern Territory (NT), Queensland (Qld), South Australia (SA), and Western Australia (WA)]. Aboriginal and Torres Strait Islander HBV notification data from 2022 are presented in Table 1 (Naruka et al., 2023). Notifications were higher among Aboriginal and Torres Strait Islander males than females (n=67 males, n=40 females, n=1 sex not reported) and both males and females aged 40 years and over reported the highest HBV notification rates. Further, 2,210 (44%) HBV notifications were reported among people for whom Aboriginal and Torres Strait Islander status was not known. In 2022, the age-standardised HBV notification rate for this population decreased by 35% since 2018 (29 per 100,000). Notification rates were highest among Aboriginal and Torres Strait Islander peoples living in remote and regional areas compared to those residing in major cities (Naruka et al., 2023). The prevalence of chronic HBV among Aboriginal and Torres Strait Islander peoples in Australia in 2022 was reported as 1.6 which is equivalent to 13,810 people living with the condition (MacLachlan et al., 2024).

Table 1. HBV, HCV and HIV notification rates, Aboriginal and Torres Strait Islander peoples, 2022

Type	Total notifications	Notification rates per 100,000			
		Age-standardised	Remote areas	Regional areas	Major cities
HBV	108 (2% of all notifications in Australia in 2022 [5,075 overall in Australia])	19	27	20	13
HCV	1,088 (16% of all notifications in Australia [6,728 overall in Australia])	156	54	193	209
HIV	25 (5% of all notifications in Australia [555 notifications overall in Australia])	3.2			

Source: Naruka et al., 2023

Hepatitis C

HCV incidence and prevalence data are reported from five included jurisdictions (ACT, NT, Qld, SA and WA). Aboriginal and Torres Strait Islander HCV notification data from 2022 are presented in Table 1. The majority of new cases were reported as male (n= 768 male, n=320 female) and 46% of notifications were within the age range of 25-39 years. Additionally, 2,419 (36%) HCV notifications were reported among people for whom Aboriginal and Torres Strait Islander status was not known. In 2022, the age-standardised HCV notification rate decreased by 16% since 2018 (186 per 100,000). Additionally, HCV notifications within this population varied by remoteness, with a higher rate in major cities compared to regional and remote areas. Further, among Aboriginal and Torres Strait Islander peoples participating in the Australian Needle and Syringe Program (ANSPS), the prevalence of HCV antibodies among this population was reported as 36% in 2022 (Naruka et al., 2023).

HIV

HIV incidence and prevalence data are reported from all state and/or territory jurisdictions. Aboriginal and Torres Strait Islander HIV notification data from 2022 are presented in Table 1 (Naruka et al., 2023). Among 2022 notifications, the median age of diagnosis was 34 years, and the majority of cases were reported as male (n=22 male, n=3 female). Further, in 2022, the age-standardised HIV notification rate for this population increased from the 2021 notification rate (2.3 per 100,000). However, fluctuations in HIV notification rates are influenced by limited data and may signify regional variations rather than national trends among the Aboriginal and Torres Strait Islander population. Data from

2022 reports that among the Aboriginal and Torres Strait Islander population, those aged 35 years or older had a notification rate of 4.0 per 100,000, while those under 35 years had a rate of 2.2 per 100,000. Based on immune function tests (CD4+ cell count), 27% of the HIV notifications among Aboriginal and Torres Strait Islander peoples in 2022 were classified as late diagnoses, indicating that these HIV infections were likely acquired at least four years prior to receiving a diagnosis. At the end of 2022, the prevalence of HIV among Aboriginal and Torres Strait Islander peoples in Australia was estimated to be 590 people living with HIV (Naruka et al., 2023).

Health service utilisation

Health service utilisation by Aboriginal and Torres Strait Islander peoples is impacted by a variety of barriers and issues such as social determinants of health, cultural safety of health services and stigma.

General Practitioner (GP) attendance and engagement in BBV screening

Data on BBV-related GP attendance among Aboriginal and Torres Strait Islander peoples nationally are scant however through surveys such as the ANSPS, insights into testing and screening rates are available.

Hepatitis B

HBV screening was first introduced for all pregnant women in the NT in 1985 (Naruka et al., 2023). Additionally, vaccinations for infants born to people living with chronic HBV was simultaneously introduced. By 2000, universal HBV vaccination was introduced for all infants in Australian jurisdictions. HBV vaccination coverage rates among children are high. From the period 2018-2022, Aboriginal and Torres Strait Islander children at 12 months of age report 90% vaccination coverage, and children at 24 months of age report 96% coverage.

Hepatitis C

HCV testing data included in this review are derived from the results of the ANSPS. Annual HCV antibody testing rates were reported to decline among Aboriginal and Torres Strait Islander ANSPS participants during the period 2013 to 2022 (Naruka et al., 2023). Aboriginal and Torres Strait Islander females who were HCV antibody negative and reported participating in an HCV antibody test in the past 12 months declined from 57% to 46% over this period. Similarly, among Aboriginal and Torres Strait Islander males who were HCV antibody negative, testing declined from 55% to 47%. However, ANSPS data may not be representative of all Aboriginal and Torres Strait Islander peoples who inject drugs, and the COVID-19 pandemic may influence testing rates within this period.

HIV

HIV testing is recommended in national testing guidelines to occur in multiple contexts including after HIV risk exposure, during antenatal care and for priority populations (Naruka et al., 2023). The Fifth National Aboriginal and Torres Strait Islander Blood Borne Viruses and Sexually Transmissible Infections Strategy 2018–2022 further prioritises annual testing for STIs, including HIV (Australian Government Department of Health and Aged Care, 2018). HIV testing data included in this review is derived from the results of the ANSPS. Among ANSPS participants in 2022, 41% of Aboriginal and Torres Strait Islander females and 52% of Aboriginal and Torres Strait Islander males reported having had a HIV test in the past 12 months (Naruka et al., 2023). Notably, ANSPS data may not be representative of all Aboriginal and Torres Strait Islander peoples who inject drugs and the COVID-19 pandemic may have reduced the number of people undergoing routine testing (King et al., 2023).

Hospitalisation rates related to BBV complications

The average annual age-standardised acute HBV hospitalisation rate among Aboriginal and Torres Strait Islander peoples was 1.2 per 100,000 population per year (Sonneveld et al., 2024). This rate remained stable over the period 2010 to 2019. The median length of hospital stay was reported as five days, and the hospitalisation rate was highest among those aged 40-49 years followed by 30-39 years and 20-29 years. Acute HBV hospitalisations among Aboriginal and Torres Strait Islander infants and children are low, with no hospitalisations reported for children aged 0-4 years and a rate of hospitalisation of 0.8 per 100,000 population for children aged 5-9 years. HBV and HCV can lead to life-threatening conditions such as chronic liver disease (cirrhosis) and liver cancer which can also result in hospitalisation. Data were not available on HCV or HIV related hospitalisations.

Potentially preventable hospitalisations (PPH)

PPH are a health system performance indicator of accessibility and effectiveness based on recorded hospital admissions of patients diagnosed with certain vaccine-preventable, chronic, and acute conditions (Australian Institute of Health and Welfare [AIHW], 2020). HBV is a vaccine-preventable condition with data collected on PPH however, this includes all hospital admissions where HBV is included in the patients' clinical notes. As such, PPH for HBV captures instances where HBV may not be significant to the occasion of hospitalisation (AIHW, 2020). For 2019-2021, chronic HBV was reported to account for 65% of all PHH due to vaccine-preventable conditions among Aboriginal and Torres Strait Islander peoples, equivalent to 3.8 PHH per 1,000 population (Australian Institute of Health and Welfare National Indigenous Australians Agency, 2024c). HCV and HIV potentially preventable hospitalisation rates are not reported on.

Burden of disease (non-fatal)

Data from the Australian Burden of Disease Study provide insights into the non-fatal burden of disease. Years lived with disability (YLD) is a measure of the non-fatal burden of disease. Table 2 presents YLD data among Aboriginal and Torres Strait Islander peoples in 2018 (Australian Institute of Health and Welfare [AIHW], 2022).

Table 2. Years lived with disability (YLD), Aboriginal and Torres Strait Islander peoples, 2018

Acute HBV	0.12 YLD (equivalent to 0.0 YLD per 1,000 population)
Acute HCV	0.64 YLD (equivalent to 0.0 YLD per 1,000 population)
HIV/AIDS	35 YLD (equivalent to 0.1 YLD per 1,000 population)

Source: AIHW, 2022

Furthermore, HBV and HCV can contribute to the development of conditions such as chronic liver disease and liver cancer. Chronic liver disease is the 14th leading burden of disease among Aboriginal and Torres Strait Islander peoples, and liver cancer is the fastest growing cause of cancer-death in Australia (AIHW, 2022; MacLachlan et al., 2024). Among Aboriginal and Torres Strait Islander peoples, chronic liver disease and liver cancer were reported to account for 15 YLD (0.0 per 1,000 population) and 20 YLD (0.0 per 1,000 population) respectively (AIHW, 2022).

Mortality

BBVs contribute to mortality rates among Aboriginal and Torres Strait Islander peoples particularly, through increasing susceptibility to acquiring other infections due to lowered immunity, impacting liver health, and increasing cancer risk (Australian Institute of Health and Welfare National Indigenous Australians Agency, 2024b).

Mortality data are available for acute HBV among Aboriginal and Torres Strait Islander peoples. Within the period 2000 to 2019, 29 deaths were attributed to acute HBV, equivalent to an age-standardised average annual rate of 3.6 per 1,000,000 population per year (Sonneveld et al., 2024). Further, within the period 2006 to 2019, the median age of death attributed to acute HBV among Aboriginal and Torres Strait Islander peoples was 51 years.

HCV mortality data are not availability for Aboriginal and Torres Strait Islander peoples. DAAs are a widely curative and tolerable treatment for HCV. HCV treatment uptake increases post 2015 reflect PBS subsidised interferon-free DAA regimens becoming available in Australia in March 2016 (Naruka et al., 2023). Data from the ANSPS report that in 2022, among Aboriginal and Torres Strait Islander participants, 66% reported a lifetime history of HCV treatment, an increase from 13% in 2013. In 2022, 27% of Aboriginal and Torres Strait Islander participants in the ANSPS reported uptake of treatment in the last 12 months (Naruka et al., 2023).

HIV is increasingly viewed as a chronic condition which can be successfully managed through treatment. In Australia, 93% of people living with HIV are aware of their HIV status, 95% of those who are diagnosed are receiving treatment, and 98% of those who are diagnosed and on treatment have an undetectable viral load (Health Equity Matters, 2024). HIV mortality data are not available for Aboriginal and Torres Strait Islander peoples.

Burden of disease (fatal)

Data from the Australian Burden of Disease Study provide insights into fatal burden of disease. Years of life lost (YLL) is a measure of fatal burden of disease. Disability adjusted life years (DALYs) is a combined measure of fatal and non-fatal burden of disease. Table 3 presents YLL and DALY data among Aboriginal and Torres Strait Islander peoples in 2018 (AIHW, 2022).

Table 3. Years of life lost (YLL) and disability adjusted life years (DALY), Aboriginal and Torres Strait Islander peoples, 2018

	Acute HBV	Acute HCV	HIV/AIDS
YLL	49 YLL (equivalent to 0.1 YLL per 1,000 population)	0.16 YLL (equivalent to 0.0 YLL per 1,000 population)	87 YLL (equivalent to 0.1 YLL per 1,000 population)
DALYs	49 DALYs (0.1 per 1,000 population)	0.8 DALYs (0.0 per 1,000 population)	122 DALYs (0.2 per 1,000 population)

Source: AIHW, 2022

Furthermore, chronic liver disease and liver cancer represent a significant burden of disease among Aboriginal and Torres Strait Islander peoples. Chronic liver disease was reported to account for 4,668 YLL (8.1 per 1,000 population) and 4,683 DALYs (8.2 per 1,000 population) (AIHW, 2022). Further, liver cancer was reported to account for 1,628 YLL (3.3 per 1,000 population) and 1,648 DALYs (3.3 per 1,000 population).

Avoidable deaths

Avoidable mortality is a measure which refers to deaths which are considered preventable through timely and effective healthcare such as individualised care and/or treatable through existing primary or hospital care. In Australia, this is measured based on the cause of death among people aged less than 75 years (Australian Institute of Health and Welfare National Indigenous Australians Agency, 2024b). Specific data on HBV, HCV and HIV avoidable deaths among Aboriginal and Torres Strait Islander peoples are not available. This may be due to the high rates of HBV vaccination coverage, the management of HIV as a chronic condition through treatment, and the treatment of HCV through DAAs (Australian Institute of Health and Welfare National Indigenous Australians Agency, 2024a).

Priority Setting: Prisons

The prevalence of BBVs and IDU within custodial settings is significantly greater than that among the general population (Bah et al., 2024). The National Prison Entrants' Blood-borne Virus Survey conducted in 2016, provides data on the status of HBV, HCV and HIV among Aboriginal and Torres Strait Islander prison entrants (Table 4) (Butler & Simpson, 2017).

Table 4. Number of antibody tests conducted and positive results, Aboriginal and Torres Strait Islander prison entrants, 2016

BBV	Number of antibody tests conducted	Number of positive tests (%)
HBV	98	31 (32%)
HCV	99	21 (21%)
HIV	102	0 (0%)

Source: Butler & Simpson, 2017

IDU status was not collected for all survey participants. Among HCV antibody tests conducted, IDU status was collected for 84 tests. Among positive HCV antibody tests, 2% were non-IDU compared with 66% of positive case who identified as IDU. Of the HBV antibody tests conducted, IDU status was collected for 82 tests. Among positive HBV tests, 35% identified as non-IDU, compared with 18% of positive cases identifying as IDU (Butler & Simpson, 2017).

The National Prison Entrants' Blood Borne Virus Survey also collected data on HBV immune status among Aboriginal and Torres Strait Islander prison entrants. In 2016, 85 HBV immune status tests were conducted (Table 5).

Table 5. HBV immune status, Aboriginal and Torres Strait Islander prison entrants.

No evidence of HBV immunity	Immune through past exposure	HBV carrier	Vaccine conferred immunity
28 (33%)	26 (31%)	5 (6%)	26 (31%)

Source: Butler & Simpson, 2017

Limited data is available on BBV status within juvenile custodial settings. A survey of justice-involved adolescents aged 14-17 years old from Qld and WA showed that among Aboriginal adolescents surveyed who identified themselves as having sex before, only 36% had ever been tested for STI/HIV (Taflan et al., 2023).

To date in Australia, the majority of national BBV surveillance data is collected through the national prison entrants survey which only collects data from new prison entrants. The Australian Hepatitis and risk survey in prisons (AusHep) is a new BBV surveillance system for prison settings, aiming to enhance data collection and participant recruitment (including those sentenced and those on remand) to provide data on BBV testing and treatment uptake. AusHep results are not yet available at the time of publication (Bah et al., 2024).

Prevention and management

Australia’s public health response to BBVs has been a multifaceted response encompassing prevention and management through health promotion, harm reduction initiatives and screening and treatment. This response has seen successful endeavours in reducing BBVs among the mainstream population in Australia. However, Aboriginal and Torres Strait Islander peoples still experience high rates of BBVs despite these interventions. The *National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people* (Royal Australian College of General Practitioners, 2018) outlines the primary health care guidelines for the prevention and screening of BBVs.

Education and prevention

The education and prevention of BBVs in Aboriginal and Torres Strait Islander communities is multifaceted and entails community education, vaccination, screening, harm reduction and antenatal care. Culturally appropriate education is essential to increase awareness, knowledge and health literacy regarding BBVs in Aboriginal and Torres Strait Islander communities. Research indicates that health literacy of sexual health and BBVs is low among Aboriginal and Torres Strait Islander communities and argues for improved methods of education (Alavi et al., 2015; Anderson et al., 2016; Binks, Ross, et al., 2024; Brener et al., 2015; Cama, Beadman, Beadman, Walker, et al., 2023; Rosenberg et al., 2019). Historically, health education and prevention methods have been most effective when designed and delivered with local communities, this ensures cultural appropriateness and can aid in acceptance (Binks, Venkatesan, et al., 2024; Davies et al., 2014; Rosenberg et al., 2019). There have been many diverse forms of health promotion and education that have been deemed acceptable in their respective communities (Graham, O'Connor, et al., 2017; Rosenberg et al., 2019). The burden of BBVs in Aboriginal and Torres Strait Islander communities validate the need for diverse intervention through education, health promotion and prevention initiatives.

Community education and engagement

Community education on transmission and prevention

Low health literacy levels can be directly linked to poor health outcomes (Hosking, Binks, et al., 2024; Nutbeam, 2008), a concerning reality given the reported education gaps in sexual health and blood-borne viruses (SHBBVs) among Aboriginal and Torres Strait Islander communities (Alavi et al., 2015; Anderson et al., 2016; Binks, Ross, et al., 2024; Brener et al., 2015; Cama, Beadman, Beadman, Walker, et al., 2023; Rosenberg et al., 2019). Increasing knowledge and awareness of BBVs is essential for prevention endeavours. Impactful community education and engagement requires relationships, trust, two-way learning, capacity building, collaboration and significant time investment in delivering education projects alongside local Aboriginal and Torres Strait Islander communities (Binks, Ross, et al., 2024; Binks, Venkatesan, et al., 2024; Davies et al., 2014; Fagan et al., 2015; Fela, 2024).

Community education in Aboriginal and Torres Strait Islander communities can involve an array of delivery methods such as peer-education, yarning circles, men’s and women's groups, clinical yarning, phone apps, social media and health promotion events (Binks, Ross, et al., 2024; Fagan et al., 2015; Rosenberg et al., 2019). There is a large evidence-base regarding sexual health education in Aboriginal and Torres Strait Islander communities. However, this review found limited BBV specific education and identified gaps in culturally appropriate health promotion resources (Davies et al., 2014; Hosking, De Santis, et al., 2024). Use of first language was also identified as a key priority towards strengthening health and health literacy (Hosking, De Santis, et al., 2024; Lim et al., 2023). Previous BBV education projects offer valuable insight and learnings into the development of future BBV health promotion projects with Aboriginal and Torres Strait Islander communities. One example is the electronic resource *Hep B Story* (detailed in Box 1).

Box 1. ***Hep B Story***

To bridge the health education gap, the Menzies School of Health Research (Menzies) in the NT developed a comprehensive electronic app, *Hep B Story*, as a health education resource delivered in both Yolnu Matha (local Indigenous language spoken in the NT) and English (Binks, Ross, et al., 2024; Davies et al., 2015). The app was tailored for Aboriginal peoples and serves as a training tool for healthcare workers. The project commenced in 2012 in Arnhem Land, NT and was launched at the 2014 Indigenous Peoples' Conference on Viral Hepatitis in Alice Springs, NT. Menzies developed the app in partnership with the Miwatj Health Aboriginal Corporation Community Clinic (an Aboriginal-Controlled Health Service representing communities across East Arnhem Land), the Royal Darwin Hospital Liver Clinic, and Dreamedia (Darwin based graphic design company) (Davies et al., 2015).

Using a participatory action research (PAR) methodology to guide practice, the research team consulted with healthcare workers, the Arnhem Land community and patients living with CHB to inform the program and translate health resources (Binks, Ross, et al., 2024; Davies et al., 2015). Use of the PAR methodology also strengthened the capacity of culturally and linguistically diverse Aboriginal communities and cultivated a culturally appropriate and responsive research framework (Binks, Ross, et al., 2024; Davies et al., 2015). The app went through vigorous forward translation (English to Yolnu Matha) and back translation (Yolnu Matha to English) by two experienced interpreters from the community to ensure translation was accurate (Davies et al., 2015). Additionally, the app was evaluated four times by the community prior to its final approval (Davies et al., 2015). Following the app's launch, evaluation showed overwhelmingly positive qualitative feedback with references to its ease of use, ability to read and listen in Yolnu Matha and culturally appropriate graphics (Davies et al., 2015).

Following the app's initial success, 10 additional Aboriginal languages were selected for translation in 2018 as part of a wider project, Hep B PAST (A Partnership Approach to Sustainably eliminating Chronic Hepatitis) (Binks, Ross, et al., 2024; Binks, Venkatesan, et al., 2024). Hep B PAST aimed to improve HBV health literacy among people living with CHB, Aboriginal communities and healthcare workers (Binks, Venkatesan, et al., 2024). During formative evaluation of the adaptation project, some challenges were identified from the community such as, stigma and shame surrounding HBV transmission (i.e., transmission from mother to baby considered women's business, drug use and sexual transmission), language errors and gendered blaming (Binks, Venkatesan, et al., 2024). It was also found that knowledge-based assessments were intimidating for community users, even when presented in Yolnu Matha, (Binks, Venkatesan, et al., 2024). The adaptation project sought to address these concerns to ensure cultural safety.

While the adaptation was initially planned to occur within 12 months, translation and development occurred over five-years (Binks, Ross, et al., 2024; Binks, Venkatesan, et al., 2024). This underscores the complexities and need to build meaningful relationships based on trust to effectively develop and evaluate electronic health resources. By doing this, and using PAR methodology, the project team successfully translated health messages into an additional 10 Aboriginal languages and negated information being shared with those who should not (i.e., women's and men's business) and gendered blaming, and adapted storytelling to be relevant to diverse communities within the NT (Binks, Ross, et al., 2024). Addressing and correcting language errors also reduced levels of fear or threat perceived by participants. At the end of evaluation, all participants (n=95) felt that HBV and CHB information was so important that they planned to pass on information to their families and to encourage check-ups (Binks, Venkatesan, et al., 2024).

While there have been around 250 apps that have been developed in Aboriginal and Torres Strait Islander languages, evidence of their effectiveness is limited (Binks, Ross, et al., 2024). The development and evaluation of *Hep B Story* sets itself apart from others on the market due to the research team's continued engagement and consultation (via yarning) with culturally and linguistically diverse Aboriginal communities across the NT, healthcare workers and patients living with CHB. To ensure the app's uptake, the Hep B PAST team co-designed a comprehensive training course for the Aboriginal health workforce, enabling them to practice independently within health clinics (Binks, Venkatesan, et al., 2024).

Healthcare providers' education

Many studies report a deficiency in healthcare providers' understanding and awareness of BBVs in Aboriginal and Torres Strait Islander communities (Anderson et al., 2016; Binks, Ross, et al., 2024; Cama, Beadman, Beadman, Hopwood, et al., 2023; Coles et al., 2019; Davies et al., 2014; Hosking, Binks, et al., 2024; Lim et al., 2023; Merone et al., 2022; Rosenberg et al., 2019; Wallace et al., 2014). Research suggests increased opportunities for education in Aboriginal and Torres Strait Islander health settings would prove beneficial in raising awareness and improve continuity of care (Clark et al., 2024; Davies et al., 2014; Lim et al., 2023; Wallace et al., 2014). High turnover of staff has been identified as an enabler to low understanding of BBVs (Anderson et al., 2016; Hosking, De Santis, et al., 2024; Wallace et al., 2014) resulting in stigma among health professionals (Cama, Beadman, Beadman, Hopwood, et al., 2023; Coles et al., 2019) and a disruption to continuity of care for clients living with BBVs (Coles et al., 2019; Lim et al., 2023; Rosenberg et al., 2019).

Peer-led education and support groups

Peer-education has been a notable feature of health promotion in Aboriginal and Torres Strait Islander communities (Biggs et al., 2016; D'Costa et al., 2019; Rosenberg et al., 2019), as well as in communities of PWID, with many harm reduction organisations implementing peer-education and support in their service delivery (AIVL, 2016; Rosenberg et al., 2019; Treloar et al., 2023; Treloar et al., 2018). Peer-education has proven applicable with younger Aboriginal people and serves as a method to remove barriers of stigma and shame due to the familiarity of a peer who would usually have established relationships, trust and networks within their community (Biggs et al., 2016; Cama, Beadman, Beadman, Hopwood, et al., 2023; Rosenberg et al., 2019). Historically, there have been limitations in evaluating peer-education programs long-term to gauge influence on behaviour change (D'Costa et al., 2019). Short-term evaluations have demonstrated increased knowledge regarding BBVs and STIs and increased likelihood of requesting STI and BBV testing and empowerment within community. Deadly Liver Mob (DLM) is one example of a robust BBV peer-based program targeting Aboriginal people in New South Wales (NSW) (Treloar et al., 2023; Treloar et al., 2018) (detailed further in Box 2).

Box 2. Deadly Liver Mob

The Deadly Liver Mob (DLM) program was developed to address low attendance rates at NSPs in NSW, Australia, in an area with higher levels of IDU and low engagement with sexual health screening and health services (Cama, Beadman, Beadman, Walker, et al., 2023; Treloar et al., 2018). DLM is an incentive based, peer-driven health promotion program which seeks to educate Aboriginal and Torres Strait Islander peoples on HCV and refers clients to BBV/STI screening and treatment if required (Biggs et al., 2016; Cama, Beadman, Beadman, Walker, et al., 2023).

Aboriginal DLM staff members deliver HCV education sessions to clients through yarning, and with visual aids to support those with low literacy skills (Treloar et al., 2023). A supermarket voucher is provided to the client following education sessions, and they are encouraged to share lessons with their networks and to recruit others to attend (Biggs et al., 2016; Cama, Beadman, Beadman, Walker, et al., 2023). Clients are then referred to BBV/STI screening services by a local NSP or sexual health clinic and asked to return for results and relevant treatment. Clients are provided with supermarket vouchers following each step of care, and further vouchers for up to three peers recruited to the program. This peer-driven approach helps to deliver HCV education and break down associated stigmas among communities beyond those who inject drugs (Biggs et al., 2016).

Following the success of two DLM pilot sites in Mount Druitt, NSW in 2013, an additional seven sites were established across metropolitan, rural and remote NSW (Cama, Beadman, Beadman, Walker, et al., 2023). The key to DLM's success was the employment of Aboriginal or Torres Strait Islander staff, which helped to build and maintain trust between health services and DLM clients (Biggs et al., 2016; Treloar et al., 2023; Treloar et al., 2018). Rural and remote DLM sites troubleshooted challenges following the project's expansion by adapting and tailoring their services, incentives and modes of delivery to better suit the needs of respective communities; driving engagement and facilitating screening with harder-to-reach groups (Cama, Beadman, Beadman, Walker, et al., 2023).

Evaluation of the project saw positive results in the HCV screening and treatment behaviours of Aboriginal and Torres Strait Islander communities. In the first year of the pilot DLM site, there was a significant increase in screening (n=313) compared to the five years preceding DLM (n=83) and an increase in presentations from young people (Biggs et al., 2016). From 2013 to 2020, DLM has delivered HCV education sessions to 1,787 clients, with 74% of those receiving BBV/STI screening and 57% returning to receive results (Cama, Beadman, Beadman, Walker, et al., 2023).

The success of the DLM program is largely attributed to the employment of Aboriginal and Torres Strait Islander staff, who acted as cultural brokers to meet the sexual health needs of DLM clients. While starting as a program to improve HCV screening and treatment, DLM has evolved to support clients with other BBV and STIs and serves as a unique opportunity for referrals to other social and health services (Cama, Beadman, Beadman, Walker, et al., 2023). In developing the evaluation framework, Treloar et al. (2023) notes that DLM adopted a strengths based approach, as opposed to a deficit approach, which helped to build the capital and sexual health literacy of DLM clients and staff members. DLM showcases the effectiveness of Aboriginal and Torres Strait Islander led programs to improve the sexual health needs of Aboriginal and Torres Strait Islander peoples, and to closing the gap in sexual health outcomes.

Vaccination programs

Vaccines for HBV became universally available in 1990, contributing to already declining rates of HBV (Davies et al., 2017; Qama et al., 2021). Since 2000, the infant HBV vaccination program has been successful in providing vaccinations to 97% of Aboriginal and/or Torres Strait Islander children aged 24 months (Narayana et al., 2022). However, gaps remain in vaccination rates, and suspected vaccine efficacy (Deng et al., 2017; Narayana et al., 2022; Olsen et al., 2014). Catch-up schedules are available to follow up on missed vaccinations. However, government funding for catch-up schedules varies across Australian jurisdictions.

Hepatitis B vaccination campaigns, including catch-up programs

Since the HBV vaccine became universally available in 1990, a large percentage of Aboriginal and/or Torres Strait Islander infants have received vaccinations. According to National Centre for Immunisation Research and Surveillance Australia (2019) a reported 98.7% of Aboriginal and Torres Strait Islander children aged five had received three doses of the HBV vaccine.

Despite this high coverage, vaccination initiatives have not always adequately reached Aboriginal and/or Torres Strait Islander communities (Coles et al., 2019). Lower vaccine coverage among this cohort can be linked to a lack of access to health care, both geographically and culturally (Coles et al., 2019). The literature discusses the effectiveness of the HBV vaccine in Aboriginal communities (Cheah et al., 2018; Davies et al., 2017; Deng et al., 2017; Gidding et al., 2015; Graham et al., 2019; Reekie et al., 2018) sharing a range of both improved coverage and mild coverage in differing communities. There are few studies that appear to discuss catch up initiatives and campaigns. The literature does call for further culturally appropriate methods of vaccine delivery, a focus on vaccination and education with Aboriginal and Torres Strait Islander peoples in custodial settings (Coles et al., 2019; Gidding et al., 2015) and a vaccination approach that is consistent on a national level to provide optimal coverage for Aboriginal and /or Torres Strait Islander peoples (Harrod et al., 2014; Olsen et al., 2014).

Harm reduction programs

Needle and Syringe Programs (NSPs)

NSPs have proven to be a successful intervention in reducing the transmission of HCV and HIV in Australia through provision of IDU hardware and relevant health education (Lobo & Coci, 2021). Access to NSPs can be an issue for Aboriginal and/or Torres Strait Islander peoples due to a lack of service provision in regional, remote or very remote settings, lack of resourcing to ACCHS, experiences of stigma, discrimination or perceived discrimination due to Indigenous identity or IDU, culturally insensitive services, associated costs, health literacy and shame in being identified using service (Lobo & Coci, 2021; Peach et al., 2018). Additionally, a lack of NSPs in custodial settings contributes to higher rates of BBVs in these environments, due to the higher prevalence of IDU and sharing of injecting equipment (Merone et al., 2022; Smirnov et al., 2018). The literature highlights these barriers, and emphasises the need for a hybrid approach to models of delivery to enable broader opportunities for access (Fisher et al., 2017) and calls for the introduction of NSPs in custodial settings (Merone et al., 2022).

Education on safe injection practices

Evidence for safe injecting practices in Aboriginal and Torres Strait Islander communities appears limited. However, learnings from other countries, particularly Canada, where First Nations peoples are exposed to higher rates of HIV (Graham, Maher, et al., 2017; Graham, O'Connor, et al., 2017; Peach et al., 2018) is available. Based on these studies, recommendations were made to boost access to NSPs for Aboriginal and/or Torres Strait Islander PWID and increase education on safe injecting practices (Doyle et al., 2018; Graham, Maher, et al., 2017; Graham, O'Connor, et al., 2017). Aboriginal and/or Torres Strait Islander females and young people were identified as a key target audience for safe injecting education due to increased likelihood of having a partner who injects drugs, and younger age of commencing IDU (Doyle et al., 2018; Graham, Maher, et al., 2017; Graham, O'Connor, et al., 2017; Peach et al., 2018). A gap is identified in the literature on harm reduction programs in custodial settings, particularly so with Aboriginal and Torres Strait Islander peoples, suggesting a need for further research and resourcing in this space.

Availability and uptake of PrEP and PEP in high-risk populations

There appears to be limited discussion of the availability and uptake of Pre-Exposure Prophylaxis (PrEP) and Post-Exposure Prophylaxis (PEP), specifically among Aboriginal and Torres Strait Islander peoples. Some literature discusses the gaps in education and promotion of PrEP and PEP in Aboriginal and Torres Strait Islander communities, particularly in reaching Aboriginal and/or Torres Strait Islander men who have sex with men (MSM) (Graham, O'Connor, et al., 2017; Hope & Haire, 2019). One study interviewing sexual health workers in ACCHS and AIDS Councils argued that this was due to a lack of government commitment of funding towards HIV and sexual health promotion in Aboriginal and Torres Strait Islander communities (Hope & Haire, 2019). The authors called for further collaboration between AIDS councils and ACCHSs to meet this need for education with Aboriginal and/or Torres Strait Islander MSM to raise awareness and uptake of PrEP and PEP (Hope & Haire, 2019).

Condom distribution and safe sex education

The provision of condoms, safe sex education and NSPs establish a holistic prevention approach to STIs and BBVs in Aboriginal and Torres Strait Islander communities (Rosenberg et al., 2019). Condom distribution and safe sex education is noted as a high priority in Aboriginal and Torres Strait Islander communities; however, lack of resourcing contributes to accessibility issues, and insufficient training of healthcare providers and educators on SHBBV and/or culturally appropriate practice (Hope & Haire, 2019; Rosenberg et al., 2019). There have been numerous successful safe sex education initiatives implemented alongside local community and Aboriginal and/or Torres Strait Islander health workers, such as the response to the AIDS epidemic described by Fela (2024). Previous successful safe sex education initiatives offer valuable insight into future sexual health promotion practice.

Screening programs

Routine screening for high-risk groups

Routine screening among high-risk groups for BBVs is an area that needs to be strengthened to combat further burden of disease in Aboriginal and/or Torres Strait Islander communities (Puljević et al., 2022; Ward et al., 2016). Studies found that there was an insufficiency in routine screening for BBVs, with the majority occurring across annual health checks, at client request or client participation in high-risk activities resulting in possible exposure (Puljević et al., 2022). Clients who had a history of IDU or recent incarceration were more likely to be asked to participate in BBV screening (Puljević et al., 2022). Successful HBV screening initiatives have also been introduced among high-risk groups in custodial settings and throughout antenatal care (Olsen et al., 2014). Further research is required to learn of the barriers preventing screening with populations considered high-risk of BBVs (Ward et al., 2016).

Screening in Aboriginal Community Controlled Health Services (ACCHS)

ACCHS are noted to provide holistic and culturally safe care to their respective communities (Khoury, 2015; McCormack et al., 2022). Due to this, they are widely accepted as health service providers for many Aboriginal and Torres Strait Islander peoples (Davy et al., 2016; Hickey et al., 2021). Generally, screening tools ACCHS may utilise for BBVs are the HCV Point-of-care test (PoCT) (Bajis et al., 2018; Lafferty et al., 2024) (discussed under early detection and diagnosis) and the Medicare Benefits Scheme (MBS) item number 715 Aboriginal and Torres Strait Islander health check (Australian Government Department of Health and Aged Care, 2022). The MBS 715 health check is an annual preventive assessment to examine risks for illness or chronic disease (Australian Government Department of Health and Aged Care, 2022). The MBS 715 health check enables testing for stigmatised ailments such as STIs and BBVs by removing the stigma around these ailments, and normalising testing (McCormack et al., 2022; Nattabi et al., 2017).

Antenatal care

Aboriginal and/or Torres Strait Islander peoples and those who are pregnant have been recognised as priority populations in Australia's National HBV Strategy (Olsen et al., 2014; Sullivan et al., 2022), calling for prevention and intervention methods that are uniquely targeted to reach this audience. A scoping study conducted by Olsen et al. (2014) found that BBV screening during antenatal care has proven to be effective in most settings, however, HBV prevalence remains higher in Aboriginal and/or Torres Strait Islander communities (Reekie et al., 2018). Despite this history of higher HBV prevalence experienced by Aboriginal and/or Torres Strait Islander peoples this review found minimal evidence on antenatal care and BBVs, suggesting that further research is required to update this evidence base.

Testing, treatment and management

Early detection and diagnosis

Mobile clinics and outreach testing options

Few studies extensively explored the use of mobile clinics and outreach testing options in the healthcare of BBVs in Aboriginal and/or Torres Strait Islander communities. However, it was identified that these options have been successful in engaging with individuals who usually would not use traditional health services and therefore increase screening of STIs and BBVs with this cohort (Peach et al., 2018). The flexibility and innovative methods of delivery facilitated by mobile clinics and outreach testing was considered valuable in conjunction with traditional services (Cama, Beadman, Beadman, Smith, et al., 2023; Clark et al., 2024; Peach et al., 2018).

Point-of-care testing, self-testing options and community-based testing initiatives

HCV PoCT was a regular testing initiative of discussion in this review, particularly so from the use of PoCT in ACCHS settings. Many studies discussed the acceptability of PoCT from the point of view of healthcare providers and their clients. Barriers associated with PoCT included the additional workload burden, immediate time commitment and the risk of siloing healthcare (Lafferty et al., 2024). However, PoCT also enabled clients who injected drugs to opt for PoCT due to scarring from IDU and produced a more effective cascade of care (Bajis et al., 2018; Lafferty et al., 2024). Multiple studies found that PoCT can be beneficial and acceptable when delivered in culturally safe settings (Lafferty et al., 2024; Lim et al., 2023; Rosenberg et al., 2019) and suggested training all clinic staff and incorporating BBV education when implementing PoCT (Lafferty et al., 2024). Studies on HIV PoCT, self-testing options and community-based testing initiatives with Aboriginal and/or Torres Strait Islander peoples appear to be minimal. Further qualitative research is required on PoCT acceptability, HIV PoCT, self-testing options and community-based testing in Aboriginal and Torres Strait Islander communities.

Regular screening and follow-up for hepatitis B

Studies highlight differing experiences of HBV care across Aboriginal and/or Torres Strait Islander communities, reporting low HBV health literacy among those living with CHB, competing health priorities, lack of staff resources and infrastructure, lack of client education on managing and preventing transmission of HBV, little follow-up and insufficient communication from healthcare providers resulting in distrust and disempowerment (Anderson et al., 2016; Davies et al., 2014; Wallace et al., 2014). To strengthen the continuity of care for clients with CHB, it is recommended that:

- additional HBV training be provided
- HBV treatment and vaccinations are offered in custodial settings

- health systems review and enhance post-diagnosis follow-up, monitoring and treatment
- dedicated HBV healthcare workers are employed
- reimbursements for HBV treatment are made available in Primary Health Care (PHC) settings
- a jurisdiction-based HBV register is established
- HBV care is integrated into chronic disease self-management
- further research is conducted with healthcare workers and people living with CHB to guide new practice and policy (Anderson et al., 2016; Coles et al., 2019; Larkin et al., 2022; Olsen et al., 2014; Wallace et al., 2014).

Access to direct-acting antivirals (DAA) for hepatitis C treatment

Increased access to DAA treatment for HCV is essential as Australia moves towards elimination targets of HCV by 2030. However, several barriers persist, preventing Aboriginal and/or Torres Strait Islander peoples from accessing treatment including racism, culturally insensitive healthcare, socioeconomic status, lack of transport, living regionally/remotely and being unhoused (Clark et al., 2022; Lim et al., 2023; Treloar et al., 2016a; Treloar et al., 2014). Studies also find that knowledge of DAA treatment was limited among healthcare providers and Aboriginal and/or Torres Strait Islander peoples who could be at risk of HCV (Lim et al., 2023; Puljević et al., 2022; Treloar et al., 2014). This lack of knowledge is noted as contributing to a hesitancy in undertaking DAA treatment, due to known past side effects associated with previous interferon-based treatment (Brener et al., 2016; Lim et al., 2023). Eligibility is also cited as a barrier to accessing DAA treatment due to some healthcare providers' hesitation to prescribe because of the client’s current IDU and alcohol use, contrary to HCV treatment guidelines (Lim et al., 2023; Puljević et al., 2022). Enablers in increasing access and uptake of DAA treatment in Aboriginal and/or Torres Strait Islander communities include peer referral, culturally safe care, flexible service delivery, increased promotion, dispensing of DAAs in webster packs, strong community networks and child-friendly waiting areas (Lim et al., 2023; Puljević et al., 2022; Read et al., 2024; Treloar et al., 2018; Treloar et al., 2014).

Treatment and care

Access to antiretroviral therapy (ART)

Literature on access to ART among Aboriginal and Torres Strait Islander communities appears scarce. However, research does discuss how barriers to sexual health and BBV care can impact Aboriginal and/or Torres Strait Islander peoples regarding HIV. Rosenberg et al. (2019) and Ward et al. (2016) highlighted that barriers to accessing healthcare can result in delayed HIV diagnosis, inability or impeding to sufficiently reduce viral load, and therefore attain viral suppression for Aboriginal and/or Torres Strait Islander peoples living with HIV. Evidence suggests increased HIV testing, use of HIV PoCT, targeted health promotion campaigns, opportunistic testing among high-risk populations, and improving engagement in care is essential for the prevention of HIV (Hope & Haire, 2019; Stephens et al., 2023; Ward et al., 2016), in addition to treatment as prevention. Notably, once engaged in care, Aboriginal and/or Torres Strait Islander peoples living with HIV are likely to manage treatment uptake and sustain viral suppression (Stephens et al., 2023). Previous HIV management initiatives involving visiting multidisciplinary teams have also proven successful in maintaining the retention of Aboriginal and Torres Strait Islander peoples living with HIV (Stephens et al., 2023).

Support for treatment adherence

Aboriginal and/or Torres Strait Islander peoples often experience comorbidities and face competing priorities with health, social and cultural obligations (Clark et al., 2022; Lim et al., 2023; Olsen et al., 2014). These competing priorities can result in barriers to the uptake and adherence of treatment measures. Multiple studies highlight these competing priorities and propose that uptake and adherence are sustained when healthcare is holistic, care is delivered in primary health settings, family are involved, and cultural practices are respected (Lim et al., 2023; Olsen et al., 2014).

Culturally safe healthcare delivery

Culturally safe healthcare delivery is crucial for Aboriginal and Torres Strait Islander peoples to attain good health (Dudgeon et al., 2014). The literature highlights the various methods of health service providers in delivering culturally safe healthcare including employing Aboriginal and/or Torres Strait Islander health workers, pre-employment cultural awareness training for non-Indigenous staff, peer support, partnerships and visits with ACCHS staff, ongoing professional development and providing healthcare on Country (Han et al., 2024; Hosking, De Santis, et al., 2024; Lim et al., 2023; Treloar et al., 2018). Research specifically highlighted the importance of knowing the diversity of Aboriginal and Torres Strait Islander communities and the need in understanding a local community's culture (Lim et al., 2023). Also highlighted was the significance of gender, as some Aboriginal or Torres Strait Islander peoples may be uncomfortable discussing health with a healthcare worker of the opposite gender due to cultural sensitivities (Lim et al., 2023). Providing culturally safe healthcare can result in establishing relationships, trust, further engagement with service and enable treatment adherence (Brener et al., 2016; Lim et al., 2023; Treloar et al., 2018).

Integration of BBV care with other health services

Multiple studies discuss the implementation of BBV care within primary health care services (Cama, Beadman, Beadman, Smith, et al., 2023; Foy & Tierney, 2014; Hla et al., 2020; Wallace et al., 2018). These studies sought to increase healthcare access specifically for Aboriginal and/or Torres Strait Islander peoples, who may not have been able to access necessary specialist services in their respective communities. Studies note considerable barriers in access, specifically travel required (Foy & Tierney, 2014; Hla et al., 2020), and concerns accessing tertiary liver clinics due to perceived stigma and discrimination (Wallace et al., 2018). Integration of BBV care primarily involved a BBV care team consisting of a GP, specialist nurse and/or doctor, sonographer, and Aboriginal Health Practitioner (Hla et al., 2020; Wallace et al., 2018), healthcare was also provided with visiting specialists (Foy & Tierney, 2014; Hla et al., 2020). ACCHS specifically were noted as suitable services to implement targeted BBV care with Aboriginal and/or Torres Strait Islander peoples due to long-standing trust with community, no judgement and person-centred healthcare (Brener et al., 2015; Wallace et al., 2018). While the literature did suggest the feasibility of integrating primary health BBV care in other communities (Brener et al., 2015; Hla et al., 2020; Wallace et al., 2018), it was noted that a localised approach based on the models previously implemented was best practice (Hla et al., 2020).

Aboriginal and Torres Strait Islander health workforce

The significant role of the Aboriginal and/or Torres Strait Islander health workforce in providing credibility and enabling trust with community, establishing connections, providing cultural insight, assisting with interpreting and translation of medical jargon between clients and other healthcare staff has been highlighted, in addition to their roles as trained health professionals (Biggs et al., 2016; Cama, Beadman, Beadman, Hopwood, et al., 2023; Hla et al., 2020; Hosking, De Santis, et al., 2024; Lim et al., 2023). Despite this evidence, the Aboriginal and Torres Strait Islander workforce remains ill-resourced, leading to short-term contracts, insufficient remuneration, high turnover of staff, and a smaller workforce (Cama, Beadman, Beadman, Walker, et al., 2023; Hla et al., 2020; Hosking et al., 2023). This lack of resourcing contributes to the risk of burnout due to high workloads and both community and professional obligations (Cama, Beadman, Beadman, Walker, et al., 2023; Hla et al., 2020; Hosking et al., 2023). Strengthening the recruitment and retention of Aboriginal and/or Torres Strait Islander health workers through adequate training, supportive and anti-racist environments and increased resourcing were identified as crucial requirements to address these barriers impacting this workforce (Cama, Beadman, Beadman, Hopwood, et al., 2023; Hla et al., 2020)

Programs and services

National initiatives

A variety of programs and services support the prevention, diagnosis, and management of BBVs within Aboriginal and Torres Strait Islander communities. These national initiatives are funded by the Australian Government Department of Health and Aged Care, including

Australian Needle and Syringe Program Survey (ANSPS)

- The ANSPS is conducted by Kirby Institute, University of New South Wales and has been funded by the Australian Government Department of Health and Aged Care since 1995.
- The ANSPS provides serial point prevalence estimates of HIV and HCV antibody prevalence, HCV Ribonucleic acid (RNA) prevalence and monitors sexual and injecting behaviour among PWID in Australia.
- The ANSPS is conducted annually in all states and territories at more than 50 NSP services over a one to two week period in October each year.

The Pharmaceutical Benefits Scheme (PBS)

- DAA therapies for treatment of chronic HCV infection are subsidised through PBS since 2016.
- A range of antiretroviral therapies are subsidised through PBS for the management of HIV. Additionally, Pre-Exposure Prophylaxis is subsidised through PBS for HIV-negative individuals who may be at high risk of exposure.

The Medicare Benefits Schedule (MBS)

- MBS provides rebates for consultations where patients are assessed for BBVs, receive counselling, or discuss treatment options. Additionally, consultations with specialists, such as infectious disease doctors, hepatologists (for HBV and HCV), and sexual health specialists, who provide expert care for those living with or at risk of BBVs are covered by MBS.
- MBS rebates also cover blood tests to screen for and confirm the presence of BBVs, monitor viral load, and assess liver function in the case of hepatitis.

The National Immunisation Program (NIP)

- HBV vaccination is provided free of charge to all infants as part of the routine childhood immunisation schedule. The vaccine is administered in multiple doses: a birth dose within 24 hours of birth, and additional doses at 2, 4 and 6 months of age as part of a combined vaccination that also protects against other diseases (such as tetanus and whooping cough).
- Children who missed their vaccinations, adolescents and adults in high-risk exposure groups can receive catch-up doses of the HBV vaccine. This is often provided through schools, public health clinics, and GPs.

Role of primary health care services

Primary health care plays a vital role in the early identification and prevention of BBVs in Indigenous communities through incorporating risk assessment, screening and follow-up care. Key primary health care services include:

Aboriginal Community Controlled Health Services (ACCHSs)

- ACCHSs play a vital role in delivering BBV programs and services to Aboriginal and Torres Strait Islander communities in Australia. ACCHSs are primary healthcare providers that are owned and operated by Aboriginal communities, ensuring culturally appropriate and accessible care tailored to the specific needs of Indigenous people.
- ACCHSs offer culturally appropriate BBV services, deliver health promotion and education programs about BBVs, provide free and confidential BBV screening and testing, offer comprehensive treatment and management of BBVs, and partner with government and non-government agencies to deliver services and advocate for BBV prevention strategies and policies.
- ACCHS deliver holistic health services through person-centred care and often offer essential supports such as transportation and food provision. ACCHS also advocate on behalf of community in areas across child protection, justice, and housing.

715 Health Check

- Aboriginal and Torres Strait Islander peoples of all ages can access a free annual 715 health check at Aboriginal Medical Services and bulk-billing clinics. This health check aims to identify and manage health issues early and improve overall health outcomes.
- While the 715 Health Check is not specifically focused on BBVs, it can include elements related to the prevention, diagnosis, and management of BBVs, depending on the individual's risk factors and health needs.

Antenatal Screening for BBVs

- Antenatal screening for BBVs is a routine part of prenatal care which helps protect the mother and child through identifying infections early and ensuring appropriate interventions are implemented during pregnancy and childbirth.
- Universal screening for HBV and HIV is offered as part of routine antenatal care in Australia. HCV screening is typically offered based on assessed risk of infection.

Policies and strategies

Australia's comprehensive strategies and plans provide a framework and direction for all partners involved in responding to BBVs within Aboriginal and Torres Strait Islander populations. These strategies guide decision-making, monitor progress by evaluating previous results and the effectiveness of responses, consult with stakeholders, and identify any existing gaps.

The Fifth National Aboriginal and Torres Strait Islander Blood Borne Viruses and Sexually Transmissible Infections Strategy 2018-2022 established goals, targets, and priority areas for addressing BBV and STIs specifically among Aboriginal and Torres Strait Islander peoples in Australia. The strategy identifies key priority populations, including young people, those in remote communities, gay men and other men who have sex with men, women, people who inject drugs, and individuals in custodial settings. It focuses on several critical areas such as education and prevention, testing and treatment, addressing stigma, improving access to culturally appropriate services, workforce development, and enhancing data and research. Specific targets are set for increasing vaccination coverage, STI testing, use of sterile injecting equipment, and reducing the incidence of various BBVs and STIs. The strategy emphasises the importance of community engagement, partnerships between government and community organisations, and culturally safe approaches. While acknowledging ongoing challenges such as high rates of some STIs and increasing HIV notifications, it also notes progress in areas such as HBV vaccination. Other relevant national policy documents include:

- Ninth National HIV Strategy 2024-2030

- Draft Fourth National Hepatitis B Strategy 2023–2030
- Draft Sixth National Hepatitis C Strategy 2023–2030
- *National Bloodborne Viruses and Sexually Transmissible Infections Surveillance and Monitoring Plan 2018–2022*
- The First National Bloodborne Viruses and Sexually Transmissible Infections Research Strategy 2021–2025

This review summarises the available strategies for each state and territory jurisdiction and the national strategies (a full list of documents is available in Appendix 1) to identify alignment in targets.

HIV

Goals and targets varied across states. While national targets in relation to HIV were set for 2030, only Victoria (Vic) had state-level targets for the same year. The ACT had targets only until 2020, including the ambitious goal of sustaining the virtual elimination of HIV among people who inject drugs by 2020. Qld, Tasmania (Tas), and the NT did not set specific targets for HIV acquisition.

Most states had targets related to HIV stigma, though these were only quantified in NSW and Vic. Qld, SA, the NT, and WA combined HIV strategies with other STIs and BBVs, while Vic and NSW had standalone HIV strategies. Only SA, Qld, and Vic had HIV strategies specifically for Aboriginal and Torres Strait Islander populations, combined with other STIs and BBVs in their action plans. Other states had strategies for the general population. While the NT did not identify Aboriginal people as a priority population, it acknowledged that some populations might be at higher risk of STIs and BBVs. Vic adopted a more tailored approach to tackling HIV within priority populations. WA took a holistic approach by increasing STI testing coverage and improving knowledge and behaviour. SA aimed to close the gap in STI and BBV incidence, prevalence, testing, and treatment rates between Aboriginal and non-Indigenous populations. Qld’s action plan focused on increasing community awareness, information, and prevention across the lifespan, responding to specific population groups' needs, and improving the service system. However, no specific targets were included. The NT goals were to decrease STI/BBV incidence and prevalence, improve care and management, and minimise personal and social impact, but without measurable targets. The ACT's targets differed from other sub-national jurisdictions, aiming to achieve virtual elimination of HIV transmissions through prevention strategies and early detection initiatives, as well as reducing morbidity and mortality rates and minimising the personal and social impact of HIV within Aboriginal and Torres Strait Islander populations.

Hepatitis B

National targets for HBV were set for 2022, aiming for a 30% reduction in mortality. NSW, Qld, Vic, and WA had specific HBV targets, with Vic setting targets until 2030. The NT had no specific targets, and SA set targets only for childhood vaccinations. The ACT combined their HBV targets with HCV, HIV, and STI priorities for 2016-2020. All states had quantified targets except for the NT, and Tas had no strategies in place for HBV. NSW, Qld, WA, and Vic had standalone HBV strategies, while the ACT combined theirs with HCV, HIV, and STIs. The NT had an STI and BBV operational plan but nothing specific to HBV. Vic, WA, and national strategies included specific HBV targets focusing on priority populations. SA had strategies for HBV relating to Aboriginal populations under a combined BBV and STI plan, but not as a specific strategy for priority populations. Other states did not specify Aboriginal populations in their strategies and targets.

Hepatitis C

National targets were set for HCV, but Aboriginal populations were not specified as a priority group in the strategy. Vic, WA, NSW, and ACT were the only states with HCV targets, with Vic setting targets for 2025 and 2030. SA and Tas had no strategies for HCV, and the NT only had a general STI and BBV strategic and operational plan. Quantified targets were present nationally and in Vic, WA, ACT, and NSW. Qld, SA, and the NT did not have quantified targets, and Tas had no HCV strategies. National targets for HCV included a focus on priority populations with specific targets. Vic set specific HCV targets (2025 and 2030) for priority populations, while NSW did not include priority populations in their targets. Qld and SA had strategies specific to Aboriginal and Torres Strait Islander peoples, but no specific HCV targets were set. Vic and WA had specific plans and strategies with HCV targets for this priority population. Tas lacked strategies for any priority groups, and the NT did not have HCV targets for Aboriginal populations due to the absence of specific HCV strategies.

Future directions

Future efforts to prevent and manage BBVs among Aboriginal and Torres Strait Islander peoples must address persistent challenges through culturally responsive and community-driven approaches. One of the key priorities is expanding access to culturally safe healthcare. ACCHS play a vital role in delivering appropriate care, but mainstream health services must improve their cultural competence as well. The training of healthcare workers in cultural sensitivity, particularly in understanding stigma, discrimination and racism, is essential to increase engagement and improve health outcomes for Aboriginal and Torres Strait Islander peoples.

Community-led health initiatives have shown promise of addressing BBVs in Aboriginal communities, and these should be strengthened and expanded. Programs like the Deadly Liver Mob have successfully employed peer-driven health promotion to increase BBV screening and treatment uptake. The effectiveness of these models in engaging hard-to-reach populations suggests that future efforts should focus on scaling up such peer-based interventions, ensuring they are tailored to the needs and contexts of individual communities.

There is also a critical need to improve BBV screening and treatment programs, particularly in remote and high-risk populations. Future efforts should focus on integrating innovative approaches, such as mobile clinics, point-of-care testing, and outreach services, to increase accessibility and equity in healthcare delivery. Ensuring that these services are culturally sensitive and adaptable to the unique circumstances of Aboriginal and Torres Strait Islander peoples is essential to overcoming barriers to engagement.

Policy and system-level reforms are necessary to address gaps in the current public health response. This includes the expansion of harm reduction services, such as NSPs, particularly in custodial settings where Aboriginal and Torres Strait Islander peoples are over-represented and where BBV transmission rates are higher. Furthermore, integrating BBV care into primary health services in a more coordinated and systematic way will improve access to care for those in remote and underserved areas.

There is also a pressing need for ongoing research and data collection to inform future strategies. Data gaps, particularly in relation to HIV and HCV mortality and avoidable deaths, must be addressed. Research should focus on understanding the specific barriers to BBV care for Aboriginal and Torres Strait Islander peoples, as well as identifying enablers that can be leveraged to improve outcomes. This evidence will be crucial in developing effective, culturally appropriate interventions that reduce the burden of BBVs in these communities.

Conclusion

Addressing the ongoing challenges of BBVs among Aboriginal and Torres Strait Islander peoples requires a multifaceted approach that prioritises cultural safety, community empowerment, and health system reforms. While significant progress has been made, particularly through Aboriginal-led health services and peer-based initiatives, there remain critical gaps in service delivery, screening, and treatment accessibility, particularly for remote and high-risk populations. Ongoing research and targeted interventions are essential to inform culturally appropriate and effective public health strategies. By continuing to invest in these areas, future efforts can significantly reduce the burden of BBVs in Aboriginal and Torres Strait Islander communities and promote better health outcomes.

APPENDIX 1: BBV RELEVANT POLICY DOCUMENTS

National

- Fifth National Aboriginal and Torres Strait Islander Blood Borne Viruses and Sexually Transmissible Infections Strategy 2018-2022
- *Blood Borne Viral and Sexually Transmissible Infections in Aboriginal and Torres Strait Islander Peoples Annual Surveillance Report 2023*
- *National Blood-borne Viruses and Sexually Transmissible Infections Surveillance and Monitoring Plan 2018-2022*
- *National BBV & STI Surveillance and Monitoring Report 2017*
- Fourth National Hepatitis B Strategy 2023-2030
- Sixth National Hepatitis C Strategy 2023-2030
- The First National Bloodborne Viruses and Sexually Transmissible Infections Research Strategy 2021-2025
- Ninth National HIV Strategy 2024-2030
- Tracking the Progress 2022 National HIV Strategy
- Tracking the Progress 2022 National Hep C Strategy
- Tracking the Progress 2022 National Hep B Strategy
- Tracking the Progress 2022 National ATSI Strategy
- *2021-2031 National Aboriginal and Torres Strait Islander Health Plan*
- *Enhanced Response to Addressing Sexually Transmissible Infections (and Blood-borne Viruses) in Indigenous Populations*

Western Australia

- WA Aboriginal STI BBV Strategy
- Western Australian Sexually Transmissible Infections (STI) Strategy
- Western Australian Hepatitis C Strategy
- Western Australian Hepatitis B Strategy
- Western Australian HIV Strategy
- *WA Sexual Health and BBV Strategies Implementation Report 2020*

New South Wales

- *NSW Aboriginal Blood Borne Viruses and Sexually Transmissible Infections Framework 2016-2021*
- NSW HIV Strategy 2021-2025
- NSW Sexually Transmissible Infections Strategy 2022-2026
- NSW Hepatitis C Strategy 2022-2025
- NSW Hepatitis B Strategy 2023-2026

Queensland

- *Queensland Aboriginal and Torres Strait Islander BBVSTI Action Plan 2019-2022*
- *Queensland HIV Action Plan 2019-2022*
- *Queensland STI Action Plan 2019-2022*
- *Queensland Hepatitis B Action Plan 2019-2022*
- *Queensland Hep C Action Plan 2019-2022*
- Queensland Sexual Health Strategy 2016-2021
- *Queensland Sexual Health Framework*

Victoria

- *Victorian Aboriginal Sexual and Reproductive Health Plan (2022-2030)*
- *Victorian Hepatitis C Plan 2022-30*
- *Victorian HIV Plan 2022-30*
- *Victorian Hep B Plan 2022-30*

South Australia

- *South Australian Aboriginal STI and BBV Action Plan 2020-2024*

Tasmania

(No documents listed)

Northern Territory

- *Northern Territory Sexually Transmissible Infections and Blood Borne Viruses Strategic and Operational Plan 2019-2023*
- *Northern Territory Enhanced Response to Addressing STI and BBV in Indigenous Populations Action Plan 2017*

Australian Capital Territory

- *Hepatitis B, Hepatitis C, HIV and Sexually Transmissible Infections ACT Statement of Priorities 2016-2020 ACT Health Directorate*

Abbreviations/acronyms

ABS - Australian Bureau of Statistics

ACCHS - Aboriginal Community Controlled Health Services

AHPRA - Australian Health Practitioners Regulation Agency

AIHW - Australian Institute of Health and Welfare

ANSPS - Australian Needle and Syringe Program Survey

AOD - Alcohol and other drug

ART - antiretroviral treatment

AusHep - Australian Hepatitis and risk survey in prisons

BBV - Blood-borne virus

CHB - Chronic hepatitis B

DAAs - Direct-acting antivirals

DALY - Disability adjusted life years

DLM - Deadly Liver Mob

GP - General Practitioner

HBC - Hepatitis C virus

HBV - Hepatitis B virus

HIV - Human immunodeficiency virus

IDU - Injecting drug use

MBS - Medicare Benefits Scheme

MEM - Men who have sex with men

NACCHO - National Aboriginal Community Controlled Health Organisation

NSPs - Needle and Syringe Programs

PAR - Participatory action research

PBS - Pharmaceutical Benefits Scheme

PEP - Post-Exposure Prophylaxis

PoCT - Point-of-care test

PPH - Potentially preventable hospitalisations

PrEP - Pre-exposure prophylaxis

PWID - Peoples who inject drugs

SHBBV - Sexual health and blood-borne viruses

WHO - World Health Organization

YLD - Years lived with disability

YLL - Years of life lost

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