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Summary of sexual health links with chronic disease in Aboriginal and Torres Strait Islander males

Australian Indigenous HealthInfoNet

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Australian Indigenous Health*InfoNet*

The mandate of the Australian Indigenous Health*InfoNet* (Health*InfoNet*) is to contribute to improvements in both Aboriginal and Torres Strait Islander peoples' health by making relevant, high quality knowledge and information easily accessible to policy makers, health service providers, program managers, clinicians and other health professionals (including Aboriginal and Torres Strait Islander Health Workers) and researchers. The Health*InfoNet* also provides easy-to-read and summarised material for students and the general community.

The Health*InfoNet* achieves its commitment by undertaking research into various aspects of Aboriginal and Torres Strait Islander peoples' health and disseminating the results (and other relevant knowledge and information) mainly via Australian Indigenous Health*InfoNet* website (**https://healthinfonet.ecu.edu.au**), the Alcohol and Other Drugs Knowledge Centre (**https://aodknowledgecentre.ecu.edu.au**), Tackling Indigenous Smoking (**https://tacklingsmoking.org.au**) and WellMob (**https://wellmob.org.au**). The research involves analysis and synthesis of data and other information obtained from academic, professional, government and other sources. The Health*InfoNet*'s work in knowledge exchange aims to facilitate the transfer of pure and applied research into policy and practice to address the needs of a wide range of users.

Recognition statement

The Health*InfoNet* recognises and acknowledges the sovereignty of Aboriginal and Torres Strait Islander people as the original custodians of the country. Aboriginal and Torres Strait Islander cultures are (in the main) persistent and enduring, continuing unbroken from the past to the present, characterised by resilience and a strong sense of purpose and identity despite the undeniably negative impacts of colonisation and dispossession. Aboriginal and Torres Strait Islander throughout the country represent a diverse range of people, communities and groups, each with unique identities, cultural practices and spiritualities. We recognise that the current health status of mainland Aboriginal and Torres Strait Islander people has been significantly impacted by past and present practices and policies.

We acknowledge and pay our deepest respects to Elders past and present throughout the country. In particular, we pay our respects to the Whadjuk Nyoongar peoples of Western Australia on whose Country our offices are located.

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We welcome and value your feedback as part of our post-publication peer review process, please let us know if you have any suggestions for improving this summary.

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Summary of sexual health links with chronic disease in Aboriginal and Torres Strait Islander males

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This *Summary* is part of a resource package including the full review, a fact sheet and a short video. These resources and more information about male sexual health can be viewed on the Australian Indigenous Health*InfoNet's* Sexual Health Portal:
https://healthinfonet.ecu.edu.au/sexual-health

The content of this Summary focuses on sensitive male health topics (Men's Business). We encourage readers to share the information it contains appropriately and with consideration for the cultural context.

Contents

Cover artwork

by Bec Morgan

When the freshwater meets the saltwater

This painting represents the freshwater people and the saltwater people coming together.

Featured icon artwork

by Frances Belle Parker

The Health*InfoNet* commissioned Frances Parker, a proud Yaegl woman, mother and artist, to produce a suite of illustrated icons for use in our knowledge exchange products. Frances translates biomedical and statistically based information into culturally sensitive visual representations, to provide support to the Aboriginal and Torres Strait Islander workforce and those participating in research and working with Aboriginal and Torres Strait Islander people and their communities. Frances came to prominence winning the Blake Prize in 2000, making her the youngest winner and the first Indigenous recipient over the 65 year history of the prize.

"Biirrinba is the Yaygirr name for the mighty Clarence River (NSW). It is this river that is the life giving vein for the Yaegl people. And it is this river which inspires much of my artwork. I am deeply inspired by my Mother's land (Yaegl land) and the Island in the Clarence River that my Mother grew up on, Ulgundahi Island. The stories which are contained within this landscape have shaped me as a person as an artist and most recently as a Mother. This is my history, my story and it will always… be my responsibility to share this knowledge with my family and my children."

About this Summary

This *Summary* is based on the ***Review of sexual health issues linked with cardiovascular disease and type 2 diabetes mellitus in Aboriginal and Torres Strait Islander males*** (the '*Review*') [1] published by the Australian Indigenous Health*Bulletin* in 2021. It provides information about the male sexual health conditions of erectile dysfunction (ED) and low testosterone, and their links to chronic disease, specifically cardiovascular disease (CVD) and type 2 diabetes mellitus (T2DM). It outlines:

- the causes and symptoms of ED and low testosterone
- how common ED and low testosterone are among the Australian male population (there are limited data available about Aboriginal and Torres Strait Islander males)
- how common CVD and T2DM are among the Aboriginal and Torres Strait Islander male population
- the management and treatment of ED and low testosterone
- relevant prevention and awareness initiatives, programs, and services to support males with sexual health problems.

The purpose of this *Summary* is to:

- raise awareness about the links between male sexual health and CVD and T2DM for Aboriginal and Torres Strait Islander males
- encourage healthcare providers to consider sexual health problems and impacts in the management and prevention of CVD and T2DM among Aboriginal and Torres Strait Islander males
- encourage the inclusion of sexual health assessments as part of a holistic approach to the healthcare of Aboriginal and Torres Strait Islander males
- encourage Aboriginal and Torres Strait Islander males, health workers and other health professionals to engage in conversations about sexual health problems and impacts, especially with regards to prevention and management.

The Australian Indigenous Health*InfoNet* has prepared this *Summary* as part of our contribution to support those in the Aboriginal and Torres Strait Islander health workforce and those participating in research and working with Aboriginal and Torres Strait Islander people and their communities. This plain language and visual publication provides key information in a style that is easy to engage with and does not require readers to have an academic or medical background.

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

The accuracy of the identification of Aboriginal and Torres Strait Islander males in health data collections varies across the country. Some information is only considered to be sufficient and complete for certain states and territories. Please note that the statistics presented in this *Summary* do not always include all states and territories, see sources for details.

The terms 'men' and 'males' are used interchangeably throughout the report. 'Male' is the preferred term as it is inclusive of all males, including young males, uninitiated males of any age, adult men, and members of the LGBTIQA+ community. The term 'men' is used when this is the term used by the original source document, and is the term most often used for non-Indigenous adult males.

Introduction

What is sexual health?

The World Health Organization (WHO) describes sexual health as 'a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination, and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled' [2]. Sexual health encompasses reproductive health, which the WHO defines as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes' [3].

Erectile dysfunction (ED) and low testosterone are two male sexual health conditions that are relatively common. Research over the past 15 to 20 years shows there are links between these sexual problems and chronic disease. Importantly, ED can be a risk indicator for future CVD or undiagnosed T2DM. Although most of the studies in this area have been in non-Indigenous populations, it is likely that the links established between sexual problems and chronic disease will apply to all males [4]. Understanding these links can lead to more holistic health care for males, including the benefits of earlier diagnosis and treatment [5]. Raising awareness of these issues can also prevent some males from suffering in silence with a sexual problem.

Importantly, ED can be a risk indicator for future CVD or undiagnosed T2DM.

Aboriginal and Torres Strait Islander males are impacted by chronic diseases such as CVD and T2DM, at higher rates than other population groups [6-13]. While there have been many studies and reports that discuss the impacts of these chronic conditions among Aboriginal and Torres Strait Islander males, there is a lack of information available about the prevalence of related male sexual health problems. These conditions also may also begin to occur at younger ages for Aboriginal and Torres Strait Islander males than for non-Indigenous males [14, 15].

There has been only one in-depth study undertaken between 2004 -2007 (Adams, 2014) of male sexual health disorders among Aboriginal and Torres Strait Islander males, which found relatively high rates of some sexual disorders and identified barriers to seeking help for such disorders [4, 16].

For some males, talking about their sexual health problems can be an uncomfortable experience. For some Aboriginal and Torres Strait Islander males, this can be even more difficult on a personal level due to:

cultural beliefs and taboos,

and sometimes a lack of cultural sensitivity within health care systems.

Increasing awareness of the links between sexual health and general health among healthcare providers and enabling access to safe spaces where sensitive sexual health issues can be discussed in culturally appropriate settings [9] are important steps to improving the overall health and wellbeing of Aboriginal and Torres Strait Islander males.

The historical, social and cultural contexts of Aboriginal and Torres Strait Islander male health

The current health and wellbeing of Aboriginal and Torres Strait Islander people has been significantly impacted by colonisation and the forced shift away from their traditional social and cultural systems [17-19]. Over several generations, Aboriginal and Torres Strait Islander people have faced and continue to be confronted by damaging experiences such as:

Discrimination and racism

Economic exclusion

Child removal by the state

Exposure to violence

Grief and loss

Intergenerational trauma

Today, many Aboriginal and Torres Strait Islander people experience poorer social conditions and higher burden of disease, relative to non-Indigenous Australians, as a result of these long lasting effects of colonisation [7, 18].

Colonisation has also had particular negative effects on the identity of Aboriginal and Torres Strait Islander males, resulting from the loss of male roles as traditional leaders, decision makers, father figures and educators [20]. Some older Aboriginal and Torres Strait Islander males ('Elders') have lost their traditional authority and status, while many young males no longer have access to these role-models and cultural teachers. The loss of traditional cultural roles can leave Aboriginal and Torres Strait Islander males struggling to find their place in the community, and some turn to self-destructive behaviours such as the use of alcohol and other drugs which can add further stress on their physical, emotional and spiritual health [7, 20].

However, in the face of the damaging effects of colonisation, Aboriginal and Torres Strait Islander people have repeatedly demonstrated their resilience and capacity to overcome extreme disadvantage [7, 18]. In overcoming challenges to their identity, Aboriginal and Torres Strait Islander males are finding ways to re-connect with their culture and reclaim their roles as decision-makers and educators in their communities, as well as more broadly in Australian society and politics [13, 20, 21].

While there are ongoing challenges in 'closing the gap'[1] [23], health and wellbeing programs for Aboriginal and Torres Strait Islander males have shown some success when they have incorporated appropriate social and cultural approaches [7, 8]. In fact, there is increasing recognition of the importance of addressing cultural as well as social determinants of health for Aboriginal and Torres Strait Islander people [17, 24, 25].

1. 'Closing the gap' is a term used to describe the strategies used by various levels of government in Australia to decrease the difference in health outcomes (such as life expectancy and prevalence of disease) for Aboriginal and Torres Strait Islander people and other Australians which has historically been in deficit [22].

As well as the high rates of CVD and T2DM, Adams' 2004-2007 study suggests that sexual health conditions are common among Aboriginal and Torres Strait Islander males. However, only about half of the males with moderate to severe ED in Adams' study said they had sought help or treatment [4]. The sexual health of Aboriginal and Torres Strait Islander males was described by Adams as 'shrouded in silence', and he continues to recommend that action across three levels is taken in order to change the context for Aboriginal and Torres Strait Islander male sexual health [16]:

Research

There is little knowledge about the extent of sexual health problems among Aboriginal and Torres Strait Islander males and how they are managed.

Health services

There can be a 'cultural distance' between Aboriginal and Torres Strait Islander males and healthcare services that makes discussing sexual health difficult, particularly if the doctor or health professional is a female and/or non-Indigenous.

Community

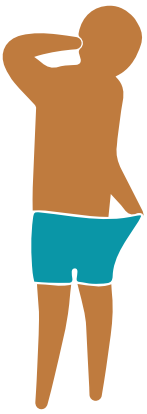
Males generally don't talk about their sexual health with their partners or with other males.

Male Reconciliation of Self by Mick Minin Adams, 2003

Artist's statement: "The male standing is the stronger of the three males. The strong male has taken the opportunity to extend himself in a dominant society as well as maintaining his connection with the land, spirit, language and culture. He has not been affected by the traumas of life experienced by the other two men. The two men kneeling were not so fortunate and have been affected by racism and being part of the stolen generation. They are depicted kneeling down to indicate their suffering. The strong male is standing and comforting the other two men with his palms on their heads. He is encouraging them to stand up and take their positions in their community and family. The four U-shaped symbols clustered around a circle represent the families who are waiting for the men to come home. The families are willing to lend support to the men."

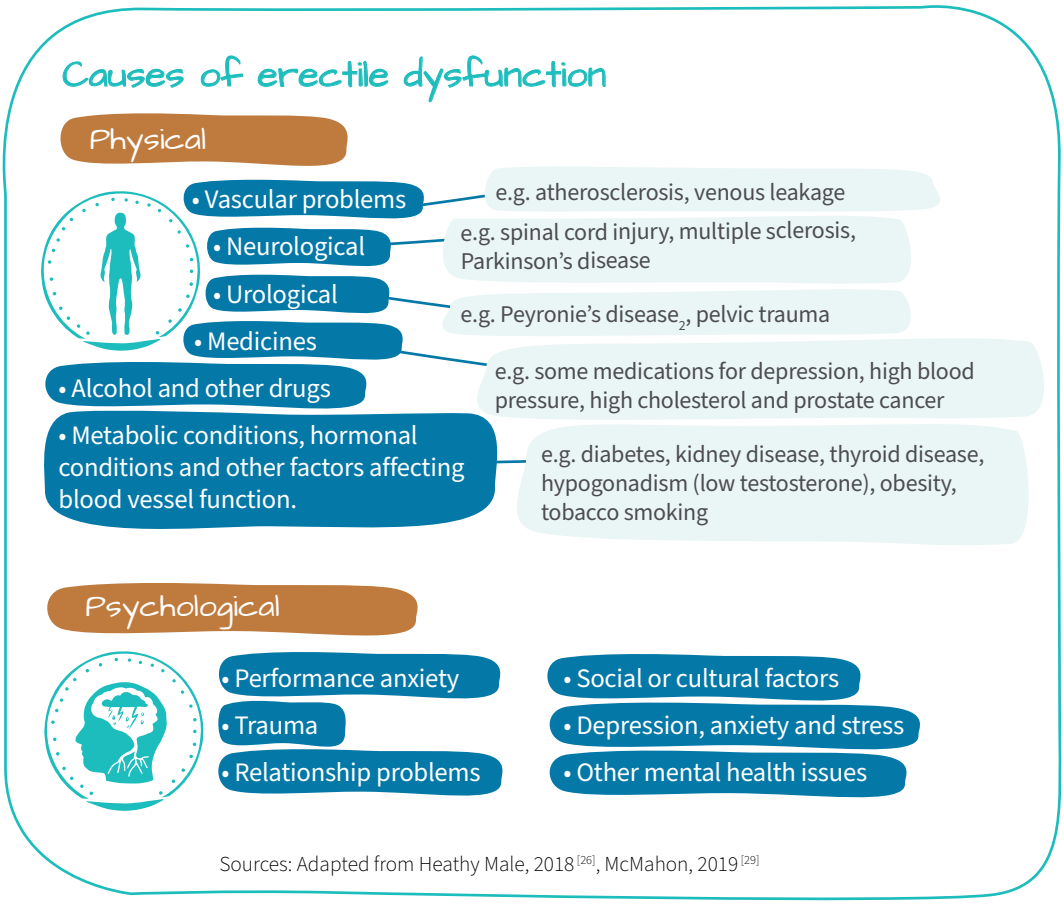
Defining male sexual problems and associated chronic conditions

Erectile dysfunction



ED is when a male has trouble getting or maintaining a penis erection, which can make it difficult to have sex. It is a sexual problem experienced by many males, although more commonly among older males. ED can have a significant impact on a male's quality of life (and that of his partner) [26, 27] and be a cause of worry, frustration and unnecessary shame. The problem is often not talked about by males themselves or by healthcare workers, so ED can remain untreated if not specifically addressed [28].

An erection involves nerves, blood vessels and muscles of the penis. Physical stimulation, or arousal from thoughts, smells, sounds or images increases the amount of blood flowing into the penis causing it to enlarge and harden [27, 29, 30]. As an erection requires good blood flow into the penis, males who have a medical condition associated with narrowing of blood vessels, such as CVD, have a greater risk of having erection problems [27]. Usually, ED is caused by a combination of physical and psychological factors.



Sources: Adapted from Heathy Male, 2018 [26], McMahon, 2019 [29]

More information on ED and other male sexual and reproductive health conditions can be found at Healthy Male (www.healthymale.org.au).

2. A condition where tissue in the penis hardens permanently and a lump of scar tissue forms on the lining of the penis. This hardened area stops the penis from stretching normally during an erection, and can affect the muscle and arteries of the penis, leading to problems with erections [30].

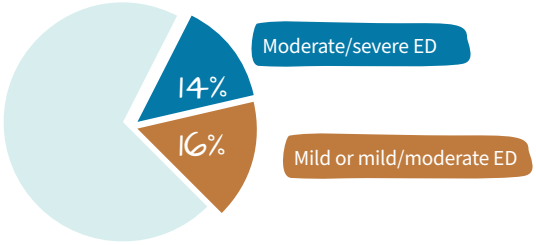
Prevalence of erectile dysfunction

There have been many studies of ED among wider populations, both in Australia and around the world. While the exact prevalence varies, all show that ED affects a significant proportion of males across age-groups, and that prevalence increases significantly with age [4, 31-37].

Adams' 2004-2007 study of Aboriginal and Torres Strait Islander adult males in communities across the Northern Territory (NT) and Queensland (Qld) is the only study that has looked at the prevalence of ED in this population. While it was a relatively small study sample (293 males), results of this research showed that approximately **1 in 3 males** experienced ED [4]. Notably, moderate-to-severe ED was reported by around 10% of younger Aboriginal and Torres Strait Islander males (18-34 years).

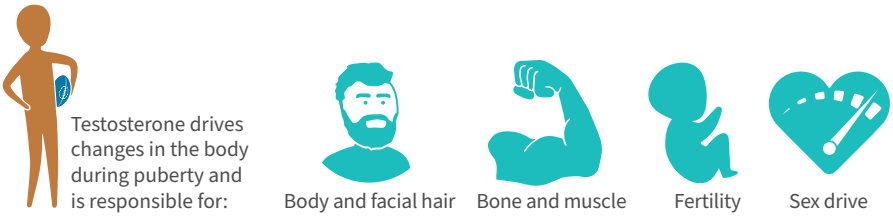
Prevalence of ED reported in a study of Aboriginal and Torres Strait Islander adult males

Source: Adams et al. (2014) [4]

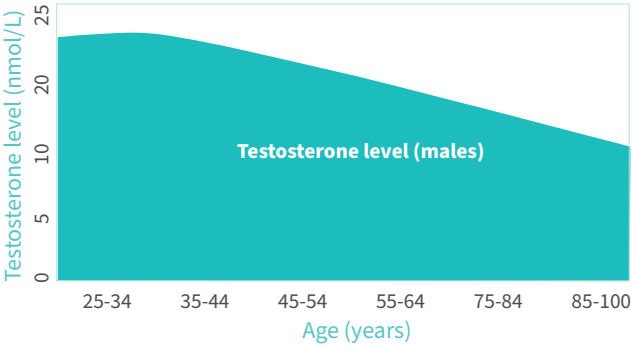


Low testosterone

Androgens are the predominant hormones in males that are responsible for male development and reproduction. Testosterone is the main androgen active in males, which drives changes in the body when a child becomes an adult (puberty) and maintains his masculine traits throughout adulthood. Testosterone affects development of the genitals, bone and muscle development, body and facial hair and fertility [38, 39].



Testosterone also affects mood and libido (sex drive), and influences overall health and wellbeing [39]. It is normal for testosterone levels to slowly get lower as an adult male ages. In general, testosterone levels peak in early adulthood and decline across middle and older age [40]. The symptoms of low testosterone vary, however it can be diagnosed as a medical condition when a male has a 'lower-than-normal serum testosterone level', where the normal range is about 8 nmol/L to 27 nmol/L [39, 41].

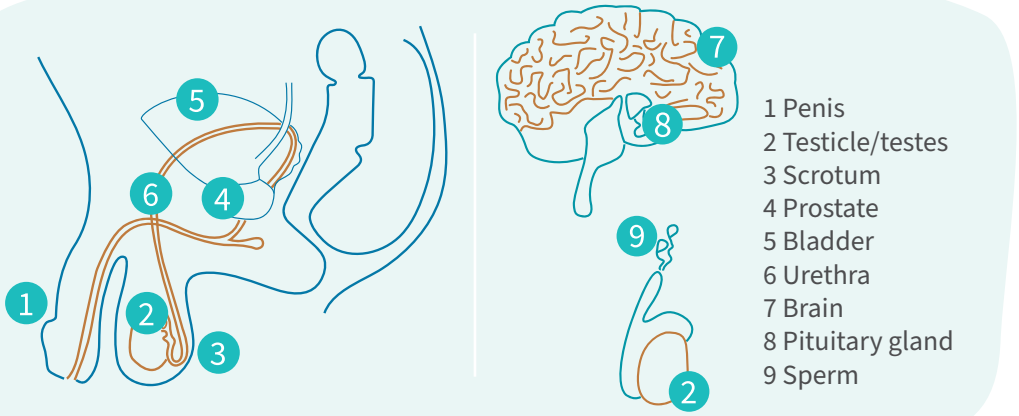


Adapted from Healthy Male

Most testosterone is produced in the testes, with a small amount produced by the adrenal glands. Testosterone stimulates sperm production in the testes, required for fertility and reproduction. When a male's body is not able to produce enough testosterone to function normally, the condition is known as low testosterone (or testosterone deficiency).

When low serum testosterone is detected in two samples (collected in the morning on separate days), the diagnosis is androgen deficiency. Other hormones are usually tested to see if the cause of the deficiency is due to organic causes (clinically termed "pathological hypogonadism") such as problems in the testes or the pituitary gland (a gland located at the base of the brain that controls hormone production) [39].

Male sexual and reproductive anatomy



Adapted from Healthy Male

If the low testosterone is due to obesity or chronic disease (clinically termed "functional hypogonadism"), it can be treated with lifestyle changes [42]. Understanding the cause will determine the best treatment and identify any underlying health conditions that may need treatment.

Functional hypogonadism is more likely to affect older males who are overweight or obese and have chronic conditions such as diabetes, CVD, liver or kidney disease.

In these cases, symptoms may be non-specific and overlap with the symptoms of such chronic diseases [41, 42]. Low testosterone related to obesity has been shown to be reversible with studies of weight loss in obese men showing an increase in testosterone proportional to the amount of weight lost [43].

Prevalence of low testosterone

Studies in non-Indigenous populations have shown that up to 1 in 10 older men have low testosterone, usually together with obesity and chronic disease [39, 44]. While there are no data specifically about low testosterone in Aboriginal and Torres Strait Islander males, it is likely the proportion would be similar.

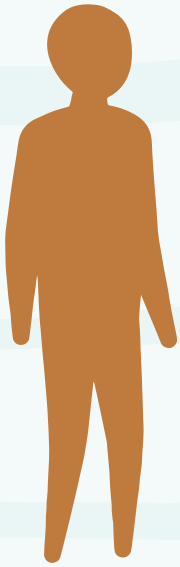
Symptoms of low testosterone and androgen deficiency across life stages

0-11 years

- Penis does not grow to expected size
- Small testes

12-19 years (puberty)

- Body does not grow to normal height for age
- Body does not go through the normal changes for this age
- Small testes and penis
- Little growth of facial, body or pubic hair
- Low muscle development
- Voice does not deepen
- Breast development (gynaecomastia)



20 years +

- Mood changes (feeling down or angry)
- Difficulty with concentration
- Low energy or tiredness
- Increased body fat
- Low interest in sex
- Reduced muscle strength
- Reduced facial or body hair growth
- Breast development (gynaecomastia)
- Hot flushes or sweats

Source: Adapted from Healthy Male, 2019 [39]

More information on low testosterone and other male sexual and reproductive health conditions can be found at Healthy Male (www.healthymale.org.au).

Cardiovascular disease

Cardiovascular disease (CVD) is the collective term used for the diseases and conditions that affect the heart and blood vessels, including [45]:

- ischemic heart disease (IHD), sometimes called coronary heart disease (CHD)
- heart attack
- stroke
- atherosclerosis (blocked arteries)
- hypertension (high blood pressure)
- rheumatic heart disease (RHD)
- other disorders or the heart and circulatory system [45, 46].

As the range of conditions that fall under the broad category of CVD is vast, the causes, symptoms and outcomes vary. While CVDs are serious health concerns they are usually preventable, or manageable with appropriate diagnosis, lifestyle changes and monitoring. There are common risk factors for most types of CVD (excluding RHD[3]). These include: smoking, unhealthy diet, physical inactivity, high alcohol use, high blood pressure, high cholesterol, being overweight or obese, T2DM, chronic kidney disease, depression, family history of CVD, ethnicity and age [48-50].

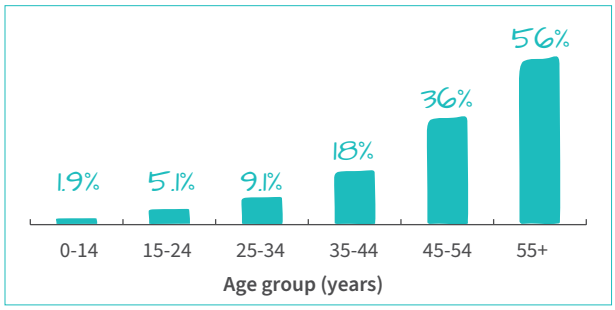
CVD is a major contributor to the burden of disease among Aboriginal and Torres Strait Islander males [15, 51]. Many males report living with CVD, and it is a leading cause of hospitalisations and deaths among this population [52]. In the 2018-19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) [53]:

14% of Aboriginal and Torres Strait Islander males reported having CVD.

The age-standardised proportion for the more specific (and serious) conditions of 'heart, stroke and vascular disease' was 9.4% among Aboriginal and Torres Strait Islander males, more than double the rate among non-Indigenous males (4.7%) [53].

Although rates of CVD are highest among older people, CVD has a substantial impact on younger Aboriginal and Torres Strait Islander people [15]. IHD was the leading cause of death for Aboriginal and Torres Strait Islander people aged 35-44 years in the period 2015-2019 [54].

Prevalence (%) of self-reported CVD among Aboriginal and Torres Strait Islander people, 2018-19



Source: ABS, 2018-19 NATSIHS [53]

The risk of CVD starts relatively early for Aboriginal and Torres Strait Islander people. A consensus statement released by leading Australian health organisations in 2020 recommended that Aboriginal and Torres Strait Islander people begin having CVD risk assessments at younger ages because of early disease onset [48].

More information about CVD among Aboriginal and Torres Strait Islander people can be found on the Australian Indigenous HealthInfoNet's Cardiovascular Health Portal https://healthinfonet.ecu.edu.au/learn/health-topics/cardiovascular-health/

3. Unlike other types of CVD, RHD occurs when acute rheumatic fever (ARF), an illness that affects the heart, joints, brain and skin, leads to permanent damage to the heart valves [47]. ARF is caused by an untreated bacterial (group A streptococci or GAS) infection of the throat.

Diabetes

Diabetes (diabetes mellitus) is a chronic condition where the body cannot properly process glucose (sugar) from food leading to hyperglycemia (high blood sugar levels) [55]. Diabetes is treatable but can lead to life-threatening health complications if left untreated or not managed well [56].

Type 2 diabetes *(also known as type 2 diabetes mellitus or T2DM)* is the most common form of diabetes. It usually develops in adulthood, although recently it has been diagnosed more frequently among children and adolescents [57, 58]. This form of diabetes often runs in families, and typically occurs when risk factors such as obesity, poor nutrition, and lack of physical activity are present.

T2DM can usually be controlled through lifestyle modifications such as keeping fit, eating well and not smoking, however patients may require insulin treatment over time [59, 60].

As T2DM is often diagnosed at a later age, sometimes signs are dismissed as a part of 'getting older'. Often people with T2DM experience no symptoms and the diagnosis comes at a point where the body is already affected by complications of diabetes [61]. These complications can include diseases of the large blood vessels including all types of CVD, and diseases of the small blood vessels, such as kidney disease, eye disease and nerve disease [62, 63].

Aboriginal and Torres Strait Islander people experience higher levels of T2DM, and it is a significant factor in the life expectancy gap between Indigenous and non-Indigenous people [14, 60, 64]. Aboriginal and Torres Strait Islander people with diabetes tend to have higher levels of risk factors such as smoking [55] and may show signs of other chronic conditions, including chronic kidney disease, CVD, liver disease and anaemia [65].

Data presented in the *Indicators for the Australian National Diabetes Strategy 2016-2020: data update* (2020) [66], indicate that in 2018-19 the prevalence of T2DM among Aboriginal and Torres Strait Islander adult males was around 11% and increased with age.

Prevalence of self-reported type 2 diabetes mellitus among Aboriginal and Torres Strait Islander adult males, 2018-19

Age group (years)	Number	Proportion (%)
18-44	4,583*	3.0
45-54	6,849	18
55-64	7,279	27
65+	6,382	35
Total (18+)	25,093	11

Source: AIHW, 2020 [66]

Note: *Should be used with caution.

The Royal Australian College of General Practitioners (RACGP) and National Aboriginal Community Controlled Health Organisation (NACCHO) recommend that all Aboriginal and Torres Strait Islander adults be screened for T2DM (via blood test) on an annual basis [60].

More information about diabetes among Aboriginal and Torres Strait Islander people can be found on the Australian Indigenous HealthInfoNet's Diabetes Portal https://healthinfonet.ecu.edu.au/learn/health-topics/diabetes/

The links between male sexual problems and cardiovascular disease and type 2 diabetes

This section outlines some of the key information about how ED and low testosterone are linked with CVD and T2DM. The full *Review of sexual health issues linked with type 2 diabetes mellitus and cardiovascular disease in Aboriginal and Torres Strait Islander males* provides more comprehensive information about these links including the synthesising of all relevant and recent studies, both nationally and internationally in this area. You can read the Review here: https://healthinfonet.ecu.edu.au/key-resources/publications/42717

Common risk factors

Many of the risk factors for ED and low testosterone are also factors that increase the risk of CVD and T2DM. These include being overweight or obese and smoking tobacco, which are both relatively common among Aboriginal and Torres Strait Islander males [26, 52]. Alcohol use can also be a risk factor for sexual and chronic conditions. Aboriginal and Torres Strait Islander people are less likely to drink alcohol than other Australians, but those who do drink alcohol are more likely to do so at harmful levels [67, 68].

Bodyweight

One way of establishing if a person is overweight or obese is by calculating their Body Mass Index (BMI) using height and weight measurements. By calculating each participant's BMI, the 2018-19 NATSIHS indicated that 71% of Aboriginal and Torres Strait Islander males aged 15 years and over were either overweight (31%) or obese (40%) [53, 66]. However, it is important to note that the optimal BMI range is based on national standards and may not be accurate for Aboriginal and Torres Strait Islander males due to differences in body shape and other physiological factors [69-71].

Alcohol and tobacco use

The health impacts of alcohol and tobacco use, including increased risk of chronic diseases such as CVD and T2DM, are well established [72]. Tobacco smoking reduces blood vessel function which is known to be a cause of ED, and alcohol too can be contributing factor. The 2018-19 NATSIHS found that 42% of Aboriginal and Torres Strait Islander males aged 15 years and over reported they were current daily smokers [53]. The NATSIHS also reported that 65% of Aboriginal and Torres Strait Islander adult males reported exceeding the guideline (2009) for drinking on a single occasion[4] and 30% reported exceeding the lifetime risk[5] guideline [53].

4. Four or less standard drinks on a single day for both males and females [73]

5. No more than two standard drinks on any single day [73]

Erectile dysfunction and cardiovascular disease

ED is not only linked with CVD, but may also predict the development of CVD in apparently healthy males [31, 74-91] and those with diabetes [77, 91-93]. There is ongoing research into why endothelial dysfunction[6] in blood vessels of the penis may be noticeable earlier than in blood vessels in other areas of the body, such as the heart or the brain [94]. There are still many questions about why, but the evidence to date shows that ED often occurs earlier than CVD [94]. In fact, it is thought that ED can occur about three to five years earlier than a CVD event [79, 84]. When a young male has ED, then it is likely to be a sign of increased CVD risk [87] and may indicate other systemic health problems [95].

Erectile dysfunction and type 2 diabetes

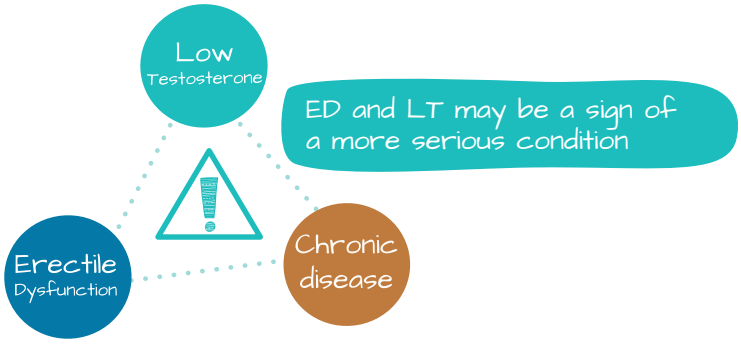
Along with other sexual health problems, ED is a common complication of diabetes with a prevalence about two to three times that in males without diabetes, and a higher prevalence in males with T2DM than type 1 diabetes [96].

In males with diabetes, ED may develop up to 10 to 15 years earlier than in males with no diabetes and the risk of ED increases with age [96, 97].

The causes of ED in males with diabetes are more complex than in males without diabetes [77]:

- the process of endothelial dysfunction is quicker in diabetes, leading to reduced blood flow to the penis, making an erection more difficult
- endothelial dysfunction can lead to atherosclerosis (blocked arteries) and CVD
- possible reduction in cyclic guanosine monophosphate - a chemical produced in the body that is needed for the penis to remain erect and can affect nerves in the penis
- T2DM is often associated with lower circulating testosterone levels that can increase the risk of ED.

A recent review suggests between 5% and 12% of males with ED have undiagnosed diabetes [29].



Low testosterone and cardiovascular disease

Assessing the relationship between testosterone and CVD is complicated by the fact that age and obesity are risk factors for both CVD and low circulating testosterone levels. Age and obesity are also risk factors for T2DM, and males with diabetes are more likely to have low testosterone and are at higher risk of CVD [41, 42].

It is not yet clear whether testosterone is an independent risk factor for CVD or a marker of the presence of CVD or other systemic illness [98]. However, if low testosterone is a consequence of obesity and lifestyle factors, losing weight and exercising can improve testosterone levels and reduce CVD risk [40, 98, 99].

6. The endothelium is the lining of the blood vessels and has a role in the expansion and contraction of blood vessels. Endothelial dysfunction is an early step in the development of atherosclerosis (where plaque or fatty deposits build up in the arteries). It is characterised by a reduction in chemicals that help to dilate blood vessels and/or an increase in contracting factors from the endothelium, leading to less dilation of the blood vessels.

Low testosterone and type 2 diabetes

Studies show a two-way relationship between T2DM and testosterone levels. It is estimated that between 25% and 50% of males with T2DM have low testosterone [100]. While several studies have shown a higher risk of developing T2DM in males with low testosterone, suggesting that testosterone may have a protective role with respect to developing T2DM [76, 100-102].

Insulin resistance (when a person's body does not respond to the insulin hormone), is thought to be the mediating factor in lowered testosterone and diabetes [100, 103]. Research shows the relationship between insulin resistance and low testosterone operates in both directions, such that males with low testosterone have a higher risk of developing T2DM or metabolic syndrome (a cluster of chronic disease risk factors), and males with metabolic syndrome or T2DM have a higher risk of developing low testosterone [100, 102].

Management and treatment

There are many benefits to managing and treating sexual health problems in males. As well as improved sexual health, it can also improve general health due to the links between sexual health problems and some chronic diseases. This means that Aboriginal and Torres Strait Islander males who have, or are at risk of CVD or T2DM, should also be getting sexual health assessments.

The extent of assessment and management of sexual problems in Aboriginal and Torres Strait Islander males is unknown. More research in this area is important.

Assessment and management of erectile dysfunction in the context of cardiovascular disease and type 2 diabetes

Clinical guidelines on managing ED generally agree that a male presenting with ED that is caused by physical factors should be assessed for risk or presence of CVD, due to the strong links between ED and CVD [28, 29, 76, 81, 82, 104, 105]. *The Princeton III consensus recommendations for the management of erectile dysfunction and cardiovascular disease* state that any male with ED should be considered at risk for CVD until examinations and tests show otherwise [82].

There are no similar Australian guidelines but one recent summary of international practice guidelines recommends a comprehensive assessment of CVD, among other recommendations for managing ED in the Australian context [29].

There are no clinical guidelines for diagnosing and managing ED in males with T2DM, but it is recommended that if a male presents with ED, their glucose levels (for diagnosis of diabetes or impaired glucose tolerance) and CVD risk should be assessed.

A full medical and culturally sensitive sexual history should also be discussed between the health professional and patient, as well as a physical (genital and cardiovascular examination) and psychosocial assessment [28, 29, 106].

Treatment of erectile dysfunction

Lifestyle modification and management of risk factors, such as smoking, alcohol intake, body weight, physical activity, hypertension and high cholesterol, as well as good management of any co-morbid conditions (particularly CVD and T2DM), should be considered before or with other treatments for ED. Where treatment is indicated for ED oral medication is the first line treatment [28, 29, 106, 107].

Treatments options for ED

Medication	Tablet medicines (PDE5 inhibitors) prescribed by a doctor
External devices (for the penis)	Rubber rings, vacuum devices
Injectable treatments	Prescribed penis injections
Surgery	Penis prosthesis Vascular surgery (for some patients) Treatment of Peyronie's disease

Source: adapted from Healthy Male, 2018 [106]

For psychological problems, depression or relationship issues, psychosexual therapy may be needed with a specialist counsellor, psychologist or in some cases, a psychiatrist. Any sexual misinformation should be discussed with the male, and his partner if appropriate, including having realistic expectations of erectile function (for example, age-related changes) and the need for sufficient arousal and lubrication [28, 29, 106].

Assessment and management of low testosterone in the context of cardiovascular disease and type 2 diabetes

It is important to understand whether a male's low testosterone is due to pathological causes (such as infection of the testes or pituitary tumour), or related to obesity and/or chronic health conditions (functional hypogonadism). The Endocrine Society of Australia's *Position statement on male hypogonadism (part 1): Assessment and indications for testosterone therapy* [41] and Healthy Male's *Clinical summary guide: Androgen deficiency diagnosis and management* [39] provide guidance on the assessment of a male with suspected low testosterone or androgen deficiency. If a male presents with symptoms of androgen deficiency and pathological causes, such as Klinefelter's syndrome[7], have been ruled out, a comprehensive medical history, a review of reproductive function and a physical examination are recommended [39, 41, 42]. If androgen deficiency is suspected, two morning fasting serum testosterone levels can confirm the diagnosis.

Usually in males with CVD, testosterone levels will be at the lower end of the normal reference range, and management of CVD and obesity may improve the situation without the need for testosterone therapy [43, 108].

Given the higher risk of low testosterone associated with diabetes, it is recommended that males with T2DM should be asked routinely about symptoms of low testosterone (as well as ED) [100]. Males without T2DM who have low testosterone should have their blood glucose levels measured regularly given their increased risk for developing T2DM.

7. A chromosome problem that causes low testosterone levels, breast development, small testes and infertility in men [30].

Treatment of low testosterone

A **pathological deficiency** can be treated with testosterone therapy, with the aim to restore testosterone to normal levels and improve symptoms of the deficiency [39, 41, 43]. Treatment is likely to be life-long and there are possible effects on fertility so the option of sperm storage should be discussed before starting treatment [41]. Monitoring of males undergoing testosterone treatment is essential.

In males with **functional hypogonadism**, the low testosterone is usually a consequence of obesity and/or chronic disease, and testosterone treatment is not usually recommended [39, 41, 43]. Instead, the focus should be on weight loss and lifestyle improvements such as quitting smoking, healthy eating and exercise, that can potentially increase testosterone levels and improve symptoms.

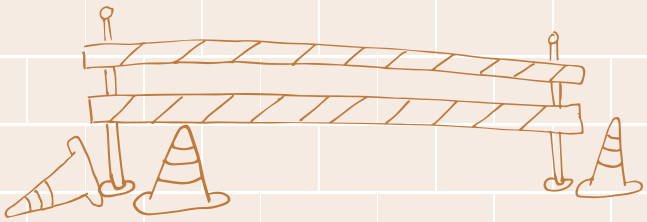
Prevention, awareness initiatives, programs and services

At present, apart from those relating to sexually transmitted infections (STIs), there are no prevention programs, awareness initiatives or services that focus solely on Aboriginal and Torres Strait Islander male sexual health. However, there are programs and services for Aboriginal and Torres Strait Islander male health in general that could be vehicles for male sexual health initiatives. Some programs that could be adapted to engage males about their sexual health are listed below. These programs are all based on the principles of empowerment, social support, strengthening culture, 'yarning' and providing a culturally safe space [21]. In addition, cultural competency training currently available for healthcare providers could be adapted to include consideration of male sexual health.

Aboriginal and Torres Strait Islander male health programs in Australia, 2021

Program	Location	Description	Contact
Budja Budja Men's Group	Halls Gap region, Victoria	Builds healthy and supportive relationships through regular activities that focus on cultural reconnection and heritage, including 'Yarn-Up' sessions, mentorship and health promotion such as healthy eating and diabetes management.	https://budjabudjacoop.org.au/cooperative-services/mens-group/
Bush TV: Camping on Country	National	The camps provide a space for community leaders and Law men to discuss current health issues in their community and support for developing and improving health programs.	https://bushtv.com.au/back-on-country-program/
Danila Dilba Men's Clinic	Darwin, Northern Territory	Operated by male health workers who engage with males about a variety of health and wellbeing issues.	https://ddhs.org.au/clinics/mens-clinic-new-location
Gurriny Yealamucka Health Services Men's Program	Yarrabah, Queensland	Two male workers operate social and wellbeing activities in a male-only space.	https://www.gyhsac.org.au/social-emotional-wellbeing-services
Ingkintja: Wurra apa artwuka pmara	Alice Springs, Northern Territory	Provides care for health and wellbeing including a safe place to discuss issues of cultural sensitivity such *Men's Business* and ceremony.	https://www.caac.org.au/client-services/ingkintja-male-health-service
Kirrip Men's Group	Melbourne, Victoria	Provides traditional cultural learning, strengthening and connection for Aboriginal and Torres Strait Islander males aged 17 years and over.	https://kirripaboriginalcorporation.org/mens-group/
Men's Sheds Australia	National	Runs programs that aim to decrease social isolation, create friendships, enhance self-esteem and offer health promotion activities.	https://mensshed.org
Mibbinbah Spirit Healing	National	Male-only camp providing a safe space for males to 'yarn'.	https://www.mibbinbah.org/
Rekindling the Spirit	Lismore, New South Wales	Aims to empower Aboriginal males through a process of spiritual, emotional, sexual and physical healing.	https://www.rekindlingthespirit.org.au/
StrongBala Men's Health Program	Katherine, Northern Territory	Culturally appropriate clinical services and support for males to make meaningful contributions to their family, community and culture.	https://www.wurli.org.au/clinical-services/strongbala-mens-health/
Strong Young Men and Boys Program (Red Dust Role Models)	Northern Territory	Supports the development of strong male Aboriginal youth through a combination of strategies including yarning circles, explicit instruction, peer led participatory approaches and hands-on interactive activities, offered in local language/s and English. Sexuality and health topics are explored.	https://reddust.org.au/work/programs/
Walan-Budhang-Gibir Men's Group	Griffith, New South Wales	Provides opportunities to gather socially and to culturally connect with other Aboriginal and Torres Strait Islander males, as well as health education, support and advocacy.	https://www.griffithams.org.au/mensgroup

Sources: Australian Indigenous Health*InfoNet* database of programs (2021) [109-118]



Barriers for Aboriginal and Torres Strait Islander males to receiving appropriate care for sexual health

Access to and use of sexual health services

While sexual health assessments can be important in the early diagnosis and treatment of chronic diseases such as CVD and T2DM, Aboriginal and Torres Strait Islander males face many barriers to accessing health services and care. Due to the sensitive nature of sexual problems, seeking or accessing help can be particularly problematic [4, 8, 9, 16, 21].

In Adams' 2004-2007 study about sexual health disorders among Aboriginal and Torres Strait Islander males, barriers to seeking help were identified through focus groups and interviews [4, 16]. Participants reported that often males kept silent about sexual matters and that males tended to speak in roundabout ways when discussing sexual health among themselves. Some reported feelings of shame and low self-esteem related to their sexual health, fears about lack of confidentiality in communities, and the stigma attached to having a sexual health problem, which had created a barrier for them to speaking with health professionals [4, 16]. Only about half of the males with moderate to severe ED in Adams' study said they had sought help or treatment [4].

Factors affecting health service access and use for Aboriginal and Torres Strait Islander males

Societal	Stigma related to sickness Sex-specific differences in health Racism
Cultural	Traditional gender-related lore, masculinity, and gender roles
	Language barriers
	Beliefs about what has caused the sickness (cursed by others, punishment for past wrongdoing)
Logistical	Lack of transport to services Inflexible appointment times that do not allow for cultural and family priorities that can occur at short notice
Health system	Limited access to specialist services Complicated referral processes Lack of male health professionals Female health professionals not understanding of male needs Services can be geared to females and children such that males can feel socially excluded Long waiting times Medical terminology and jargon Culturally inappropriate service/undertrained staff Distrust and discrimination
Financial	Hard to meet health service or medication costs Access only to short-term funding for services
Individual	Lack of knowledge about the problem or sickness Previous negative experiences with healthcare Lack of knowledge about local health services Low self-esteem or lack of confidence Feelings of shame or a need to be strong

Sources: Adapted from[9, 16, 119, 120, 121, 21]

Lack of appropriate training for providers

Among healthcare providers, knowledge of sexual health conditions is often low and there is a general lack of awareness of links with CVD and T2DM. It is important for providers to have appropriate knowledge and training to feel comfortable and competent to initiate discussions about sexual health with their Aboriginal and Torres Strait Islander male clients. Unfortunately, few educational training programs for health workers around male sexual health care exist. Additionally, there are further barriers that health workers face to participating in training, including [122]:

- too many training programs for the limited number of male health workers
- not being able to take time off work to attend due to lack of relief workers or not being supported by management
- the diverse needs of health workers not being catered for in such training.

Access to chronic disease and primary health care

There are many programs and services designed to improve access and care for Aboriginal and Torres Strait Islander people with CVD and diabetes [14, 15]. For example, Aboriginal Community Controlled Health Organisations (ACCHOs) reduce barriers by providing culturally appropriate services, including Aboriginal and Torres Strait Islander Health Workers and Practitioners (ATSIHWPs). However, barriers to accessing primary health care such as financial and logistical factors, still exist [14, 15].

Attempts to increase male engagement with health services have often focused on changing the behaviour of males to engage with services. However, many of the barriers to access lie outside the individual, so a much broader approach is needed with a focus on how services are delivered and the cultural context of services for males [13, 21], for management of sexual health problems. Males are motivated to engage with primary health services providing they feel safe and welcomed and have a rapport with staff [119, 121].

Access to medicines

Oral medications are the main treatment for ED, but the costs associated with these medications (PDE5 inhibitors) can be very high and some are not covered by the Pharmaceutical Benefits Scheme (PBS). Similarly, testosterone treatment may not be easily available in some communities and usually the involvement of a specialist doctor (endocrinologist) is required before testosterone is covered by the PBS [123]. There may also be feelings of shame for some Aboriginal and Torres Strait Islander males about using these medications [16].

Strategies for engaging Aboriginal and Torres Strait Islander males with services for sexual health

Despite the barriers Aboriginal and Torres Strait Islander males often face when getting help for sexual health issues there are no studies describing successful strategies to increase their primary health care use [9, 16, 21, 119-121].

Recommendations for healthcare providers to engage with Aboriginal and Torres Strait Islander males

Health service level

- health services designed specifically for males
- involving males from the local community in the design of health services
- male-only times or places to discuss sensitive health issues with the assurance of confidentiality
- culturally appropriate waiting rooms
- employing more male ATSIHWPs and increasing their training and support
- cultural competency training for staff
- decreasing high staff turnovers
- less waiting times and the availability of longer and more flexible consultation times
- access to appropriate treatment and translation services if required to explain diagnoses and treatments
- access to specialist health practitioners (e.g., endocrinologists, sex therapists) when needed
- follow up consultations to allow relationship building with male patients

Personal level

- strong and ongoing relationships with health service staff and male patients
- healthcare providers being able to sensitively discuss sexual health with males and use simple, straightforward language
- normalisation of sexual health issues to reduce shame and stigma
- non-Indigenous healthcare providers understanding the cultural and historical determinants of Aboriginal and Torres Strait Islander male health
- word of mouth conversation promoting males going to sexual health services.

Adapted from various sources [9, 16, 21, 119-122, 124, 125]

Breaking the silence

Addressing the three levels of 'silence' identified by Adams [4, 16] around male sexual health provides a good starting point for improvements in this area.

Research

The types of research that could be useful around male sexual health include:

- prevalence and incidence studies
- investigation of links between sexual health and chronic disease in Aboriginal and Torres Strait Islander communities
- identification of barriers and enablers to seeking or obtaining sexual healthcare
- intervention studies to trial and evaluate culturally appropriate approaches aiming to increase males' access to health services and engagement with sexual health
- examination of ways to encourage the inclusion of sexual health into general health checks and chronic disease assessment and management in Aboriginal and Torres Strait Islander males.

Healthcare providers and services

Firstly, there must be awareness and knowledge of sexual health and the links with chronic disease among males and healthcare providers working with males. Sexual health assessments should become routine as part of any male health check up and for those with CVD or T2DM, discussion around any sexual problems is vital.

To talk about sexual health with Aboriginal and Torres Strait Islander males, healthcare providers must have appropriate knowledge and training to feel comfortable and competent to start the discussion. Healthcare providers and services must also create an environment where males feel safe. In order to achieve a culturally safe environment where staff are culturally aware and sensitive, the needs of the healthcare provider and service, as well as the local community where the health service is located must be considered.

Importantly, healthcare providers must have the capacity for ongoing monitoring of sexual health and support for males undergoing treatment and healthy lifestyle interventions.

Aboriginal and Torres Strait Islander males and communities

Aboriginal and Torres Strait Islander males and local communities need to be involved in the development of any programs that address male sexual health and chronic disease to ensure a holistic and culturally appropriate approach is taken [126]. This also encourages community empowerment, helps de-stigmatise sexual health issues and increase males' motivation to seek help when needed [9, 16].

Cultural competency training

Cultural competency is an important aspect of improving access to, and the effectiveness of, health care for Aboriginal and Torres Strait Islander people [127]. Cultural competency is more than cultural awareness and should include behaviours, attitudes, skills, capabilities and policies for effective cross-cultural work at the level of systems, agencies and healthcare providers [127].

Cultural competency training to support male health is vital for non-Indigenous healthcare providers and services, especially for those working in the areas of male sexual health, which has specific cultural sensitivities [125]. At present, there are no specific training programs for those who work in Aboriginal and Torres Strait Islander male sexual health. However, cultural competency training for other areas of health may be adapted to include this type of training to meet the needs of male clients. It is important that the development of any competency training for Aboriginal and Torres Strait Islander male sexual health is led by Aboriginal and Torres Strait Islander males and should be critically evaluated to ensure it is effective.

"A lot of Aboriginal men sort of keep it to themselves"

– a quote from an interview that became a main theme of Adams' study [16] and led to the development of Healthy Male's training resource *A lot of Aboriginal men sort of keep it to themselves: Communicating specific Men's Business* [128]. This culturally appropriate training activity is for health professionals who want to improve their skills in engaging with Aboriginal and Torres Strait Islander male patients, especially around the sensitive topics of sexual health and the links between erectile dysfunction and chronic disease. The course can be completed online and earns participants Continuous Professional Development (CPD) points. For more information visit: https://www.healthymale.org.au/health-professionals/professional-education/aboriginal-and-torres-strait-islander-health

Policies and funding

Policy responses at all levels of government are required to improve the health of Aboriginal and Torres Strait Islander males [13]. At present, there is a lack of specific policy actions to improve the poor health outcomes for Aboriginal and Torres Strait Islander males, let alone address sexual health issues. Additionally, complex funding pathways, short-term funding, and sudden loss of funding are common barriers to successful health interventions for Aboriginal and Torres Strait Islander health in general, especially male health [13, 126].

At a national level, The *National Aboriginal and Torres Strait Islander Male Health Framework - Revised Guiding Principles* [12] highlights the need for reconstructing male empowerment and self-determination as well as a holistic approach to male health. It also provides a guide for the funding and governance of male health initiatives. However, other federal policies such as the *National Aboriginal and Torres Strait Islander Health Plan 2013-2023* [129] and the *National Men's Health Strategy 2020–2030* [10] do not include specific strategies to improve Aboriginal and Torres Strait Islander male health, or the necessary funding commitments.

At a local level, the Northern Sydney Local Health District *Aboriginal and Torres Strait Islander Men's Health Plan 2015-2020* [130], identifies specific strategies to improve Aboriginal and Torres Strait Islander male health. This could be a possible template for other local health districts to follow.

WAY FORWARD

"We need to stop describing problems and blaming individuals, and start acknowledging Aboriginal and Torres Strait Islander men as the dynamic, essential elements of families, communities and societies they have always been. The inherent personal and cultural strengths and attributes of Aboriginal and Torres Strait Islander men must be unshackled, and positive energy directed towards the development of new ways forward by men and their communities, who are empowered and supported to do so."

(Canuto et al. (2019) p. 308) [126]

Concluding comments

There are well established links between male sexual health and chronic conditions. However, there is a lack of data about sexual problems among Aboriginal and Torres Strait Islander males. Importantly, ED can be a sign of future CVD or T2DM. This is a powerful message that has the potential to motivate males of all ages to seek help when first experiencing ED, and for health professionals to become skilled in discussing sexual health with their male patients.

Given that chronic conditions such as CVD and T2DM are common among Aboriginal and Torres Strait Islander males and they can occur at younger ages than in non-Indigenous males [14, 15], there is much scope for including sexual health conditions in the assessment and treatment of males attending health services. Lifestyle interventions used for the prevention and treatment of CVD and T2DM can also improve sexual health, and this could be incorporated into health promotion and prevention programs [131].

Effective management and treatments for ED and low testosterone are available, however, health care providers must break the silence surrounding male sexual health to improve the lives of their clients.

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