

SUMMARY: INTRODUCTORY MODULE

Content

Intro 1 Introduction and welcome

Intro 2 Experience and knowledge of participants

Intro 3 Your questions

Duration 60 minutes

Objectives

By the end of this session the participants will:

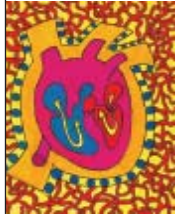
- have gained an understanding of the aims and objectives of the workshop
- be familiar with the modules in the workshop
- be familiar with the scope of training in the workshop
- have identified individual learning needs for their training.

Handouts

1-2

Overheads

1-3



introductory module

Introductory module plan at a glance

Intro 1 Introduction and welcome

Sub topic	Explanation	Overhead	Handout
Welcome	Housekeeping Provide background information on yourself and the reasons for the workshop Describe style and components of workshop	1	
Activity	Ice breaker activity		
Aims and objectives of the workshop	Outline workshop aims and objectives	2	1
Overview of modules	Outline modules and their content	3	

Intro 2 Experience and knowledge of participants

Overlapping roles	Draw overlapping circles on whiteboard. Explain overlapping roles and application of knowledge to individual, community and work.		
Activity	Whole group continuum – stand along to represent different levels of knowledge		

Intro 3 Your questions

Activity	Small group discussions to identify questions. Groups to call out their questions three at a time, record on butcher's paper for later reference and checks at end of modules.		2
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TEACHING NOTES: INTRODUCTORY MODULE

Intro 1 Introduction and welcome

Aim

To introduce the workshop and provide an overview of the workshop.

Duration 30 minutes



Presentation – Welcome



Overhead 1 – Introduction and welcome

Introduce yourself, giving some information on your background. Explain the reasons why you are providing this training.

Provide some housekeeping information – location of toilets, times for breaks etc.

Describe the style of the workshop – combination of lecture, brainstorming, group work.

Stress that everyone is involved and that sharing of experiences and information is very welcome.

Welcome participants with an ‘Ice Breaker’ activity (see suggestion).

Stress throughout the workshop that all questions are welcome, no matter how basic or simple.

Stress that anything personal disclosed to the group is to remain confidential.

Activity – ‘Ice breaker’



This activity is designed to facilitate a friendly and relaxed atmosphere so learning can begin.

Get participants to call out, in turns, their name and where they are from. Alternatively get participants to talk with the person next to them for 1 minute. After this they are to tell the bigger group this person’s name and where they are from.

Presentation – Aims and objectives of the workshop



Overhead 2 – Aims and objectives of the workshop

Present overhead 2 and explain that the aims of the workshop are to increase the capacity of participants to:

- deliver culturally sensitive and up to date information in the prevention, treatment and management of cardiovascular disease (CVD)
- plan, deliver and implement primary and secondary prevention strategies to improve cardiovascular disease (CVD) health outcomes in Aboriginal communities.

Explain to the participants the objectives of the workshop are to increase AHWs and other professionals:

- knowledge and understanding of cardiovascular disease (CVD)
- knowledge and understanding in how the heart works
- knowledge of the risk factors associated with cardiovascular disease (CVD) and the prevention of CVD
- knowledge of screening methods, treatment procedures and management of cardiovascular disease (CVD)
- understanding of the roles they may take in the prevention and management of cardiovascular disease (CVD)
- knowledge of the local services relevant to the prevention and management of cardiovascular disease (CVD)
- identification of actions and strategies that may address cardiovascular disease (CVD) in their communities
- awareness of self-management of chronic illness in Aboriginal communities.

Further explain that this workshop is designed for:

- Aboriginal Health Workers
- Health professionals working with Aboriginal people
- Aboriginal community members.



Handout 1 – Aims and objectives of the workshop

Presentation - Overview of modules



Overhead 3 – Overview of modules

Provide participants with a basic outline of modules as shown on overhead 3. This is a good opportunity to describe the method of workshop delivery that will be used. For example, as a continuous one-and-a-half day program or as individual modules presented over a number of weeks.

INTRO 2 EXPERIENCE AND KNOWLEDGE OF PARTICIPANTS

Aim

To determine participants' experience and knowledge of cardiovascular disease.

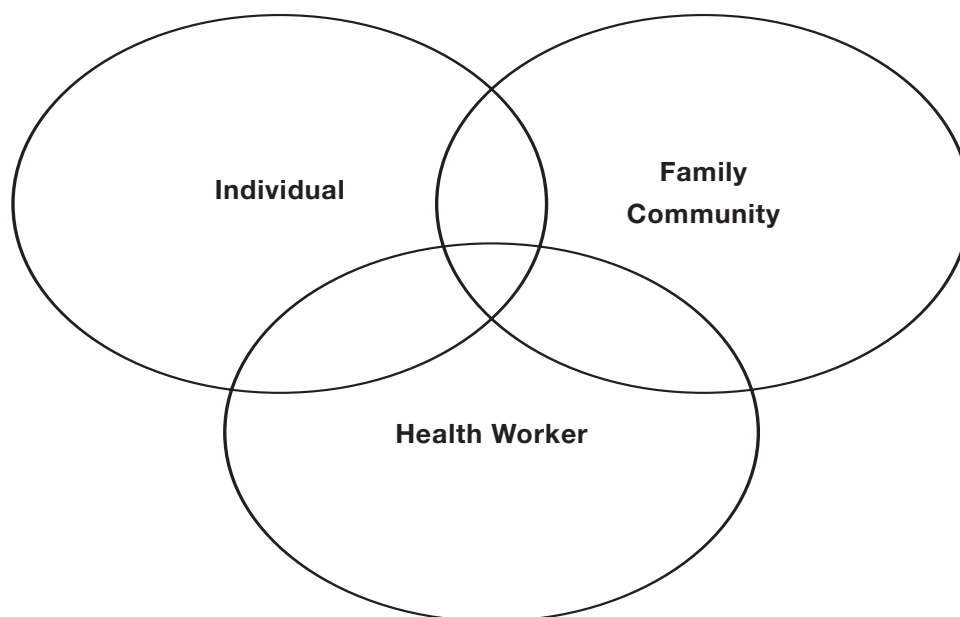
Duration 10 minutes

Presentation - Overlapping roles

Explain that throughout the session there will be exercises that will allow participants to reflect on their experiences and new knowledge and how to begin to apply the knowledge they have learnt.

Explain that knowledge gained from the workshop can be applied to a range of interventions and in different ways as:

- yourself as an individual
- your role as a health worker
- your family and community.



Draw overlapping circles, as shown above, on the whiteboard to represent the concept and explain that the knowledge gained during the workshop can be applied to the individual, to the health worker and to the community.

Explain the following:

- that there is overlap between these circles. For example, changes in your life (as an individual) can impact on your work role and community role
- Aboriginal Health Workers have overlapping roles – as members of families and communities and also as individuals who are health workers. The poor health experienced in their community also impacts on them as members of that community



Aboriginal Health Workers have a wealth of information and skills to teach their colleagues, clients and communities. Also remember that individuals in the community also have many skills and a great range of knowledge. The sharing of information is very important for successful training and it is important to acknowledge that all in the training have contributions to make.

Important message



The heart is very symbolic. The term 'heart disease' can mean different things to different people.

It is important for presenters of this manual to note that when you are providing training in communities, people who attend these sessions may come with fears, concerns, unresolved feelings or other emotions. Some may be experiencing grief from the loss of family members through cardiovascular disease. There may be people in the group who have had cardiac surgery or procedures and still have questions and concerns; they may need reassurance or expert advice. It is important that they go away with a contact person's name or phone number if their concerns cannot be answered in the session. It may be useful to have this information on hand.

Activity - Whole group continuum

Explain that the aim of this activity is to get an idea of what the participants know about cardiovascular disease.

Indicate an imaginary line along the floor. Point out that one end of the line corresponds to a little bit of knowledge about cardiovascular disease while the other end corresponds to a lot of knowledge about cardiovascular disease.

Emphasise that this is not a test.

Ask participants to stand at a position along the line to indicate their knowledge about cardiovascular disease.

When participants are in position along the line get participants to look where others are standing and point out that there are different levels of knowledge in the group.

Explain that for some they will be learning new knowledge and that others may be familiar with some of the content. Invite those with knowledge to contribute.

Also emphasise that we all have different perspectives on the issues that will be discussed (for example, from being a patient, health professional or community member).

Ask participants to keep this concept in mind as you progress through the workshop.

INTRO 3 - YOUR QUESTIONS

Aim

To clarify any issues regarding the workshop and the material to be covered.

Duration 20 minutes

Activity - Questions



After participants have settled back into their seats, ask each person to list (on handout 2) the questions they would like answered during the workshop in relation to the module outline. You may wish to put up overhead 3 that outlines the modules to prompt the participants of content. Emphasise that no question is too basic or simple.



Handout 2 – Questions

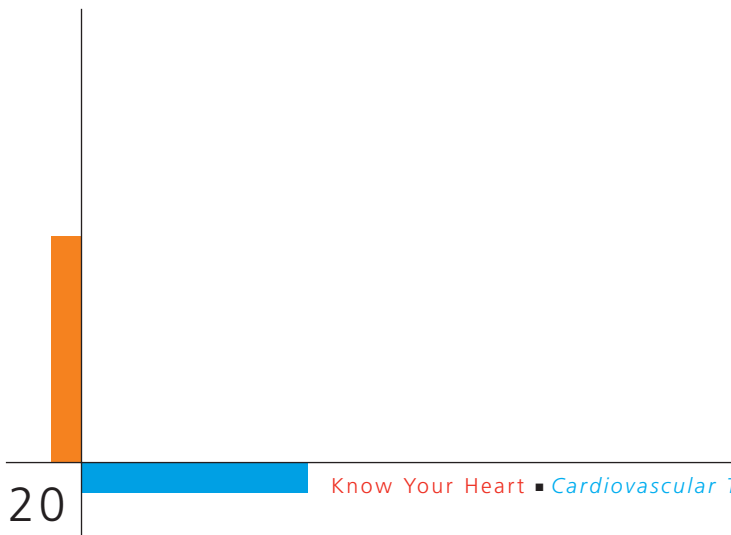
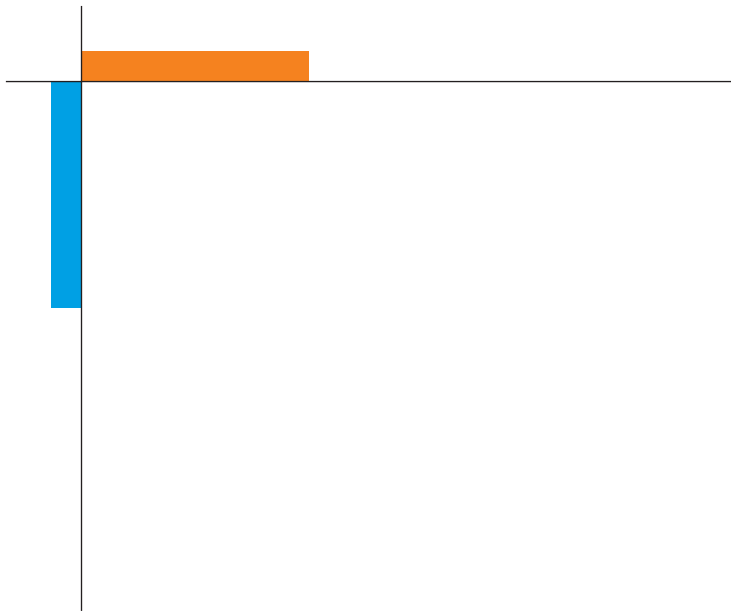
Then:

- arrange participants into groups of 4 – 5 people
- ask the participants to share questions within the small group and together compile a group list.

After approximately 5 minutes ask the small groups to come together as a larger group. Then:

- in the large group go around the room and ask each group to call out 3 questions from their list (this will allow each group to contribute as they may have similar questions)
- write the questions on butcher's paper so that they can be revisited during the workshop
- go around the groups until all questions are on the board
- mention that questions can be added to the list at any time during the workshop
- indicate to the group that most of the questions will be covered during the training and if there are any not answered, they can be followed up after the workshop.





SUMMARY: MODULE 1 ABORIGINAL PEOPLE AND HEALTH

Content

- 1.1 Aboriginal view of health
- 1.2 Aboriginal people and cardiovascular disease
- 1.3 Aboriginal people and chronic conditions
- 1.4 Reflective practice

Duration 1 hour

Objectives

By the end of the module participants will be able to:

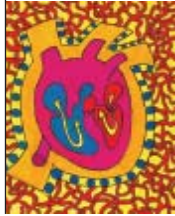
- describe the Aboriginal view of health and relate this to the significance of the heart in culture and language
- explain the prevalence and mortality of cardiovascular disease in the Aboriginal community
- describe the factors that contribute to chronic illness in Aboriginal communities
- reflect on the incidence of cardiovascular disease in their communities.

Handouts

3 – 6

Overheads

4 – 6



module 1

MODULE 1 PLAN AT A GLANCE

1.1 Aboriginal people's view of health

Sub topic	Explanation	Overhead	Handout
Setting the context	Discuss the cultural significance of the heart and the Aboriginal view of health		3

1.2 Aboriginal people and cardiovascular disease

Types of disease	Discuss the research presented on Aboriginal people and cardiovascular disease	4 & 5	4
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1.3 Aboriginal people and chronic disease

Chronic conditions	Discuss the contributing factors for chronic health conditions in Aboriginal people	6	5
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1.4 Reflective practice

Activity	Ask participants to individually reflect on the incidence of cardiovascular disease in their community, and how they can decrease its impact, and record thoughts on handout 6		6
Summary	Answer any further questions participants may have and outline the next module		

TEACHING NOTES: MODULE 1 ABORIGINAL PEOPLE AND HEALTH

1.1 Aboriginal view of health

Aim

To provide an overview of the Aboriginal view of health.

Duration 10 minutes



module 1

Presentation – Setting the context

Ask participants:

Q: What is the Aboriginal view of health?

Brainstorm ideas onto the whiteboard. Ensure the following issues are discussed.

- The Aboriginal view of health is different to the western view of health. The Aboriginal view of health emphasises the holistic view and how it is important to treat the body as a whole rather than the individual system or organ.
- In Aboriginal health it is important to treat the whole community, not just the individual.
- The Aboriginal holistic view of health connects the mind, body, heart, soul, spirit, environment, and culture of the whole person, to their family and their community through strong links with the land and sea.
- The practical exercise of self-determination underpins cultural, community and individual well-being. Aboriginal self-determination and responsibility lies at the heart of Aboriginal community control in the provision of community-based health services.

Distribute handout 3 to summarise the discussion.



Handout 3 – Aboriginal view of health

Training tip – Cultural concept of health



People's individual perceptions and beliefs about health are fundamental to their lifestyle and behaviours. Aboriginal Health Workers are well aware that health to Aboriginal people is a multidisciplinary concept that embraces all aspects of living. A sense of community appears essential to a sense of oneself, and this in turn is essential to health.

These concepts influence the way we deliver health care to Aboriginal communities and training to Aboriginal Health Workers.

Exert from Eckerman, A., Dowd, T., Martin, M., Nixon, L., Gray, R. and Chong, E. (1998) Binan Goonj Bridging Cultures in Aboriginal Health. University of New England Press, Armidale.

1.2 Aboriginal people and cardiovascular disease

Aim

To explain how cardiovascular disease affects Aboriginal people.

Duration 20 minutes

Presentation – Types of disease

Present overheads 4 and 5 and provide the following explanatory information:



Overhead 4 and 5 – Aboriginal people and cardiovascular disease

Cardiovascular disease

Cardiovascular disease is the leading cause of death for both Indigenous and non-Indigenous people, and its health and economic burden exceeds that of any other disease. For Indigenous people it has been found to be the greatest cause of excess deaths.

Aboriginal and Torres Strait Islander people are also much more likely to be hospitalised for cardiovascular disease than other Australians.

Mortality or death, from cardiovascular disease has been found to be much higher for Indigenous than non-Indigenous people across Australia.

Cardiovascular disease covers diseases of the heart and blood vessels they include:

- coronary heart disease or ischaemic heart disease
- heart failure
- stroke
- rheumatic heart disease
- hypertension
- peripheral vascular disease

All these diseases except rheumatic heart disease are caused by damaged blood vessels.

Having diabetes increases the risk of heart disease.

Coronary heart disease

Coronary heart disease (ischaemic heart disease) consists mainly of acute myocardial infarction (heart attack) and angina.

Aboriginal and Torres Strait Islander people die from coronary heart disease at around twice the rate of other Australians. The difference is even greater among adults aged 25–64, where Indigenous Australian death rates have been found in past studies to be up to six to eight times greater than those of other Australian men and women respectively.

Rates of hospitalisation for coronary heart disease may be up to twice as great for Aboriginal and Torres Strait Islander people than for other Australians.

Heart failure

Among Aboriginal people there are relatively few deaths attributed to heart failure. This may be due to the younger age of this population and early death rates of Aboriginal people.

However, some past studies have found that Indigenous Australians were three times more likely to die from heart failure than other Australians.

Cerebral vascular disease/stroke

Death rates from stroke in Aboriginal and Torres Strait Islander people are around twice the rate of non-Aboriginal Australians.

Among adults aged 25–64, death rates from stroke for Aboriginal Australians have been found to be up to seven and eight times those of non-Aboriginal Australian men and women respectively.

Aboriginal Australians have been hospitalised for stroke up to four times more often than other Australians according to one study.

Rheumatic fever and rheumatic heart disease

Rheumatic heart disease is a disease of disadvantage associated with poverty and overcrowded living conditions, lack of education and limited access to medical care to obtain adequate diagnosis and treatment. In Australia, it almost exclusively affects Aboriginal and Torres Strait Islander people particularly in remote areas.

Indigenous Australians are up to 13 to 14 times as likely to die from rheumatic fever and rheumatic heart disease than other Australians.

Most deaths from rheumatic fever and rheumatic heart disease have occurred in NSW, Victoria and Queensland.

Hypertension/high blood pressure

There is no national data for blood pressure levels within the Aboriginal population. Data from the Kimberley region suggests that high blood pressure may be two to three times more common among Aboriginal people than among non-Aboriginal Australians.

Distribute handout 4 that provides summary notes on the preceding presentation.



Handout 4 – Cardiovascular disease in the Aboriginal community



1.3 Aboriginal people and chronic conditions

Aim

To illustrate the factors that contribute to the development of chronic health conditions affecting Aboriginal communities.

Duration 20 minutes

Presentation – Chronic conditions

State to participants that it is known that Aboriginal people suffer a greater burden of chronic conditions than non-Aboriginal people. Explain that these relate mainly to diabetes, cardiovascular disease and renal disease. Ask participants:

Q: What factors do you think contribute to high levels of chronic disease in Aboriginal people?

Brainstorm ideas onto the whiteboard and then present overhead 6 to summarise the discussion.



Overhead 6 – Factors contributing to chronic health conditions in Aboriginal people

Distribute handout 5, a copy of the overhead.



Handout 5 – Factors contributing to chronic health conditions in Aboriginal people

1.4 Reflective practice

Aim

To think about what has been learnt in this module, and the presence of cardiovascular disease in the participants' community.

Duration 10 minutes

Activity – Reflective practice

This is an ideal time to get participants to engage in reflective practice and what the purpose of this training is.

Ask participants to reflect on the incidence of cardiovascular disease in their local community and think about how they can start to work towards changing these statistics.

Distribute handout 6 and ask participants to record their reflections.



Handout 6 – Activity Reflective practice

Summary

Ask if there are any comments/questions on this module.

Briefly mention what will be covered in the next session - Module 2:

- location of the heart
- structures of the heart
- function of the cardiovascular system
- conduction of the heart
- blood pressure
- the pulse.



MODULE 1 USEFUL RESOURCES

Australian Bureau of Statistics

The most recent statistics on the health of Aboriginal people can be found on the Australian Bureau of Statistics website www.abs.gov.au

Australian Indigenous Health InfoNet

Electronic clearinghouse that holds extensive and comprehensive reports, publications and summary information on Australian Indigenous health available from www.healthinfonet.ecu.edu.au/html/

Australian Institute of Health and Welfare (AIHW),

The Health And Welfare of Australia's Aboriginal And Torres Strait Islander Peoples.

Published bi-annually by the Australian Bureau of Statistics and the AIHW, these reports are available in hardcopy (phone (02) 6244 1032) or through the website www.aihw.gov.au/publications/index.cfm

Australian National and State Health Reports

- *Ninth Biennial Health Report of The Australian Institute of Health and Welfare*
Information on patterns of health and illness, determinants of health, the supply and use of health services, and health services expenditure is available from AIHW. The report is available in hardcopy (CanPrint phone 1300 889 873) or can be accessed online at www.aihw.gov.au/publications/aus/ah04/ah04-050222.pdf
- *The Health of the People of NSW: Report of The Chief Health Officer 2004*
This report provides an overview of the health of the people of NSW. The health of Aboriginal and Torres Strait Islander people is given specific attention. Updated every two years, these reports are a useful reference source for quick access to health data including the priority areas of cardiovascular disease, diabetes, cancer and respiratory disease. Available in hardcopy [SHPN(PH) 040246] from the NSW Health publication warehouse – the Better Health Centre on (02) 9816 9452 or on the NSW Health Department web site at www.health.nsw.gov.au/

Cardiovascular Health

- *Heart, Stroke and Vascular Diseases: Australian Facts 2004*
Comprehensive information covering patterns of cardiovascular health and illness among Australians, their associated risk factors, treatment and management of the disease are available in this publication. Produced jointly by the Australian Institute of Health and Welfare, National Heart Foundation of Australia, National Stroke Foundation of Australia, and the Australian Diabetes Association, the most recent publication (2004) is available from the AIHW website and may be viewed online for free at www.aihw.gov.au/publications/index.cfm/title/10005.
- *NHPA Report on Cardiovascular Health 1998: A Report on Heart, Stroke and Vascular Disease*
This report is one of a series of biennial reports to Australian Health Ministers on each of the five National Health Priority Areas (NHPAs). It is available online only at www.aihw.gov.au/publications/index.cfm/title/4480

SUMMARY: MODULE 2 THE CARDIOVASCULAR SYSTEM AND HOW IT WORKS

Content

- 2.1 What is the cardiovascular system?
- 2.2 Location of the heart
- 2.3 Structure of the heart
- 2.4 Conduction of the heart
- 2.5 The mechanical component of the heartbeat

Duration 1 1/2 hours

Objectives

By the end of this session participants will be able to:

- explain the location of the heart
- list the structures of the heart
- describe the function of the cardiovascular system
- describe the electrical circuit of the heart
- describe the heart beat cycle and relate it to the blood pressure and pulse.

Handouts

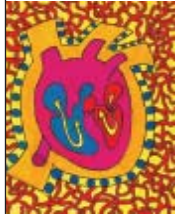
7–13

Overheads

7–15

Additional resources required

- Blood pressure equipment, watch with a second hand, heart models, and appropriate posters if available
- Red and blue textas



MODULE 2 PLAN AT A GLANCE

2.1 What is the cardiovascular system?

Sub topic	Explanation	Overhead	Handout
Functions of the cardiovascular (CV) system	Complex transport system	7	
Function of the blood and blood vessels	Function of blood, arteries, veins and capillaries Introduce concept of pulmonary and systemic blood circulation	8 & 9	
Flow of blood in body – activity	Trace blood flow using handout		7

2.2 Location of the heart

Where the heart is located	Location of heart in relation to other vessels Summary handout	10	8
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2.3 Structure of the heart

Layers of the heart	Write myocardium, pericardium and endocardium on whiteboard and explain		
Cardiac anatomy	Describe anatomy of heart using overhead 11. Participants to record anatomical features on handout 9 Recap on blood flow around the heart	11	9
Valves	Describe the four valves – pulmonary, aortic, mitral and tricuspid	12 13	
Coronary blood flow	Function of the coronary arteries	14	10

2.4 Conduction of the heart

The heart's electrical circuit	Description of sinoatrial node (SA), atrioventricular node (AV)	15	11
Summary	Answer any further questions participants may have and outline the next module		

2.5 The mechanical component of the heartbeat

The heartbeat cycle	Explain heartbeat cycle, refer back to overheads 11–13 for diagrams		12
The pulse	Continue to refer to handout 12 to describe the pulse		12
Activity	Measuring the pulse – Participant's to take turns to feel each others pulse		
Blood pressure	Meaning of diastolic and systolic readings		13
Activity	Measuring blood pressure – demonstrate on a volunteer		
Summary	Check questions listed on butcher's paper and cross off any answered Overview module 3		

TEACHING NOTES: MODULE 2 THE CARDIOVASCULAR SYSTEM AND HOW IT WORKS

2.1 What is the cardiovascular system?

Aim

To describe the cardiovascular system.

Duration 20 minutes



module 2

Presentation – What is the cardiovascular (CV) system?



Overhead 7 – Functions of the cardiovascular (CV) system

Refer to overhead 7, explaining that:

- the cardiovascular (CV) system is a complex system
- the cardiovascular (CV) system or circulatory system consists of the blood, the arteries, the veins, and smaller vessels the capillaries.
- further, explain that the function of the cardiovascular (CV) system is to be a **transport system**:
 - blood and products in the blood are transported through millions of kilometres of blood vessels to every cell in the body
 - the cardiovascular (CV) system carries and distributes oxygen, nutrients and chemicals in the blood to all cells of the body
 - it also helps remove waste products from the cells as blood is continually pumped out from the heart and around the body in two circuits.

Presentation – Function of the blood and blood vessels

Explain that:

- blood is a fluid substance that contains plasma
- blood transports:
 - oxygen from lungs to cells
 - carbon dioxide from cells to the lungs where it is expired
 - nutrients or food from digestive organs to the cells
 - waste products from the cells to the kidneys, lungs and sweat glands for elimination
 - hormones from endocrine glands to the cells
 - enzymes to various cells.
- blood regulates:
 - acid/base balance in the body
 - body temperature
 - water content of cells.



Overhead 8 – Pathways of the blood vessels

Present overhead 8 and explain that there are three main blood vessels each with a particular role:

The arteries are the largest of the blood vessels. Arteries are thick-walled so they can stand the pressure of the blood pumped from the heart. The largest artery is the aorta which branches off the heart and then divides into many smaller arteries. Arteries carry oxygenated blood . This is known as “clean” blood. Arteries then divide into medium sized arteries. These medium sized arteries branch into the various regions of the body. Medium sized arteries divide into smaller arteries called arterioles.

Veins are smaller blood vessels that carry deoxygenated blood. This is referred to as “dirty” blood. The veins carry the deoxygenated blood from the tissues back to the heart. Veins are flexible and are able to expand to hold large volumes of blood.

Capillaries are the smallest blood vessels. There are many microscopic capillaries that make vital links between the heart's smallest arteries and veins. Capillaries reunite to form small veins called venules.



Overhead 9 – Flow of the blood in the body

Briefly explain that blood circulates throughout the body in two systems (**pulmonary**/lung and **systemic**/body) through interconnecting pathways of arteries, veins and smaller blood vessels. Note that the details of these types of circulation will be explained after a review of the anatomy of the heart.

Presentation – Flow of blood in the body



Handout 7 – Blood flow to the heart and to the lungs then back into the heart

Distribute handout 7 and explain to participants that:

- blood that has no oxygen is blue. The picture in the handout shows blue blood that travels from the lower and upper body to the right side of the heart and then to the lungs to pick up oxygen.
- the blood, now full with oxygen is red. It travels from the lungs through the left side of the heart out of the aorta to the body.

Activity – Tracing blood flow

This exercise is a good way to get the participants thinking about the purpose of the heart and how the blood flows around the body. It can be a powerful visual aide getting participants to visualise the blood flowing around their own bodies and how the heart keeps this happening.

Ask participants to look at handout 7 and, using a blue and red texta provided, trace how the blood flows around heart and around body.

2.2 Location of the heart

Aim

To teach participants the location and function of the heart.

Duration 10 minutes

Presentation – Where the heart is located



Overhead 10 – Location of the heart

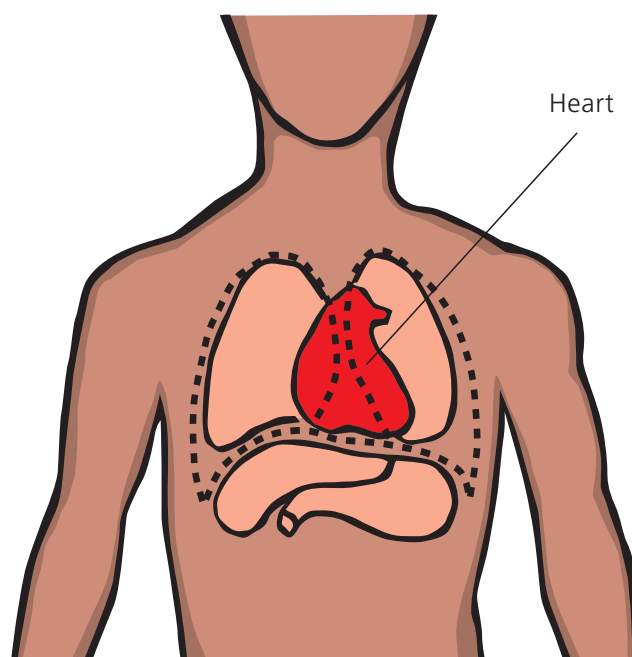


Present overhead 10 and explain the following:

- the heart is located in the middle of the chest between the lungs
- the chest bone or the sternum protects the heart
- there are two main blood vessels that come from the heart; the aorta which carries blood from the heart and the pulmonary artery carrying blood to heart
- a double-layered membrane called the pericardium surrounds your heart like a sac:
 - the outer layer of the pericardium surrounds the roots of your heart's major blood vessels and is attached by ligaments to your spinal column, diaphragm and other parts of your body
 - the inner layer of the pericardium is attached to the heart muscle
 - a coating of fluid separates the two layers of membrane, letting the heart move as it beats, yet still be attached to your body.

Important message

The following diagram shows the location of the heart in the thorax cavity.





Handout 8 – The cardiovascular system – How it works

Distribute handout 8 (three pages) and summarise by explaining that:

- the heart is the centre of the cardiovascular (CV) system
- it is a powerful muscle with the ability to pump blood throughout the entire body
- every cell in your body needs oxygen in order to live and function
- the heart:
 - pumps oxygen-rich blood to every part of the body through blood vessels
 - usually beats 60 to 100 times a minute
 - pumps between 70 and 100ml of blood with each beat
 - pumps 4–6 litres of blood each minute at rest, and even more with activity
- blood that is pumped through the heart makes a full circuit of the body every minute.

Explain that we will now look at the anatomy and physiology of the heart in more detail.

2.3 Structure of the heart

Aim

To describe the components of the heart.

Duration 30 minutes

Presentation – Layers of the heart

Write myocardium, pericardium and endocardium on the whiteboard. Explain, saying that there are three layers of the heart.

Myocardium – The myocardium is a special type of muscle. It contains special muscle fibres (cells) that enable the heart to contract automatically.

Pericardium – The heart sits in a sac. Its inner layer consists of two membranes separated by fluid.

Endocardium – This is the smooth membrane, which lines the inside of the heart and the heart valves. It is the heart's inner surface, which is in contact with the blood being pumped.

Presentation – Cardiac anatomy and recap of blood flow around the heart



Handout 9 – Cardiac anatomy

Distribute handout 9 and ask participants to write down each anatomical feature of the heart as you describe them, using overhead 11. Details on each anatomical feature and additional overheads that can be used to explain individual features are described below.



Overhead 11 – Chambers of the heart

Chambers of the heart

Explain that:

- the heart has 4 chambers and is divided down the middle by a wall of muscular tissue known as the septum
- there are two upper chambers (the atria) and two lower chambers (the ventricles)
- the ventricles meet at the bottom of the heart to form a pointed base that point toward the left side of your chest
- the left side of the heart has one atrium and one ventricle. The right side of the heart has the others.



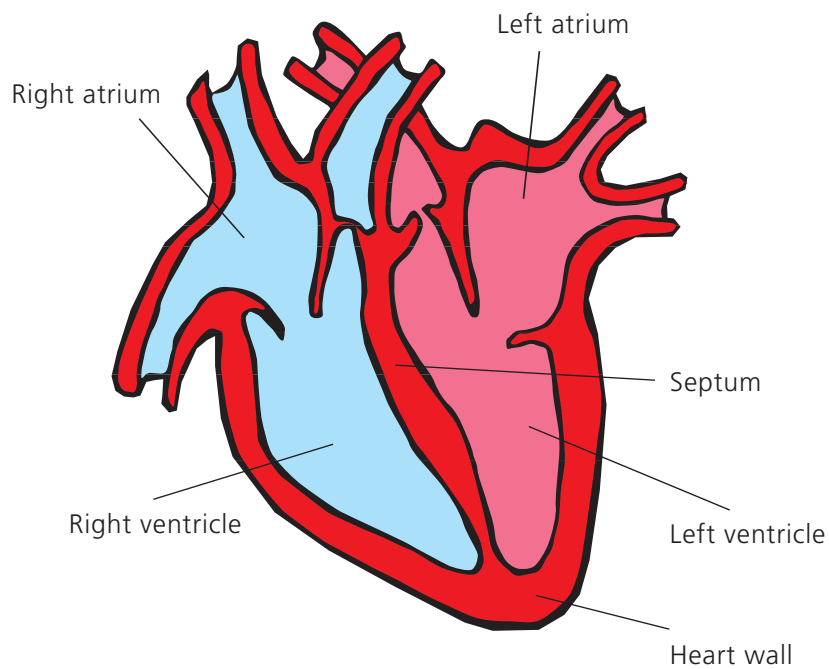


Diagram showing the 4 chambers of the heart

Image reprinted with permission National Heart Foundation (NSW Division)

Explain that:

- the left ventricle contracts most forcefully, so you can best feel your heart pumping on the left side of your chest
- the much stronger left ventricle takes oxygenated blood coming back from the lungs and circulates it to the rest of the body. This is why it is thicker.



Overhead 12 – Blood flow around the heart

Systemic circulation

Refer back to the earlier discussion of systemic and pulmonary circulation. Recap on the concepts described previously and add further detail using anatomical terminology as described below:

- the systemic circulation carries oxygen and nutrients to all body tissues
- blood returns to the heart from the lungs via four pulmonary veins that empty into the left atrium
- blood then passes into the **Left Ventricle**, which pumps the blood into the **Ascending Aorta**. This blood vessel branches and blood is taken to all body parts.

Pulmonary circulation

Explain that:

- the pulmonary circulation carries blood to the lungs where the blood releases carbon dioxide and takes on oxygen
- the Right Atrium delivers blood to the Right Ventricle which pumps blood to the right and left Pulmonary Arteries, each of which carries blood to the lungs
- oxygenated blood is then transported by the systemic circulation to all parts of the body.

Presentation – Valves of the heart



Overhead 13 – Great vessels of the heart

Present overhead 13 and explain that:

- there are four valves inside the heart (see diagram below)
- the valves keep the blood flowing in the right direction
- it is a good idea to think of these as doors or traffic police, which close off to prevent the blood from flowing backwards

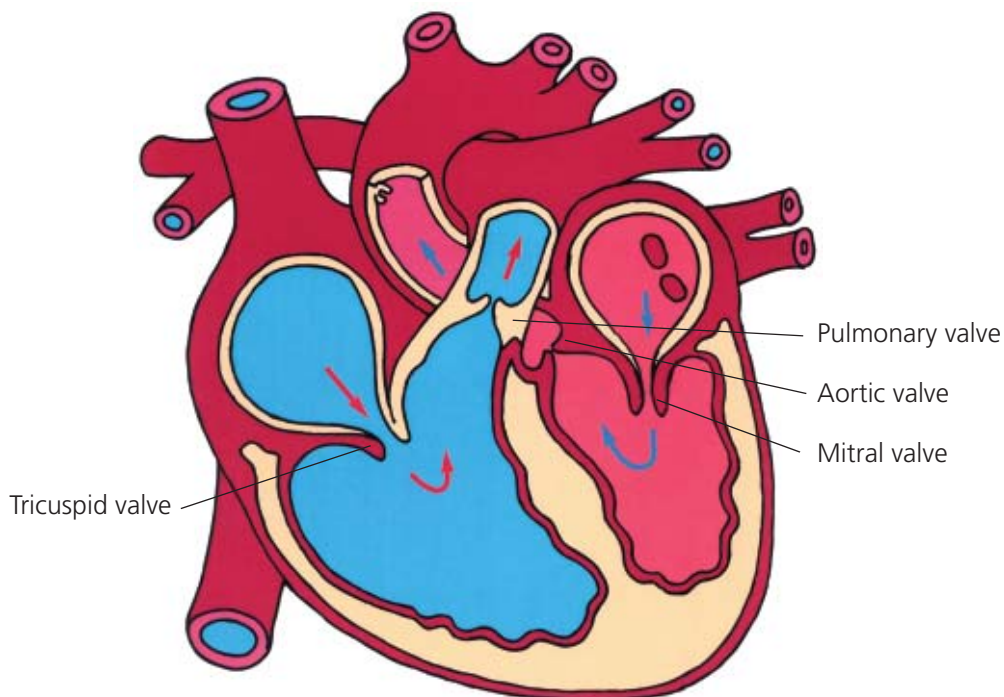
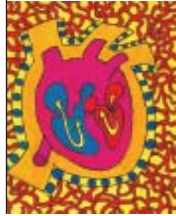


Diagram showing the 4 valves in relation to blood flow through the heart

Image reprinted with permission National Heart Foundation (WA Division) and Derbarl Yerrigan Health Services, Perth



The **tricuspid** valve regulates blood flow between the right atrium and right ventricle.

The **pulmonary** valve controls blood flow from the right ventricle into the pulmonary arteries, which carry blood to the lungs to pick up oxygen.

The **mitral** valve controls oxygen-rich blood passing from the left atrium into the left ventricle.

The **aortic** valve opens the way for oxygen-rich blood to pass from the left ventricle into the aorta the body's largest artery, where it is delivered to the rest of the body.

Heart valves don't always work, as they should. A person can be born with an abnormal heart valve. This is called a congenital heart defect.

Training tip



The following information on defective heart valves may be provided, dependent on the needs of the group and in consideration of their knowledge and the goals of training.

What is a defective heart valve?

A defective heart valve is one that is not working properly. The valve fails to fully open or close. Valves that do not open and close properly make it difficult for blood to flow in the right direction through the heart. This makes the heart pump harder in order to circulate enough blood to the body. Over time this can weaken the heart.

A narrow heart valve cannot open completely so blood is pumped through a smaller-than-normal opening.

A valve also may not be able to close completely. This leads to blood leaking back through the valve when it should be closed.

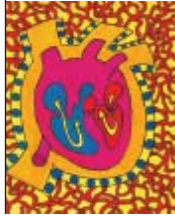
What causes heart valve disease?

The following conditions can damage or scar the valves causing problems with opening and closing of the valves:

- infection
- rheumatic fever
- ageing
- anatomic abnormalities present from birth – commonly called ‘birth defects’ to heart valves. this means people were born with this condition
- heart attack.

Symptoms can range from none to severe.

Aboriginal people may experience problems with their valves due to previous infections including rheumatic heart disease.



What are the things people may experience when valves are not working properly?

- General discomfort in body or chest
- Palpitations or a “fluttery feeling in the chest”
- Chest pain which may feel similar to angina
- A sharp pain-like feeling over the left chest
- Heavy pressure under the breastbone
- Tightness in neck and jaw ache
- Pain radiating down the left arm lasting from a few minutes to hours, appearing when very tired, sick, or under a lot of stress
- Shortness of breath
- Dizziness or blackouts with advanced disease
- Fatigue.

How are defective heart valves treated?

- Most people with defective heart valves will need to take antibiotics before certain dental or surgical procedures likely to cause bleeding.
- Surgery may be needed to repair defective valves or remove and replace diseased valves when symptoms are severe or patient’s health is compromised.

Presentation - Coronary blood flow – Coronary arteries



Overhead 14 – Blood supply to the heart

Present overhead 14 and explain that the heart, like all other muscles in the body, needs its own supply of oxygen in order to function properly. Explain that:

- although its chambers contain blood, the heart receives no nourishment from the blood inside the chambers
- the heart gets its blood supply from the coronary arteries
- the two major coronary arteries (the right coronary artery and the left main coronary artery) branch off the aorta, and then divide into many smaller arteries that lie in the heart muscle and feed the heart.

Distribute handout 10.



Handout 10 – Coronary blood flow or coronary arteries

Important message



The coronary arteries are the ones that are most likely to become blocked. These are the ones that are bypassed, for example, by a double bypass or triple bypass. This simply means that two or three of the arteries blocked were bypassed (see module 4 for more detail on this procedure).

2.4 Conduction of the heart

Aim

To provide an overview of the electrical circuitry of the heart.

Duration 10 minutes

Presentation – The heart’s electrical circuit



Overhead 15 – How does the heart beat happen?

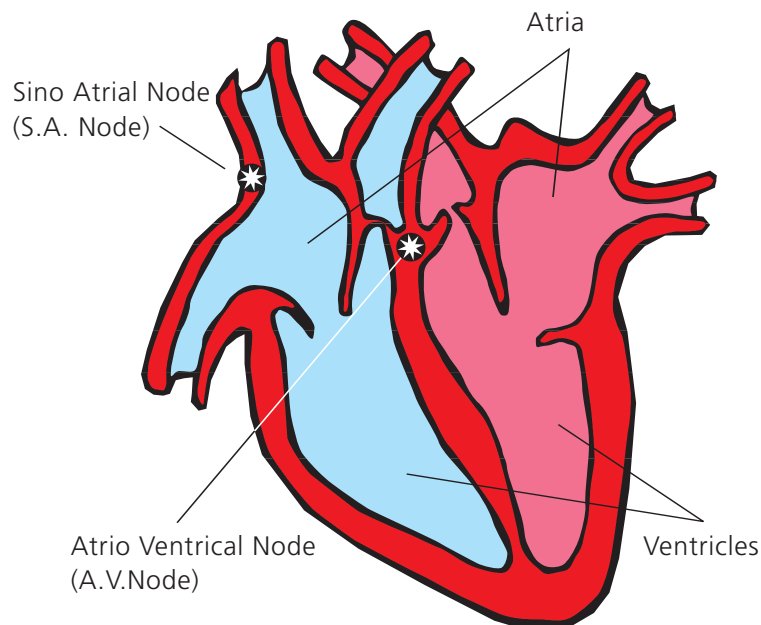
Present overhead 15 and explain that the heart has its own electrical circuit and a generator called the **pacemaker or sinoatrial node (SA)**. This electrical signal begins in the sinoatrial (SA) node, located at the top of the right atrium. Add that:

- impulses spread through the atria stimulating contraction to the atrioventricular (AV) node. Although the sinoatrial (SA) node sends electrical impulses at a certain rate, your heart rate may still change depending on physical demands, stress or hormonal factors.
- after a slight pause at the atrioventricular (AV) node the impulse passes along special conducting muscle fibres through the ventricles causing them to contract and squeeze the blood out into the body or the lungs.

Distribute handout 11.



Handout 11 – Electrical conduction of the heart



Electrical conduction of the heart and its pathway through the heart

Image reprinted with permission from the National Heart Foundation (WA Division) and Derbarl Yerrigan Health Service, Perth

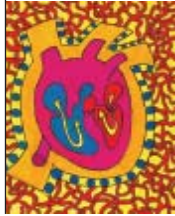
Interesting Point



When the electricity of the heart goes 'haywire' a pacemaker may be needed to take over the electrical circuit of the heart. A specially trained doctor inserts a pacemaker. It is done under local anaesthetic. The pacemaker is inserted in the muscle of the chest or abdomen.

What is a pacemaker?

Although it weighs less than a 50 cent piece, a pacemaker contains a powerful battery, electronic circuits and computer memory that together generate electronic signals. The signals or pacing pulses are carried along thin, insulated wires or leads, to the heart muscle. The signals cause the heart muscle to begin the contractions that cause a heartbeat.



2.5 The mechanical component of the heartbeat

Aim

To describe the mechanical aspects of the heartbeat and pulse and blood pressure measurement.

Duration 20 minutes

Presentation – The heart beat cycle



Handout 12 – The mechanical component of the heartbeat

Distribute handout 12 and explain how the heart beats.

- A heartbeat is a two-part pumping action that takes about a second. As blood collects in the upper chambers (the right and left atria), the heart's natural pacemaker (the sinoatrial node) sends out an electrical signal that causes the atria to contract. This contraction pushes blood through the tricuspid and mitral valves into the resting lower chambers (the right and left ventricles). This part of the two-part pumping phase (the longer of the two) is called the diastole.
- The second part of the pumping phase begins when the ventricles are full of blood. The electrical signals from the sinoatrial (SA) node travel along a pathway of cells to the ventricles, causing them to contract. This is called systole. As the tricuspid and mitral valves shut tight to prevent a back flow of blood, the pulmonary and aortic valves are pushed open. While blood is pushed/squeezed from the right ventricle into the lungs to pick up oxygen, oxygen-rich blood flows from the left ventricle to the heart and other parts of the body.
- After blood moves into the pulmonary artery and the aorta, the ventricles relax, and the pulmonary and aortic valves close. The lower pressure in the ventricles causes the tricuspid and mitral valves to open, and the cycle begins again. This series of contractions is repeated over and over again, increasing during times of exertion and decreasing while at rest.
- The heart does not work alone however. Your brain tracks the conditions around you – climate, stress and your level of physical activity, and adjusts your cardiovascular (CV) system to meet those needs.

Training tip



You may wish to refer back to overheads 11–13 for diagrams to assist in explaining the heart beat cycle.

Presentation – The pulse

Continue to refer to handout 12 and explain that:

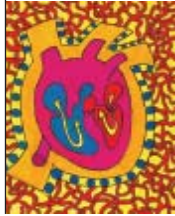
- each heartbeat moves the blood forward through the arteries, which can be felt as a pulse
- the pulse rate tells you how fast your heart is beating
- every time the heart beats there is a wave of blood that travels through the arteries
- the autonomic nervous system (ANS) controls the heart beat (pulse).

Important message



The autonomic nervous system

There are two divisions in the autonomic nervous system (ANS): the parasympathetic and the sympathetic nervous system. The autonomic nerves, especially the vagus nerve of the parasympathetic division, keep the resting rate at about 70 beats by means of impulses from the cardio regulatory centre in the medulla in the brain. Sympathetic nerves act on organs and blood vessels to prepare the body to react to stressful situations. During exercise or stress, the sympathetic cardiac nerves influenced by the hypothalamus speed the rate. The parasympathetic nervous system has an opposing effect to the sympathetic division, it works mainly in quiet non-stressful conditions and its activity predominates during sleep.



Activity – Measuring the pulse



Before commencing the next activity, explain that:

- the pulse can be felt on arteries close to the skin
- the pulse is named after the particular artery
- for example, the radial pulse is named after the radial artery in the wrist
- the carotid artery is from the artery in the neck
- the femoral artery is the one in the groin.

To take a pulse the pads of the middle fingers are used. To determine the rate per minute, the number of pulses are counted over one of the following intervals:

- one whole minute
- 30 seconds then multiplied by two
- 15 seconds then multiplied by four.

Then, ask participants to take turns to feel each other's pulse. Pair the participants and see if they can locate the radial pulse, then count the heart beat over 1 minute.

Presentation – Blood pressure



Handout 13 – Measuring the blood pressure

Distribute handout 13 and explain the following.

- Blood is carried from the heart to all parts of your body in vessels called arteries.
- Blood pressure (BP) is the measurement of the pressure of the blood against the walls of the bigger blood vessels called the arteries.

- Each time the heart beats (about 60–70 times a minute at rest), it pumps out blood into the arteries.
- Your blood pressure (BP) is at its highest when the heart beats, pumping the blood. This is called systolic pressure. When the heart is at rest, between beats, your blood pressure falls. This is the diastolic pressure.
- High blood pressure (BP) is known as hypertension. It can be very dangerous if left untreated.
- Blood pressure (BP) is recorded, as two numbers (eg 150/90). The first, the larger number (eg 150) is the systolic blood pressure. This is the pressure in the arteries as the heart squeezes out blood during each beat.
- The second, the smaller number (eg 90) is the diastolic blood pressure, which is the pressure in the arteries as the heart relaxes and the ventricles fill with blood before the next beat.
- The systolic blood pressure (BP) is a stronger and more consistent predictor for cardiovascular disease (CVD).

What is normal blood pressure?

- Normal blood pressure (BP) is less than 120/80.
- It should be noted however that there is no ideal rule about what level of blood pressure (BP) is ‘normal’ as blood pressure (BP) level depends on age and the presence of diabetes, proteinuria and renal insufficiency (kidney disease).
- The following figures are a useful guide:

■ normal blood pressure (BP)	less than 120/80
■ high-normal (Borderline) blood pressure (BP)	120–139/80–89
■ high blood pressure (BP)	more than or equal to 140/90
■ adults less than 65; and/or all adults with diabetes and renal insufficiency and/or proteinuria	goal for blood pressure (BP) is less than 130/85.

Important message



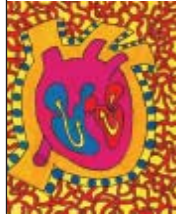
High blood pressure

Aboriginal and Torres Strait Islander people are at greatest risk of heart failure. Those at risk of or who have high blood pressure should ensure they are seen regularly by health professionals for check ups.

Training tip



If there is sufficient time, the following questions about blood pressure (BP) can be presented as a brain storming session, where each question is asked and responses recorded on whiteboard and discussed.



What are the risks of high blood pressure?

- Stroke
- Heart disease
- Kidney disease/kidney failure
- Eye problems.

What causes high blood pressure?

- Family history
- Being overweight
- Eating too much fat or salt in your food
- Drinking too much alcohol
- Insufficient exercise
- Kidney problems
- Cigarette smoking.

What can be done to help prevent or manage high blood pressure?

- Have blood pressure (BP) checked regularly
- Keep to a healthy weight
- Exercise regularly
- Have less alcohol
- Do not smoke
- Take medications properly.

Why does blood pressure (BP) change?

- Blood pressure (BP) varies all the time to meet your body's needs – from when you get up in the morning to when you are relaxing, exercising or sleeping.
- Blood pressure (BP) is usually at its highest when we exercise and lowest when we sleep. It can also rise due to anxiety, excitement, activity or nervousness. In general, it remains fairly constant throughout the day. If blood pressure (BP) readings are high (hypertension), a number of blood pressure (BP) recordings may be required to be certain that the readings reflect that person's normal, accurate blood pressure (BP).
- There are ways to reduce your blood pressure (BP) apart from medications. Exercise and losing weight is also good for reducing your blood pressure (BP). Taking your blood pressure (BP) medication is important. Raised blood pressure (BP) is a major risk for cardiovascular disease (CVD).
- The higher the blood pressure (BP), the greater the risk of stroke, coronary heart disease, kidney disease, heart failure and death.

Activity – Measuring blood pressure

Demonstrate measuring blood pressure (BP) on a volunteer and provide the following tips:

- remember to get blood pressure (BP) machines calibrated and tested properly
- let the patient sit and relax for a couple of minutes before taking a blood pressure reading
- select an appropriate cuff size
- the bladder of the cuff should be at least 80% length, and width at least 40% of the circumference of the mid-upper arm
- the cuff should be at heart level
- the cuff should be fitting snugly around upper arm about 2cm above the bend in the elbow.

Summary

Ask if there are any comments or questions on this module, then recheck questions list you compiled at the beginning of the workshop on butchers' paper.

Cross off questions that have been answered, at the same time going over the explanations.

Explain that remaining questions will be answered during the next sessions.

Briefly mention what will be covered in the next session – Module 3:

- definition of cardiovascular disease (CVD)
- types of cardiovascular disease (CVD)
- causes of cardiovascular disease (CVD)
- risk factors for cardiovascular disease (CVD)
- risk factors in Aboriginal people
- detecting cardiovascular disease (CVD)
- primary prevention of cardiovascular disease (CVD).

Module 2 Useful resources

Anatomy and physiology

Principles of Anatomy and Physiology. G.Tortora & N. P. Anagnostakos (eds) (1984) (4th Edition)
Harper & Row: New York.

Health Education and Vascular Health Resources for Aboriginal and Torres Strait Islanders

- *Aboriginal Health Worker Heart Health Manual: a resource for the certificate in cardiovascular health for Aboriginal Health Workers*, developed jointly by National Heart Foundation, (WA Division) and Derbarl Yerrigan Health Service (2001) National Heart Foundation, Perth.
- *Aboriginal Vascular Health program: health education pamphlets* (series of 13 pamphlets). Revised January 2005 SHPN (AH) 040076–040087, NSW Department of Health, Sydney. Available through The Better Health Centre ph: (02) 9816 0452.
- *Listen to Your Heart Video*. Designed for the indigenous community this short video conveys important messages about heart health. National Heart Foundation Heartline: 1300 36 27 87.

National Heart Foundation

The Heart Foundation produces a broad range of resources:

- A range of brochures designed for the public in simple, easy to read formats are available. Topics include: *Your Heart*, *Your blood pressure: heres the score*, *High blood pressure: the facts*, *All about coronary angiography*, *Bypass*, *Coronary angioplasty and coronary stent implantation*, *Heart attack? every minute counts*, *Heart valve surgery*, *Life after heart attack*, *Living with angina*, *Stroke*, *How to lower your risk*.
Order through Heartline phone: 1300 362789
- A *Heart Resource Catalogue* listing all resources and publications is available for order through Heartline: 1300 36 27 87.
- Resources for professionals including health policies, information sheets and guidelines are accessible through the National Heart Foundation website www.heartfoundation.com.au



