

NSW Chronic Care Program

Implementing Rehabilitation for Chronic Disease



Volume 2

Suggested citation:

NSW Department of Health. 2006. *NSW Chronic Care Program: Implementing Rehabilitation for Chronic Disease – Volume 2*. NSW Department of Health, Sydney.

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SHPN (HSPI) 060036
ISBN 0 7347 3914 1

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June 2006

Contents

1	Theories and models of behaviour change	3		
	Social Cognitive theory	3		
	Health Belief model	3		
	Theory of Adult Learning	3		
	Stages of Change model	3		
	Health Locus of Control	3		
	Theory of Reasoned Action	4		
2	Self-management support	5		
	Principles of self-management	5		
	Barriers to achieving self-management	5		
	Common elements of self-management support	6		
3	Clinical assessment	7		
	Health history	7		
	Review of reports	7		
	Physical assessment	7		
	Medication review	7		
	Identification of risk factors	8		
4	Psychological assessment	9		
	Depression	9		
	Anxiety	9		
	Social support	10		
	Screening for psychological conditions	10		
	Assessing for depression	11		
	Depression screening questionnaires	12		
	Assessing for anxiety	12		
	Anxiety screening tools	12		
	Social support	12		
	Depression and coronary heart disease information sheet		13	
	What is depression?		13	
	How do I know if a person is depressed (and not just sad)?		13	
	– Psychological treatments		14	
	– Medications		14	
	– What can I do?		14	
	Depression workshops		15	
	Who is the target audience?		15	
	Where will the workshops be held?		15	
	When will the workshops be held?		15	
	How will the workshops be structured and what will be covered?		15	
	What is the cost of the workshop?		15	
	How do I secure a place in the workshop or to get further information?		15	
5	Quality of life assessment tools	17		
	Quality of life		18	
	Generic measures		18	
	Disease-specific measures		18	
	Quality of life assessment tools		18	
	Quality of life tools specific to people with cardiac disease		18	
	Quality of life tools specific to people with pulmonary		18	
	Quality of life tools specific to people who have had a stroke		18	

6	Functional and exercise assessment	19			
	Six-minute walk test (6MWT)	19		General conditions when exercising people with chronic disease	28
	How to perform a 6MWT	19		Considerations when exercising people with heart disease	28
	Clinical tips	20		Considerations when exercising people with pulmonary disease	29
	When to discontinue the test	20		Dyspnoea	29
	At the end of six minutes	20		Oxygen de-saturation	29
	Six minute walk test standard instructions	21		Considerations for exercising people with diabetes	30
	Encouragement during the 6MWT	21		Considerations for exercising people following a stroke	30
	Timed up and Go Test (TUGT)	21		Considerations for exercising people with peripheral vascular disease (PVD)	30
	How to perform the test	21		Considerations for exercising people with musculo-skeletal disease	30
	Instructions	21		Maintenance Exercise Programs	30
	Scoring of the TUGT	21		Options for maintenance exercise programs	30
	MET: Metabolic Equivalent Level	21			
	Using the MET Chart to prescribe exercise	21			
	Metabolic equivalent chart	22			
	The Borg Scale of Dyspnoea	23			
	The Borg Scale of Perceived Exertion (CR10)	24			
7	Exercise prescription	25	8	Nutrition assessment tools	33
	Assessment	26		Diet habits questionnaire	33
	Prescription	26		Short fat questionnaire	37
	Intensity	26		Malnutrition Screening Tool (MST)	39
	Duration	27			
	Frequency	27			
	Mode	27			
	Equipment	27			
	Home Exercise	27			

There are many theories and models informing the understanding of the behaviour of people. The following is a brief description of some used within chronic disease rehabilitation settings. It must be noted that a more thorough understanding will be required for application in the clinical setting. An excellent guide can be found in *Theory in a Nutshell*.¹

Social Cognitive theory, developed by Bandura based on his theory of Social Learning, refers to an individual's **self-efficacy** or their belief in their ability to perform a task or behaviour, and their belief that the particular outcomes of the task or behaviour will confer benefits.² Self-efficacy is an important predictor of behaviour change³ that evolves from four elements:

- 1 An individual's ability to perform.
- 2 Others' belief in an individual's ability to perform successfully.
- 3 Others' influence and social support.
- 4 A physical feeling of well-being from successfully performing the task.

Health Belief model⁴ describes how individuals' behavioural adaptation is motivated by the belief that a particular behaviour will produce positive health gains, thereby warding off health threats. The motivation for behavioural change is embedded in the individual's belief that they are at risk of acquiring or developing a disease, which is a major threat to either their physical and psychosocial wellbeing or both.

Additionally, the individual's behaviour change is influenced by two practical considerations:

- 1 The belief that the treatments or activities are not costly in terms of money, time and effort.
- 2 That they are exposed to an impetus that may influence their decision.

Examples of factors that may influence decisions include having a close associate or relative who has suffered the result of ineffective behaviours, or a media campaign that highlighted the problem.

Theory of Adult Learning⁵ or andragogy. Andragogy refers to the premises of successful adult learning whereas pedagogy refers to a manner of learning seen in children. Knowles believes that there are five main concepts of adult learning that need to be incorporated in adult learning programs. These include self-concept, experience, readiness to learn, orientation to learning, and being motivated to learn.

Stages of Change model, otherwise known as the Transtheoretical model, was developed by Prochaska and DiClemente.⁶ The model seeks to explain changes in behaviour by recognising that individuals make specific decisions on behaviour change depending on what stage of change that person is at. Understanding the discrete stages of change is useful in the implementation of effective health promotion strategies by targeting the specific stage a person is determined to be in. The six stages of change described in the model (pre-contemplation, contemplation, preparation, action, maintenance, and termination) suggest that a person makes a conscious decision to change behaviour and recognises change does not just happen as an event on its own. Individuals will move back and forth between the stages at any given time, depending on their personal circumstances. The *stages of change model* has been used extensively in behavioural domains such as exercise-related and smoking-related behaviour change models.

Health Locus of Control⁷, proposes there are three elements that can account for why people behave as they do. These are internal locus of control, which refers to taking self-control so that the person will seek their own answers and decide what behaviours or action is needed; external locus of control, where the person needs help from outside to seek their answers; and the influence of powerful others, which could be an economic situation or a social situation that influences one's decisions about how to act.

Theory of Reasoned Action was first described in 1975 by Ajzen and Fishbein.⁸ This theory proposes that an individual's attitudes predict behaviour, with intentions to perform an action being determined by two types of beliefs or attitudes. The first is the personal belief that a positive outcome will eventuate if a particular behaviour is performed. Thus an attitude is developed through an individual's life experiences. The second determinant is socialisation within a group, referred to as 'subjective norms' because it is associated with 'prescriptive' perceptions. If a group of people believe in the value of a particular behaviour then the individual could be pressured into acting out that behaviour.

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Strengthening and supporting self-management for people with chronic conditions is well recognised as a critical aspect of improving health outcomes and quality of life.

Self-management is a process whereby participants, including carers, engage in activities that protect and promote their health, manage their signs and symptoms, monitor behaviours and manage the impact of their condition.⁹ The adaptation of healthy behaviours and extent of self-management is however very much dependant upon the individual's capacity, motivation and life context. Supporting people to self-manage is recognised as a critical part of an overall treatment program for managing chronic disease.

Some of the theories on which self-management support models are based are described in Section 1.

Principles of self-management support

Self-management support involves a range of components, service providers, tools and resources, which need to be tailored to the needs of each individual. Self-management support:

- empowers the individual and/or their carers to be active participants in their care
- involves forming partnerships between health professionals, individuals and their carers/families and incorporates shared decision making
- recognises that individuals live with their condition/s 24 hours a day and manage their health problems within the bounds of their circumstances with varying degrees of impact on their quality of life
- recognises that individuals vary in their capacity, motivation and circumstances to be able to self-manage effectively
- helps change existing behaviours to incorporate more health enhancing behaviours.

Barriers to achieving self-management

There are many factors that can impact on a person's capacity to self-manage. They may be intrinsic to the individual or beyond the person's control. A critical aspect of providing self-management support is helping the person to identify specific barriers and assisting in problem solving.

Barriers to self-management may include:

- poverty, lack of finance
- low literacy
- disability
- limited health care provision and access
- lack of confidence or self-efficacy
- lack of motivation – personal health may not be a priority, or cultural issues may discourage self-management
- myths about self-management
- other competing personal/family/community demands
- mental health problems
- isolation and lack of access to community resources.

Common elements of self-management support

Common elements to many self-management approaches include:

- defining the individual's key problems, assessing and reviewing their health status and risks
- collaboratively determining the individual's goals and priorities in relation to their problems or risks
- providing interventions, using behaviour theory, to support the required behaviour
- providing ongoing monitoring, review and feedback on goals and actions.¹⁰

Websites of interest for self-management models are:

<http://patienteducation.stanford.edu/programs/cdsmp.html>¹¹

<http://www.expertpatients.nhs.uk/>¹²

<http://som.flinders.edu.au/FUSA/CCTU/Self-management.htm>¹³

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Other reading

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Health history

A detailed assessment of past and present health status is required. This is useful for two reasons:

- 1 To alert the chronic disease rehabilitation team to possible barriers, precautions or additional elements of the service such as grief counselling, exercise prescription.
- 2 To provide an opportunity to explain the necessity and benefits of a chronic disease rehabilitation service by individualising the disease etiology, progression and its management.

Review of reports

Reports of investigations and treatments are required to further inform the health history. These are necessary to inform safety of participation and alert the team to possible omissions of optimal care. Examples of reports for diagnostic groups include but are not exclusive to:

- *Cardiac*: serum blood results such as haemoglobin and electrolytes, electrocardiograph, stress testing, perfusion scans eg sestimibi, echocardiography, angiography, angioplasty, operation reports, lipid reviews and medical communication documents
- *Pulmonary*: lung function test, arterial blood gases, x-rays, CT scans
- *Diabetes*: HbA1c, personal surveillance of blood glucose levels, recent review of eyes, feet, renal function
- *Arthritis*: x-rays, surgical reports
- *Osteoporosis*: x-rays, bone density scans
- *Stroke*: any recent neurology reports/letters to GPs, physiotherapy assessment
- *Aged care*: occupational therapist home and other functional assessments.

Physical assessment

The following assessments are the minimum requirements prior to commencing the exercise component of chronic disease rehabilitation for each diagnostic group. All groups require mobility assessment such as the need for walking aids and risk of falls.

- *Cardiac*: ECG including heart rate, rhythm and compare with previous for evidence of changes and acute ischaemia indications, blood pressure, heart sounds, lung fields, ankles for evidence of oedema, wounds, pain – either anginal or related to wounds, joints, etc
- *Pulmonary*: auscultation of lung fields, respiratory rate, skin colour, clubbing of digits, cough/sputum, oxygen saturation monitoring, blood pressure and heart rate
- *Diabetes*: foot and skin check, blood glucose levels and surveillance
- *Arthritis*: joint range and muscle strength, pain
- *Osteoporosis*: joint range and muscle strength, pain
- *Stroke*: ECG, blood pressure, stiffness, musculo-skeletal co-ordination
- *Aged care*: depends on co-morbidities and disabilities.

Medication review

A medication review is imperative to determine optimal use of prescribed drugs and ensure the regimen is complete for the diagnostic group. Attention is also needed as to the effect of the medications, both in controlling signs and symptoms as intended and any negative side effects.

As the evidence is strong regarding optimal dosages, the chronic disease rehabilitation staff can be supportive of the medical team reaching optimal targets. An example is to monitor blood pressure response to an individual's regimen so that angiotensin converting inhibitors and beta blocker doses may be adjusted.¹⁴

Additionally, chronic disease rehabilitation teams can be invaluable in supporting participants to use their medication as recommended. Examples of this include the correct methods of using inhaler devices and how to manage potential side effects such as sore mouths.

An outcome of a medication review could be that a *Home Medicine Review* is required. *Home Medicine Reviews* require liaison with an individual's general practitioner for referral to the pharmacist. Divisions of General Practice can often inform chronic disease rehabilitation staff of local pharmacists who provide these services. More information regarding *Home Medicine Review* can be found at:

http://www.nps.org.au/site.php?content=/resources/content/consumer_catalogue.html¹⁵

Identification of risk factors

The risk factors for chronic illness will be identified in conjunction with the individual and their partner/carer/spouse to help recognise why the chronic illness has occurred and how these can escalate chronic disease, and to set goals and improve self-management.

The following is a guide for risk factor identification in each diagnostic group:

- *Cardiac*: lipids, obesity, diabetes, hypertension, smoking history, alcohol use, sleep apnoea, use of illicit substances, family history, sedentary lifestyle, psychosocial issues
- *Pulmonary*: as for cardiac
- *Diabetes*: as for cardiac, foot care, skin care, understanding of diabetes self-management, nutrition
- *Arthritis*: pain, muscle wasting, joint stiffness, nutrition, obesity
- *Osteoporosis*: pain, muscle wasting, joint stiffness, nutrition, obesity
- *Stroke*: as for cardiac, falls risk, stiffness
- *Aged care*: as for cardiac, falls risk, ability to perform the activities of daily living.

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15. National Prescribing Service Limited, *Catalogue of free consumer materials: Home medicine review leaflet* [Online] [cited 2006 March 20], available from: URL: http://www.nps.org.au/site.php?content=/resources/content/consumer_catalogue.html

The information and tools noted here may be used to screen participants of chronic disease rehabilitation for depression, anxiety and social isolation. It is recommended that an individual interview as well as the use of a validated tool is the best way to elucidate the possible need for further intervention. While this section often refers to the evidence related to heart disease (as there is much published evidence related to heart disease as versus other chronic diseases), clinicians are well aware the topics discussed relate to all people living with chronic disease.

Depression

Given the high prevalence of depression in people with chronic disease, health professionals across all settings are likely to encounter a substantial number who have or are at risk of depression. It has been estimated that a clinician could expect on average to find five people with major depression and a further four cases of minor depression in a typical 25-bed cardiac ward.¹⁶ Despite this evidence, depression is poorly recognised and treated in people with chronic disease. To remedy this evidence-practice gap, the National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand have jointly published a guideline *Reducing Risk in Heart Disease* 2004.¹⁷ This guideline recommends that all people with coronary heart disease be formally screened for depression and referred for evidence-based management as appropriate.

It is essential that those involved in the screening, clinical assessment and management of depression be appropriately trained and supported. Ideally, a clinical psychologist or consultant psychiatry liaison would be available to the chronic care team. However, in their absence and depending on resources the following suggestions will help overcome this gap in service.

- Incorporate this aspect of care into the role provided by a social worker, mental health nurse consultant or other appropriately trained member of the team
- General practitioners are a valuable resource with many having accessed training provided by the Commonwealth Government Initiative *Better Outcomes in Mental Health*¹⁸
- Ensure systems are in place to utilise mental health teams, particularly for urgent consults where risk of suicide may be a concern (refer to NSW Health Department's policy document *Suicide behaviour – management of patients with possible suicide behaviour*, 2005¹⁹)
- Provide opportunities for rehabilitation staff to access specific training to gain deeper understanding of psychological assessment and management as needed. The National Heart Foundation of Australia (NSW Division) in collaboration with the Psychology Department at Macquarie University provides a two-day training course for health professionals in the recognition, assessment and management of depression in people with heart disease. See page 15 for more detail.

Anxiety

The relationship between anxiety and chronic disease is less certain than for depression and it appears that if a relationship does exist, it is likely to be weaker than that associated with depression.^{20, 21} However, anxiety often co-exists with depression. Anxiety, alone or co-morbid with depression, impacts negatively on the quality of life and rehabilitation of people with chronic disease. Hence, it is recommended that participants also be screened for anxiety and treated where indicated.

Social support

A strong and consistent inverse relationship has been found between the magnitude of social support and the development of and outcomes of heart disease.^{20, 21, 22}

Apparently healthy people, as well as those with existing heart disease, are known to have poor prognostic outcomes. Factors such as living alone, being socially isolated, low perceived social support, lack of a close confidante and low emotional support, have all been found to increase morbidity and mortality. Importantly, depression and social isolation often co-occur, and people who have depression have been found to be less likely to utilise the social support resources available to them.²³

Screening for psychological conditions

Identifying and managing psychological conditions in the context of a chronic medical condition can be challenging. Hence, psychological co-morbidity often goes unrecognised and untreated or it is considered an unavoidable consequence of their condition and not managed appropriately.²⁴ A number of psychometrically sound tools may be used to screen participants of chronic disease rehabilitation for depression, anxiety and social isolation. Screening for these conditions should be accompanied by an individual clinical interview. Participants found to score high on a reliable and validated screening tool should always be followed up with a clinical interview to determine the need for further assessment, referral and management. It is essential that those administering and interpreting screening instruments be appropriately trained and that they have access to a qualified and experienced mental health professional for consultation and referral when indicated.

A consumer resource that supports best practice in the care of people with depression has recently been released by the National Heart Foundation of Australia and *Beyondblue*.²⁵ This resource includes a quick self-assessment checklist. The respondent is determined to have a probable depressive disorder if a positive response is given to either of the cardinal symptoms of depression (depressed mood and/or loss of interest or pleasure) together with at least three other depressive symptoms in the checklist. These symptoms need to have been present for at least two weeks. A study conducted by Arroll, Goodyear-Smith, Kerse & Gunn²⁶ found that a positive response to the two cardinal depression symptoms detected most cases of depression in 1025 patients of 19 general practices in New Zealand. The resource and checklist can be found at [http://www.heartfoundation.com.au/downloads/Depression_and CHD_IS_05_HF-BB.pdf](http://www.heartfoundation.com.au/downloads/Depression_and_CHD_IS_05_HF-BB.pdf) and http://www.beyondblue.org.au/index.aspx?link_id=7.246&tmp=FileDownload&fid=262 It is presented on pages 13 and 14.

Assessing for depression

The Diagnostic and Statistical Manual of Mental Disorders – Text Revision – Fourth Edition (DSM-IV-TR) diagnostic criteria for major depressive episode are (American Psychological Association, 2004, page 356)²⁷

A

- Five or more of the following symptoms have been present during the same two week period.
 - AND represent a change from previous functioning .
 - AND at least one of the symptoms is either:
 1. depressed mood or
 2. loss of interest or pleasure.²⁷
- 1 Depressed mood (known as dysphoria)** – depressed mood most of the day, nearly every day, as indicated by either subjective report (ie feels sad or empty) or observation made by others (eg appears tearful).
 - 2 Loss of interest or pleasure (known as anhedonia)** – markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others).
 - 3 Weight loss or gain** – significant weight loss when not dieting, or weight gain (eg a change of more than five per cent of body weight in one month), or decrease or increase in appetite nearly every day.
 - 4 Insomnia or hypersomnia** – nearly every day.
 - 5 Psychomotor agitation or retardation** – nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
 - 6 Fatigue or loss of energy** – nearly every day.
 - 7 Feelings of worthlessness or excessive or inappropriate guilt** – (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
 - 8 Diminished ability to think or concentrate, or indecisiveness** – either by subjective account or as observed by others.
 - 9 Recurrent thoughts of death or suicide** – Not just fear of dying, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B

The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C

The symptoms are not accounted for by:

- 1 A mixed episode** – ie with features of mania and depression.
- 2 Direct physiological effects of a substance** – eg medication, drug of abuse, or a general medical condition eg hypothyroidism.
- 3 Bereavement** – ie after the loss of a loved one, the symptoms persist for longer than two months, or are characterised by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation

Evidence-based recommendations for the management of depression include cognitive-behavioural therapy and/or antidepressant medication.²⁸ A recent review of the literature on the safety of antidepressants in cardiac patients confirmed the superior cardiovascular profile of the selective serotonin re-uptake inhibitor (SSRIs) compared with the tricyclics.²⁹ Tricyclic antidepressants were found to have adverse cardiac effects, in particular orthostatic hypotension and cardiac conduction disturbances.

For opportunities to learn more about the identification and management of depression in people with coronary heart disease the National Heart Foundation of Australia (NSW Division) in collaboration with Macquarie University Psychology Department provides workshops for clinicians who work in chronic care settings. See page 15 for more detail.

Depression screening questionnaires

The following are some commonly used depression screening tools. While the DASS and HAD can be used free of charge (ie without payment of fee to the author), there is a small cost for the Cardiac Depression Scale.

- Depression, Anxiety and Stress Scale (DASS)³⁰ available at: <http://www.psy.unsw.edu.au/Groups/Dass/> ³¹
- Hospital Anxiety and Depression questionnaire (HAD)³² available at: <http://www.patient.co.uk/showdoc/40002439/> ³³
- Cardiac Depression Scale³⁴
- PRIME-MD Patient Health Questionnaire (PHQ-9)³⁵. Permission for use can be obtained from <http://www.pfizer.com/phq-9> ³⁶

Assessing for anxiety

The following is the Diagnostic and Statistical Manual of Mental Disorders – Text Revision – Fourth Edition (DSM-IV-TR) DSM-4-TR diagnostic criteria for generalised anxiety disorder (American Psychological Association, 2004, page 476).²⁷

- Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance)
- Difficulty controlling the worry
- Anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms present for more days than not for the past six months).
 - 1 Restlessness or feeling keyed up or on edge.
 - 2 Being easily fatigued.
 - 3 Difficult concentrating or mind going blank.
 - 4 Irritability.
 - 5 Muscle tension
 - 6 Sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep).

- The focus of anxiety and worry is not confined to things such as having a Panic Attack, being embarrassed in public, being contaminated (as in Obsessive-Compulsive Disorder), gaining weight (as in Anorexia Nervosa), having multiple physical complaints, or having a serious illness (as in Hypochondriasis), and the anxiety and worry do not occur exclusively during Posttraumatic Stress Disorder
- The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning
- The disturbance is not due to the direct physiological effects of a substance (eg drug abuse, medication) or a general medical condition (eg hyperthyroidism) and does not occur exclusively during a Mood Disorder, Psychotic, or a Pervasive Development Disorder.

Anxiety screening tools

The following are commonly used for screening for Anxiety:

- Depression, Anxiety and Stress Scale (DASS).³⁰ Available at <http://www.psy.unsw.edu.au/Groups/Dass/> ³¹
- Hospital Anxiety and Depression questionnaire (HAD).³² Available through the following website address <http://www.patient.co.uk/showdoc/40002439/> ³³

Social support

The following can be used to assess the risk of social isolation and need for support.

- Multidimensional Scale of Perceived Social Support.³⁷ Available at: <http://www.atkinson.yorku.ca/~psyctest/socsupp.pdf> ³⁸

Depression and coronary heart disease information sheet

The following resource is printed in full with permission from the National Heart Foundation of Australia and the Beyond blue initiative.

The National Heart Foundation of Australia and the beyondblue national initiative to address depression have come together to produce a resource to help people identify and understand depression. The resource can be found at http://www.heartfoundation.com.au/downloads/Depression_andCHD_IS_05_HF-BB.pdf and http://www.beyondblue.org.au/index.aspx?link_id=7.246&tmp=FileDownload&fid=262

Information from the



in association with



Following a major review of the evidence¹, the Heart Foundation now considers depression to be a significant risk factor for coronary heart disease. The Heart Foundation and *beyondblue: the national depression initiative* have joined forces to raise awareness of the risks and impact

Depression is an illness that can affect anyone at any time. However, research shows that:

- depression is more common among people with coronary heart disease
- depression can increase the risk of further heart problems in people with coronary heart disease
- depression is a risk factor for coronary heart disease
- depression is under-recognised and under-treated
- depression can be treated effectively.

What is depression?

- Depression is not just a low mood or feeling sad, but an **illness**.
- People with depression generally feel sad, down or miserable most of the time. They find it **hard to do normal activities** and **function from day to day**.
- Depression has serious effects on physical as well as mental health.
- Depression is a common illness that affects up to one million Australians each year.

How do I know if a person is depressed (and not just sad)?

A person may be depressed, if for more than two weeks they have:

- 1 Felt sad, down or miserable most of the time, OR
- 2 Lost interest or pleasure in most of their usual activities.

AND experienced symptoms in at least three of the following four categories:

1 Behaviours

- Stopped going out.
- Not getting things done at work.
- Withdrawn from close family and friends.
- Relying on alcohol and sedatives.
- No longer doing things they enjoyed.
- Unable to concentrate.

2 Thoughts

- "I'm a failure."
- "It's all my fault."
- "Nothing good ever happens to me."
- "I'm worthless."
- "Life is not worth living."

3 Feelings

- Overwhelmed.
- Guilty.
- Irritable.
- Frustrated, angry.
- No confidence.
- Unhappy.
- Indecisive.
- Disappointed.
- Miserable.
- Sad, tearful.

4 Physical

- Tired all the time.
- Sick and run down.
- Headaches and muscle pains.
- Churning gut.
- Sleep problems.
- Poor appetite/weight loss.

Typically, depression will go on for weeks or months if left untreated. What are the treatments for depression?

For people with depression and heart disease, cardiac rehabilitation programs and regular light/moderate physical activity have been shown to be effective for the less severe types of depression. However, more severe types of depression require different types of treatment and it is important to know that when treating depression, there are effective psychological or pharmaceutical treatments.

Psychological treatments

Psychological treatments look at issues that particularly affect people with depression, such as changing negative patterns of thinking or sorting out relationship difficulties:

- Cognitive behaviour therapy (CBT) – to correct the negative ways we think.
- Interpersonal therapy (IPT) – to improve relationships.

Medications

Pharmaceutical treatments are effective for treating depression. People who are depressed often feel physically unwell. Antidepressant medication treatments relieve the symptoms of depression (such as insomnia). It is common to worry about the potential side effects of antidepressant medication. However, untreated depression can lead to further negative effects on physical health.

The most important thing is to find a treatment that works.

Many things that people try do not treat the cause of the illness. For example, sleeping tablets or simple counselling are ineffective (even though they may provide temporary relief).

There is a range of treatments that are proven to work – it's about finding a treatment that's right for you.

What can I do?

People with depression don't usually get better on their own. They need the help and support of their family and friends.

You can help someone by:

- encouraging them to talk about the issues and problems causing distress
- suggesting they go to a doctor or other health professional
- assisting them to make an appointment
- going with them to see a doctor or other health professional
- following them up and making sure they get professional help
- encouraging or getting them involved in social activities.

It would be unhelpful to:

- put pressure on them by telling them to 'snap out of it' and 'get your act together'
- stay away or avoid them
- tell them they just need to be busy or get out more
- pressure them to party more or wipe out how they are feeling with drugs and/or alcohol.

If you or someone you know needs help, talk to your doctor or another health professional about getting the RIGHT help. Remember, depression is treatable.

This Information Sheet was jointly developed by the National Heart Foundation of Australia and *beyondblue: the national depression initiative*.

More fact sheets on a range of depression-related topics can be obtained by calling Lifeline's just ask on 1300 13 11 14 or downloaded from the *beyondblue* website: <http://www.beyondblue.org.au>

More information on a range of heart health topics can be obtained by calling Heartline on 1300 36 27 87 or downloaded from the *National Heart Foundation of Australia* website: <http://www.heartfoundation.com.au>

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Depression workshops

The Heart Foundation, in collaboration with the Psychology Department of Macquarie University is running a series of two-day workshops for health professionals on the recognition, assessment and management of depression in patients with heart disease.

Who is the target audience?

Health professionals working with cardiac patients – cardiac nurses, cardiac rehabilitation staff, practice nurses, allied health staff working with cardiac patients.

Where will the workshops be held?

One metropolitan workshop will be held at the Heart Foundation in Sydney. Two workshops will be offered in rural locations. The precise locations and venues of rural workshops will be determined based on demand assessed through the expressions of interest received (see below).

When will the workshops be held?

TBA each year.

How will the workshops be structured and what will be covered?

The workshops will be run over two days, scheduled three months apart. Participants will be encouraged to apply the practical skills they have learned in day one during the interim period and there will be opportunity to review these on day two. The workshops aim to deliver an appropriate balance between theory and practice, which will encompass a combination of presentations, role-plays, videos, practical exercises and discussion.

Topic areas will include: prevalence and aetiology of depression, link between depression and heart disease, screening instruments for depression, clinical assessment skills for depression, referral pathways, pharmacological and psychological management of depression and development of a clinical pathway for the assessment, referral and management of cardiac patients with co-morbid depression.

What is the cost of the workshop?

The cost is \$150 for both days, including catering. This cost is contingent on holding the course in an Area Health Service venue. The cost has been kept as low as possible (cost recovery) to facilitate access for as many staff as possible. A reduced group rate could be negotiated if an Area Health Service (or other organisation) wanted to train a large number of staff. If you are interested in exploring this option, please contact Kerrie Goldston on phone: 02 9219 2479 or kerrie.goldston@heartfoundation.com.au.

How do I secure a place in the workshop or to get further information?

Places in the workshops are limited to facilitate learning. Rural workshop locations will be determined based on expressions of interest received. To register your interest, contact Kerrie Goldston at the Heart Foundation by fax **(02 9219 2424)** or email as above.

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Quality of life

Quality of life refers to how an individual perceives the quality of their daily functional status from a physical and psychological perspective. Improvement of these states is a core goal of chronic disease rehabilitation, achieved through education, counselling, and support to maintain healthy behaviours. A consistent finding in pulmonary rehabilitation research has been an improvement in patients' health-related quality of life. It is therefore recommended that an evaluation of program and service should include some measure of health-related quality of life.⁴¹

Quality of life assessment is used to support decisions on individual service plans and improvement strategies, and to determine the effectiveness of the chronic disease rehabilitation intervention. Effectiveness of interventions can then be evaluated through follow-up assessment at strategic points such as exit, or after 2 months of service in the case of long-term interventions.

The National Heart Foundation of Australia and the Australian Cardiac Rehabilitation Association³⁹ suggest the use of both quantitative and qualitative approaches to quality of life assessments. Some quantitative tools described in the literature are disease specific, others can be used across the spectrum. There is evidence that the use of generic quality of life tools may not elicit discrete variables that a disease specific tool could reveal, whereas disease specific tools may not detect variables across a broad spectrum of issues that can reduce quality of life.⁴⁰ Thus the choice of quality of life tool depends on what constructs are to be measured.

Generic measures (eg Medical Outcomes Short-Form^{36, 42}) provide a more global view of an individual's quality of life, include a wider range of scales and can be readily compared between diagnostic groups. However, specificity and sensitivity are lower with generic measures when compared to disease specific measures.

Disease-specific measures are more likely to be sensitive to changes for that particular diagnostic group. However, comparison with other diagnostic groups is limited because of the specificity of the measures. Examples of disease specific measures are given in the following pages.

Quality of life assessment tools

The following is a list of some of the available validated questionnaires for quality of life screening that may be considered for use in the chronic disease rehabilitation setting.

Other examples are available at <http://www.proqolid.org>⁴³

- Medical Outcomes Short Form questionnaire – in both a 36 item and 10 item format.⁴²
- Nottingham Health Profile.⁴⁴ Contact details are available at: <http://www.atsqol.org/nott.asp>
- Sickness Impact Profile.⁴⁵ Contact details are at: <http://www.atsqol.org/sick.asp>

Quality of life tools specific to people with cardiac disease

- Minnesota Living with Heart Failure Questionnaire⁴⁶ available at <http://www.mlhfq.org/>⁴⁷
- Kansas City Cardiomyopathy Questionnaire⁴⁸ can be accessed through <http://www.cvoutcomes.org/demos/>⁴⁹. Email the author, John Spertus, for permission to use at: spertusj@umkc.edu
- MacNew Heart Disease Quality of Life Questionnaire⁵⁰ available at <http://www.macnew.org/>⁵¹
- Seattle Angina Questionnaire⁵² can be accessed at <http://www.cvoutcomes.org/demos/>⁵³
- Quality of Life Questionnaire for Cardiac Spouses⁵⁴

Quality of life tools specific to people with pulmonary disease

- St George Respiratory Questionnaire⁵⁵. Refer to <http://www.atsqol.org/george.asp> for information on accessing this questionnaire ⁵⁶
- Chronic Respiratory Disease questionnaire⁵⁷. Refer to <http://www.atsqol.org/crq.asp> for information on accessing this questionnaire ⁵⁸

Quality of life tools specific to people who have had a stroke

- Post-Stroke Depression Rating Scale⁵⁹
- The Stroke Impact Scale 2.0 (SIS 2.0)⁶⁰. For information about accessing this scale please go to http://www1.va.gov/rorc/stroke_impact.cfm ⁶¹
- Visual Analogue Self-Esteem Scale (VASES)⁶²

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Functional exercise assessment is important for all conditions in chronic disease rehabilitation settings to:

- determine level of functional exercise capacity, impairment/disability
- determine the factors that limit exercise capacity
- provide information that will guide exercise prescription
- evaluate the effectiveness of chronic disease rehabilitation services in improving functional and exercise capacity.

There are a number of tests used in rehabilitation settings to assess function, exercise capacity and falls risk. This paper does not intend to replace tests that are commonly used but to suggest ideas to assist and enhance chronic disease rehabilitation services that are not currently assessing function. The physiotherapist or exercise physiologist on the team will give advice on the most appropriate test for functional exercise capacity.

Types of functional tests commonly used in chronic disease rehabilitation settings:

- Exercise stress test – performed in some rehabilitation settings, commonly in laboratory settings. In rehabilitation settings an exercise stress test is only required for risk stratification of high risk participants (see page 26 regarding people with heart disease) and those who want to do high intensity exercise.
- Six-minute walk test (6MWT) – frequently used with people who have respiratory disease, heart failure, arthritis, diabetes, obesity and aged care.
- Incremental shuttle walk test⁶³ – frequently used for people with respiratory disease.
- Timed Up and Go Test (TUGT)⁶⁴ – frequently used for the frail elderly to assess falls risk.
- Tests used for gait and balance include: 10 metre walk test; Step test, Berg balance test, reach tests, motor assessment scale (stroke).^{65, 66}

Six-minute walk test

The six-minute walk test (6MWT) is commonly used for assessment in pulmonary and cardiac patients.^{67, 68} It has previously been used to determine the prognosis of people with heart failure⁶⁹ but this has now been refuted.⁷⁰

People with heart disease who are considered high-risk will require an exercise stress test to determine the safety of exercise.^{71, 72} For all other participants of chronic disease rehabilitation the 6MWT is reported as being appropriate to meet the goals of assessing functional exercise capacity and measuring service outcomes.^{68, 73} From the results of the 6MWT, exercise can be prescribed, feedback can be given on an individual's progress and the chronic disease rehabilitation service outcomes can be assessed.

How to perform a six-minute walk test (6MWT)

A clinical assessment will precede a 6MWT to identify any precautions or contraindications to exercise testing.

Other considerations will include:

- prescribed medication must be taken as usual on the day of testing
- an inhaled bronchodilator it must be taken within one hour of testing or when the participant arrives for testing (for people with respiratory disease)
- allow participant to rest for at least 15 minutes prior to beginning test
- record the following parameters prior to the test:
 - blood pressure
 - heart rate
 - oxygen saturation (for those participants with respiratory disease)
 - blood glucose level of people with diabetes
 - Borg scale of perceived exertion and/or Borg scale of dyspnoea.^{74, 78}

It is recommended that at **least two walks** be performed at baseline in order to rule out a learning effect.⁷⁵ The test can be repeated on the same day with a rest period of 40–60 minutes or on the next visit. The better of the two tests should be recorded as the baseline 6MWT result.

The results of a 6MWT are affected by a number of factors including the number of walks undertaken, the track used (flat with no corners and measures out to over 25 metres – if shorter ensure this same distance is used for successive tests), pre-test bronchodilators, supplemental oxygen, **instructions and encouragement**. These factors need to be standardised so all results are accurate and reproducible.

Clinical tips

When testing people with respiratory disease measure the oxygen saturation after two minutes, as desaturation is most likely to occur at this time. To measure, walk behind the participant at the participant's own pace.

If the participant stops during the six-minute walk test:

- ask the participant why they stopped
- monitor participant for signs and symptoms that indicate a need to discontinue the test. Be prepared to have the participant sit during rest periods
- explain the Borg scale of perceived exertion (see pages 23 and 24) to the participant and ask how breathless they feel and/or their level of discomfort
- angina is an indicator for discontinuation of the test
- measure the oxygen saturation (people with respiratory disease) and heart rate
- record the time the participant stopped
- give the following encouragement **“Begin walking as soon as you feel able”**.

Repeat this encouragement every 15 seconds if necessary.

Discontinue the test if the participant exhibits signs and/or symptoms of:

- chest pain or discomfort – possible angina
- mental confusion or lack of coordination
- dizziness
- intolerable dyspnoea

- leg cramps or extreme leg muscle fatigue
- persistent oxygen saturation < 85 per cent (for people with respiratory disease)
- other clinically warranted reasons.

Highly experienced staff will consider individual variables which may indicate continuation of the test. Less experienced staff will follow the above guideline. If the test is stopped:

- re-book the test following resolution of the problem (for people with heart disease and/or diabetes)
- recommence when the participant feels able to or when oxygen saturation approaches resting values or consider repeat testing on supplemental oxygen (for people with respiratory disease)
- recommence following resolution of pain/regaining of balance etc (for people with musculoskeletal pain/stroke).

At the end of six minutes:

- instruct the participant to **“Stop, stay where you are”**
- put a marker on the distance walked
- ask the participant to be seated
- immediately record the oxygen saturation (people with respiratory disease), heart rate and Borg scale
- measure distance walked with tape measure past the set markers and tally total distance.

The participant should remain under observation by the chronic disease rehabilitation team for at least 15 minutes following an uncomplicated test.

Following are the recommended instructions and encouragement for the 6MWT, both of which affect the results of the 6MWT. It is important for accurate measurement that they are standardised for every test and every participant.⁷⁵ The following standardised instructions can be used in any chronic disease rehabilitation setting.

Six minute walk test standard instructions

Describe the walk track to the participant and give the following instructions:

- The object of this test is to walk as quickly as you can for six minutes (around the track/up and down the corridor etc) so that you cover as much ground as possible.
- You may slow down if necessary. If you stop I want you to continue to walk again as soon as possible.
- You will be regularly informed of the time and you will be encouraged to do your best.
- Your goal is to walk as far as possible in six minutes.
- Please do not talk during the test unless you have problems or I ask you a question.
- You must let me know if you have any chest discomfort or dizziness.
- When the six minutes is up I will ask you to stop where you are.
- Do you have any questions?

Encouragement during the 6MWT

- At one minute: "five minutes remaining (use participant's name). Do your best!"
- At two minutes: "four minutes remaining (use participant's name) You're doing well – keep it up!"
- At three minutes: "Half way – three minutes remaining (participant's name). Do your best!"
- At four minutes: "Two minutes remaining (participant's name). You're doing well – keep it up!"
- At five minutes: "One minute remaining (participant's name). Do your best!"
- At six minutes: "Stop there!"

If the participant stops give the following encouragement: **"Begin walking as soon as you feel able"**.

Timed Up and Go Test (TUGT)

This test is a reliable test for assessment of the frail and/or elderly person in a chronic disease rehabilitation setting.⁶⁴ It requires little equipment and time, and measures functional mobility that may be useful in measuring change over time.

How to perform the test

Require

- standard armchair
- stop-watch
- usual foot wear
- walking aid
- three-metre course – measured and marked from the chair.

Instructions

The person begins seated with back supported. One practice test is performed.

Then instruct the person as:

"On the word "go", I want you to walk at a comfortable and safe pace to the marker on the floor. Turn and walk back to the chair and sit down again."

Scoring of the TUGT

Time of < 10 seconds = normal

Time of < 20 seconds = independently mobile; independent with a stick; reasonable balance

Time of 20–30 seconds = a greater variability in balance performance

Time of > 30 seconds = need assistance with mobility tasks

MET: Metabolic Equivalent Level

MET level is a way of measuring physical activity intensity and is used in some rehabilitation services to prescribe exercise intensity.

1 MET = the energy (oxygen) used by the body when sitting quietly, perhaps while talking on the phone or reading a book. The harder the body works, the higher the MET.

- An activity that burns 3–6 METS is considered moderate – high intensity physical activity
- An activity that burns > 6 METS is considered vigorous intensity

Using the MET Chart to prescribe exercise

See page 22 for MET equivalents and their relationship to activities of daily living.⁷⁶

If the participant has had an exercise stress test (EST), graphs of achieved METs on EST are available from many texts including the American College of Sports Association.⁷⁷

Metabolic equivalent chart⁷⁶

METs		Exercise		Recreational		Occupational		Activities of DL	
1.5–2.0 METs	Strolling 1.61–2.1kph	Knitting; Playing cards; Sewing; Watching TV	Desk work; Driving auto/truck; Sitting doing light assembly; Typing; Using hand tools; writing	Brushing hair/teeth, Light housework, Making bed; Partial bath; Polishing furniture; Washing clothes					
2.0–3.0 METs	Walking, level 3.22–4.02kph, 1.61 kilometre in 24–30min Cycling, level outdoors-8.85kph	Horseback riding (walk); Light golf (power cart); Playing musical instrument; Shuffleboard; Woodworking	Bartending; Crane operation; Standing doing light or medium assembly; TV/auto/car repair; Working heavy lever	Cooking; Driving car; Ironing; riding lawn mower; Scrubbing floor; walls, cars, windows; Showering; Sweeping; Tub bath					
3.0–4.0 METs	Walking 5.63–6.44kph, 1.61 kilometre in 15–20min Cycling, outdoors 8.85kph	Billiards; Bowling; Canoeing; Croquet; Fly fishing; Golf (pulling cart); Shopping; Volleyball (non-competitive)	Baling hay; Driving heavy truck; heavy machine assembly; Janitorial work; Light welding; Operating large levers; Plastering; Plumbing; Stocking shelves	Cleaning windows; Climbing stairs (slowly); General House work; Kneeling; Light work; Packing/unpacking; Power lawn mowing (light); Sexual intercourse; Stocking shelves; Vacuuming					
4.0–5.0 METs	Walking 5.63–6.44kph 1.61 kilometre in 15–17min Cycling, 12.87kph Calisthenics Swimming (20 yd/min)	Ballet; Dancing; Gardening (how, weeding, digging), Golf (carrying clubs); Table tennis; Tennis (doubles); Volleyball	Building interior of house; Carrying trays/dishes; Farm work (sporadic); House painting, Lifting, carrying objects (20–40 lb); Light carpentry; Mechanic work	Raking leaves, shovelling light loads					
5.0–6.0 METs	Walking 6.44–7.24kph 1.61 kilometre in 13–15min Biking, 16.09kph	Canoeing (4m/hr); Gardening (digging); Skating (ice/roller); Social/square dancing; Softball/baseball (non-game); Stream fishing	Handyman work (moving, shovelling); Heavy Carpentry; Putting in sidewalk	Raking leaves, shovelling light loads					
6.0–7.0 METs	Walking/jogging, 6.44–8.05kph 1.61 kilometre in 12–13min Biking, 17.7kph Swimming (breaststroke)	Backpacking (light); Badminton; Hiking; Hunting; Horseback riding (trot), Skiing (cross country 2.5 mph); Skiing (light downhill); quare dancing; Tennis (singles)	Exterior home building; Lifting, carrying objects (45–64 lb); Shovelling (10/min, 9 lb); Splitting wood	Lawn mowing (push mower); Snow shovelling (light snow)					
7.0–8.0 METs	Walking, 8.05kph 1.61 kilometre in 12min Biking (outdoors) 19.31kph Swimming (backstroke), 40 yd/min	Badminton (competitive); Basketball (non-game); Canoeing (5 mph); golf (carrying bag); Horseback (gallop); Skiing (downhill, vigorous)	Ascending stairs with 17 lb load; Lifting, carrying (65–84 lb); Moving heavy furniture; Sawing						
8.0–9.0 METs	Jog/run 8.85kph Biking (outdoors) 20.92kph Swimming (breaststroke) 40 yd/min Rowing machine; Rope jumping (60–80 skips/min)	Basketball (non-game); Handball/squash/racquetball; Mountain climbing; Soccer (non-team); Touch football; Tour skiing	Lifting, carrying (85–100 lb); Moving heavy furniture (moving van work); Shovelling (14 lb scoops, 10 scoops/min); Using heavy tools						
9.0–10.0 METs	Jog/run, 9.66kph 1.61 kilometre in 10min	Football (competitive); sledding/tobogganing	Heavy labor; Lumberjack; Shoveling (16 lb scoops)	Ascending stairs carrying 54 lb					
11.0+ METs	Run 11.27kph (11.5 METs) 12.87kph (13.5 METs)	Competitive sports: Basketball, Handball, Racquet, Rowing							

The Borg Scale of Dyspnoea^{74,78}

0	=	Nothing at all
0.5	=	Very, very slight (just noticeable)
1	=	Very slight
2	=	Slight (light)
3	=	Moderate
4	=	Somewhat severe
5	=	Severe (heavy)
6		
7	=	Very severe
8		
9	=	Very, very severe
10	=	Maximal

The Borg Scale of Perceived Exertion (CR10)⁷⁸

0	=	nothing at all
0.5	=	extremely weak
1	=	very weak
2	=	weak (light)
3	=	moderate
4	=	somewhat strong
5	=	strong (heavy)
6		
7	=	very strong
8		
9		
10	=	extremely strong (almost maximal)

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Exercise is an essential component of chronic disease rehabilitation. Assessment and correct prescription will allow participants to exercise safely, restore function, aerobic capacity, strength and confidence in a supervised environment.

Physiotherapists and exercise physiologists are trained to assess and prescribe exercise in chronic disease rehabilitation settings to groups and individuals. If a physiotherapist or exercise physiologist is not available locally, other centres with these staff should be consulted to assist via email, phone and teleconference. Other professional groups are supported to link with these health professionals and training programs accredited to provide this service. An example is the NSW Health and National Heart Foundation of Australia's *Heartmoves* training for fitness leaders.⁷⁹

The following are guidelines only as all assessments and prescription must take into consideration participant's co-morbidities and level of cognition. Exercise will benefit all chronic conditions at all levels of disability.

The essential components of exercise are:

- assessment
- prescription
 - intensity
 - duration
 - frequency
 - mode
- home program
- maintenance
- reassessment
- data collection.

Assessment

Functional exercise assessment is the basis for exercise prescription. Assessment is described in section 6.

Prescription

Intensity

The harder the participant works the better the outcomes in relation to function and risk factor modification. However many participants with chronic disease will have co-morbidities that preclude high intensity exercise and in a few cases it may be contraindicated. Included are people with heart disease and those with potentially painful conditions such as arthritis and peripheral vascular disease. Therefore when prescribing exercise, intensity, safety and co-morbidities must be taken into consideration.

Prescribe intensity utilising:

- maximum achieved on 6MWT or other functional testing
- perceived exertion scale reporting
- how the individual looks (some people over or under-rate the perceived exertion scale).

The following is a guide to intensity:

- 60–80 per cent of maximum (from 6MWT, exercise stress test or other)
- 3/10 dyspnoea on Borg Scale for people with respiratory disease
- 3–4/10 ratings of perceived exertion (RPE) on the BORG CR10 scale for other diagnostic groups.⁷⁸ The RPE scale was devised by Borg in 1970.⁷⁴ It was initially a scale of 6 to 20 and later adapted by Borg to the CR scale of 1 to 10. Both scales are widely used in rehabilitation and other settings. The participant is asked to rate how hard they perceive they are working with consideration of dyspnoea for people with respiratory disease, and either dyspnoea or discomfort/pain for other diagnostic groups.
- limited by increased pain in people with arthritis
- limited by leg pain for people with peripheral vascular disease

- consider choosing to begin at low intensity for short periods to overcome anxiety and avoid excessive pain, then progress as able, aiming for optimal intensity.

Walking exercise intensity based on 6MWT

To calculate an appropriate walking intensity:

Six minute walk distance (6MWD) x 10 =
distance in one hour

For distance in 30 mins ÷ 2

For distance in 20 mins ÷ 3

For distance in 10 mins ÷ 6

With the aim of prescribing an intensity that equalled 80 per cent of the maximum at exercise testing an example from a 6MWT would be:

If the person walked 220 metres in six minutes

One hour distance = 220 x 10 = 2200 metres

30 minute distance = 2200 ÷ 2 = 1100 metres

80 per cent of 1100 = 880m in 30 minutes

It is important to translate this into something the person can relate to. For example, if the walking track is 32m then the patient needs to walk $880 \div 32 = 27.5$ laps in 30 minutes or one lap of an oval.

Duration

Duration refers to the total time spent exercising. This can be continuous or intermittent, but continuous confers the greater benefits. Build up slowly over several sessions or weeks to achieve a duration of 30–60 minutes. This results in outcomes such as increase in aerobic fitness and strength as well as weight loss,⁸⁰ improved lipid profiles, diabetes control, falls prevention, and others.

Some participants may commence this process with as little as 5 minutes a couple of times a day, others may commence at about 15 minutes a day. This is very individual depending on physical and psychological variables.

Participants who cannot achieve continuous exercise of 30 minutes or more can achieve many of the benefits from shorter exercise sessions (such as 10 minutes) several times per day.

Frequency

- Two to three times per week supervised.

plus

- Daily unsupervised home program of walking and gentle exercise.
- Six to eight weeks (at least) duration in a supervised service for training effect. This is only a guide as many participants may need longer to achieve self-management skills.

Mode

- Aerobic such as walking, bike, treadmill, dancing for 30–60 minutes.
- Strength training for upper and lower limb.
- Other such as stretching exercises, balance, mobility.

Equipment

Equipment used in chronic disease rehabilitation services must meet the following needs:

- Occupation Health and Safety guidelines.
- Electrically tested.
- Suit all population groups (diagnostic, age, cultural).
- Does not need to be expensive, eg theraband, balls.
- Sufficient area for walking.

Home Exercise

This will depend on capabilities of the individual participant. Many will be able to commence with:

- home exercise program from the commencement of chronic disease rehabilitation (allowing for contraindications identified at assessment)
- gentle walking program such as walking at normal pace for five to fifteen minutes twice a day, and build up by five minute increments over many weeks to 30–60 minutes at a Borg scale rating of 3–4
- others at a brisk pace as described under *intensity* at 3–4 on the Borg scale and feeling a little short of breath
- quadriceps and balance exercises included
- personal diary of home exercise to help keep the participant on track.

General considerations when exercising people with chronic disease

- Participant's goals.
- Time since last formal exercise program.
- Co-morbidities eg obesity, hypertension, joint pain and stiffness, muscle weakness.
- Discussion of topics to enhance exercise training such as:
 - sleeping well
 - nutritious diet
 - being well hydrated
 - not exercising till at least two hours after a meal
 - wearing appropriate clothing and footwear
 - not to exercise in extreme weather
 - start with flat ground and gradually add inclines and hills
 - personal safety considerations.

Considerations when exercising people with heart disease

People with heart conditions who have been screened for contraindications to exercise, whose condition has stabilised and who are appropriately medically managed are considered to be at low risk of further cardiac events. These chronic disease rehabilitation participants are suitable to participate in exercise services in community settings at low to moderate intensity.^{71, 72}

People with heart conditions who are considered to be at high risk of a critical event will require a higher level of supervision and will receive the exercise component of chronic disease rehabilitation at a health facility where clinical support is available should a critical event occur.⁷¹ Clinical staff supervising these participants need to be accredited with some elements of advanced life support such as the recognition of potentially life-threatening arrhythmias and the use of defibrillators.⁷²

Examples of high-risk cardiac participants include those who:

- have recently suffered an acute coronary syndrome event associated with ventricular arrhythmias (besides during successful reperfusion), heart failure or cardiogenic shock
- are symptomatic at low levels of exercise
- have had a positive exercise test at low levels of exercise.⁷²

When exercising people with heart disease, the staff to participant ratios are as follows:

- Low intensity exercise requires one trained health professional for each 10 or less participants.
- Moderate intensity exercise requires one trained health professional plus an additional person with current basic life support training for each 10 or less participants.³⁹

Common considerations for people with heart disease include:

- evidence of stability of the disease symptoms. Consider medical assessment if anginal symptoms, shortness of breath, poor air entry to lungs, peripheral oedema, are present
- exercise only when regular medication regimen is maintained
- revascularisation needs – if pre-operation or pre-angioplasty seek medical advice on proceeding
- if moderate to severe valve dysfunction seek medical advice on proceeding
- if physical assessment detects possible new heart sound anomalies seek medical advice
- blood pressure readings at rest should be less than 180/105 and evidence of stability
- all people with ischaemic heart disease should be established on beta blocker medication if no contra-indications to beta blockade, before proceeding with exercise training.

For a comprehensive list of considerations when planning an exercise program for people with heart disease refer to the American Heart Association guidelines.^{81, 82}

Considerations when exercising people with chronic pulmonary disease

Exercise limitations for people with chronic pulmonary disease include:

- ventilatory limitation – airflow limitation associated with the lung disease leads to altered lung mechanics (hyperinflation) and ventilation/perfusion abnormalities (hypoxaemia). People breathe at higher lung volumes and are unable to increase ventilation to adjust to exercise. This results in dyspnoea and decreased levels of function. It may be exaggerated by fear and panic and may also be related to heart disease such as angina, valve dysfunction and heart failure.
- peripheral muscle weakness – muscle weakness from disuse or atrophy from long-term steroid use can limit exercise. Dyspnoea is also increased in de-conditioned people. Participants will have difficulty rising to stand from a chair or climbing stairs.
- cardiac limitation – shortness of breath can be of cardiac origin. Participants who report chest pain or any other cardiac symptoms on exercise need a review by a medical officer.

Dyspnoea

People with chronic respiratory disease report shortness of breath (dyspnoea) on exercise and this limits functional exercise capacity. There are a variety of measures to assess dyspnoea. Refer to table 1.

- Medical Research Council Scale (MRC scale)
- Modified Borg Dyspnoea Scale (0–10). The Borg scale was adapted by Burdon, Juniper, Killian & Hargreave⁸³ from the Borg RPE scale developed by Borg.⁷⁴ The participant is asked to rate their level of breathlessness or “how out of breath/puffed they feel”.
- Baseline Dyspnoea Index (BDI)/Transitional Dyspnoea Index (TDI).⁸⁴

Oxygen de-saturation

Oxygen de-saturation can also be a limitation to exercise however people with dyspnoea do not all de-saturate. There is currently little evidence as to the best use of oxygen during exercise for people with respiratory disease. It is recommended that oxygen saturation be kept above 88–90 per cent.⁸⁵ Therefore if saturation falls below 88–90 per cent during exercise, supplemental oxygen of two litres per minute should be used. Some respiratory patients, especially those without home oxygen, function on lower levels of oxygen and so the decision to exercise these patients at an oxygen saturation around 85 per cent before using supplemental oxygen may be made by an experienced health professional.

Oxygen saturation should be measured (for people with chronic pulmonary disease):

- prior to commencement of the 6MWT
- after two minutes into the walk test. Do not stop the test. Walk slightly behind the person to monitor. Discourage talking.
- at the end of the 6MWT.

Table 1 – Validated measures for dyspnoea⁸⁴

	MRC Scale	Modified BORG	Baseline Dyspnea Index (BDI)/ Transitional Dyspnea Index (TDI)
Practical Considerations	<ul style="list-style-type: none"> – 5 point scale (1–5) – Easy to administer 	<ul style="list-style-type: none"> – 10 point scale (0–10) – Descriptive scale to anchor responses 	<ul style="list-style-type: none"> – Experienced observer gives 3 ratings (each between 0 and 4) of magnitude of impairment – Easy to administer (2–4 minutes)
Domains assessed	Rate dyspnoea according to different levels of activity	Breathlessness during a particular task	Measures degree of impairment due to breathlessness, magnitude of the task required to produce breathlessness, and the magnitude of the effort that produces shortness of breath
Key features / remarks	<ul style="list-style-type: none"> – Lack of clear limits between grades – very useful at baseline to provide a profile of patient – Difficult to assess change following intervention such as pulmonary rehabilitation – A change of 1 level is clinically significant – Modified MRC (0–4) used with BODE index* 	<p>Demonstrates sensitivity to treatment effect</p> <p>Advantage</p> <ul style="list-style-type: none"> – adjectives assist patients to determine intensity 	<ul style="list-style-type: none"> – A change in the TDI score of 1 unit or more represents clinically significant change – Valid and reliable – Sensitive to change following pulmonary rehabilitation

Considerations for exercising people with diabetes

People with diabetes will benefit from the exercise component of rehabilitation for chronic diseases and can be assessed using the six-minute walk test. They need support to monitor their blood glucose levels pre and post exercise in the first few weeks of a new exercise program, with exercise only proceeding if the levels are between 6 and 17 mmol/l⁸⁶.

Foot care is an essential consideration. As they will be asked to walk for increasing lengths of time they may be at risk of developing blisters that can quickly progress to large ulcerations if they do not wear appropriate foot wear.

Diabetes education should include advice on:

- foot care – need to inspect all surfaces of their feet daily, looking for any evidence of friction
- carrying ‘replacement’ glucose to manage hypoglycaemia as instructed by diabetes educator
- caring for eyes and possible dangers if sight not optimal
- neuropathy and the associated dangers such as reduced or lack of feeling in extremities
- optimal nutrition
- blood glucose monitoring (pre and post exercise in the first few weeks to observe for appropriate response and monitor for hypoglycaemia)
- use of prescribed medication.

Considerations for exercising people following a stroke

Participants who have had a stroke will usually have completed an intensive multi-disciplinary specialist stroke rehabilitation program following the acute event⁸⁷. As there may still be residual loss of function and strength, it is therefore imperative that a physiotherapy assessment be sought before proceeding with exercise prescription in a chronic disease rehabilitation service. This assessment will avert any potential harm associated with the impaired function following stroke.

Special attention must be given to:

- gait
- balance
- strength
- falls risk
- activities of daily living.

Considerations for exercising people with peripheral vascular disease (PVD)

It is safe for people with peripheral vascular disease to exercise and they can be assessed using the 6MWT. Exercise may be limited by leg pain but participants should be encouraged to exercise at the highest intensity that can be tolerated with consideration of co-morbidities.

Considerations for exercising people with a musculo-skeletal disease

Arthritis and other musculo-skeletal diseases result in loss of function due to joint pain, stiffness and muscle weakness. Exercise is known to reduce the pain, increase function and muscle strength. However, exercise should not aggravate the pain. Hydrotherapy is often a treatment of choice for extremely painful joints.

Some special considerations are:

- arthritis is associated with muscle wasting so strengthening exercises play an important part of the rehabilitation program

- following surgery for joint replacement, certain movements need to be avoided during exercise. Therefore a physiotherapist consultation is required before proceeding. The physiotherapist will prescribe exercise within the limits of pain, aiming to increase range of movement and strength safely
- weight-bearing exercise such as walking and treadmill use, is important for osteoporosis. Strength building exercise training using weights has also been found to improve muscle pull and bone density.

Maintenance exercise programs

It is important that when participants graduate from the medically supervised rehabilitation program that they continue to maintain positive behaviours and self-management strategies developed. Benefits gained from exercise will deteriorate unless some form of maintenance exercises continue. The most cost-effective way to support individuals to maintain their exercise regimen is still disputed in the literature.

However it is known that service providers need to provide the participant with information about:

- achievements they have made during their chronic disease rehabilitation service
- the importance of continuing to exercise
- how to maintain home or other community exercise with or without a home exercise diary
- overcoming interruptions to their usual routines (and thus losing the habit)
- community classes available such as Heartmoves
- follow-up assessment and a contact phone number if they need further support.

Options for maintenance exercise programs

- Supervised weekly exercise classes eg Heartmoves, community classes
- Unsupervised exercise programs eg home exercise with exercise diaries and phone link; walking programs; exercise videos
- Follow-up assessment such as six-monthly recalls are recommended to assist participants to maintain healthy behaviours.

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Diet habits questionnaire (DHQ)

The Diet Habits Questionnaire is a newly developed tool for assessing dietary habits. It has been developed by the Cardiac Rehabilitation service of the Wesley Hospital in Brisbane, Queensland, Australia. A paper for publication describing the questionnaire's development is currently being prepared and a multicentre trial is planned.

Elements of diet habits assessed include:

Fat	Fibre
Fruit and Vegetables	Cereal choices
Food Preparation	Takeaways and Snacks
Omega 3	Sodium
Alcohol	

A package is available through the authors and consists of a workbook containing:

- the questionnaire
- guidance on how to use the tool
- scoring instructions/scoring tool
- instructions for using the computer generated data results
- referral and outcomes tool
- administrative flow charts
- power point presentations from a dietitian and cardiac rehabilitation health professional perspective of using the tool
- trouble shooting tips and tricks
- National Heart Foundation of Australia dietary fact sheets.

A CD, containing the listed tools (with the exception of the NHF fact sheets) plus the complete electronic data collection and analysis program, comes with the package.

In addition, ongoing support and any further updates and changes will be provided to purchasers of this package at no additional cost.

The package can be purchased for a one off fee of \$150, which includes GST. There is a \$5 postage and packaging fee.

The package is available from:

HeartWise – The Wesley Hospitals Cardiac Rehabilitation Services and Nutrition & Dietetics Department
PO Box 499, TOOWONG Queensland, Australia.

Wst: _____

HTn _____

Chol _____

DM _____

CHD _____

Diet habits questionnaire

Used with permission of Heartwise – The Wesley Hospitals Cardiac Rehabilitation Services and Nutrition and Dietetics Departments, Brisbane, QLD.

Name: _____ DOB: _____ Date: _____

Please complete the questionnaire by ticking the box/es that apply to you.

- | | |
|--|--|
| <p>1 How many days a week do you eat a high fibre breakfast cereal? (eg rolled oats, Weet-bix™, Allbran™, untoasted muesli)</p> <p><input type="checkbox"/> six or more times per week 5</p> <p><input type="checkbox"/> three to five times 4</p> <p><input type="checkbox"/> once or twice a week 3</p> <p><input type="checkbox"/> less than once per week 2</p> <p><input type="checkbox"/> never, or hardly ever 1</p> <p>2 How often do you eat or use wholemeal or wholegrain bread in preference to white bread?</p> <p><input type="checkbox"/> always 5</p> <p><input type="checkbox"/> usually 4</p> <p><input type="checkbox"/> occasionally 3</p> <p><input type="checkbox"/> rarely 2</p> <p><input type="checkbox"/> never 1</p> <p>3 How often do you eat cereal eg pasta, rice, noodles, cous cous, as part of your main meal?</p> <p><input type="checkbox"/> five or more times per week 5</p> <p><input type="checkbox"/> three to four times per week 4</p> <p><input type="checkbox"/> once or twice a week 3</p> <p><input type="checkbox"/> rarely 2</p> <p><input type="checkbox"/> never 1</p> <p>4 How many serves of vegetables do you eat in a typical day? (One serve is equal to half a cup of cooked vegetables or a cup of salad)</p> <p><input type="checkbox"/> five or more serves 5</p> <p><input type="checkbox"/> three to four serves 4</p> <p><input type="checkbox"/> one or two serves 3</p> <p><input type="checkbox"/> less than one serve a day 2</p> <p><input type="checkbox"/> none 1</p> | <p>5 How many different types of vegetable would you eat on a typical day?</p> <p><input type="checkbox"/> five or more types 5</p> <p><input type="checkbox"/> four types 4</p> <p><input type="checkbox"/> three types 3</p> <p><input type="checkbox"/> one or two types 2</p> <p><input type="checkbox"/> none 1</p> <p>6 How many times a week do you eat two or more pieces of fruit a day?</p> <p><input type="checkbox"/> six or more times per week 5</p> <p><input type="checkbox"/> three to five times 4</p> <p><input type="checkbox"/> once or twice a week 3</p> <p><input type="checkbox"/> less than once per week 2</p> <p><input type="checkbox"/> never, or hardly ever 1</p> <p>7 How many days a week do you legumes? (eg chick peas, baked beans, three bean mix, lentils, spit peas, dried beans etc)</p> <p><input type="checkbox"/> two or three times per week 5</p> <p><input type="checkbox"/> once per week 4</p> <p><input type="checkbox"/> once per fortnight 3</p> <p><input type="checkbox"/> once per month 2</p> <p><input type="checkbox"/> never 1</p> <p>8 How often do you include raw nuts or seeds such as pepitas, sunflower seeds, and linseeds?</p> <p><input type="checkbox"/> five or more times per week 5</p> <p><input type="checkbox"/> three to four times per week 4</p> <p><input type="checkbox"/> once or twice a week 3</p> <p><input type="checkbox"/> rarely 2</p> <p><input type="checkbox"/> never 1</p> |
|--|--|

9 When having milk, yoghurt or cheese, how often do you eat or use reduced-fat or low fat products in preference to regular products?

- always 5
- usually 4
- occasionally 3
- rarely 2
- never 1

10 How many days a week do you eat fish?

- more than two days per week 5
- two days per week 4
- once or twice a week 3
- less than once per week 2
- never, or hardly ever 1

11 If you use a spread on bread or cracker biscuits, which type of spread would you usually use?

- polyunsaturated margarine 5
- monounsaturated margarine 5
- sterol margarine 5
- avocado 5
- cream cheese 1
- butter 1
- I don't use spreads n/a

12 How many days a week do you eat processed meats (eg bacon, sausages, salami, ham, frankfurts, or pate)?

- four or more times per week 1
- two or three times per week 2
- once a week 3
- less than one per week 4
- never 5

13 What type of:

salad dressing do you normally use?

- unsaturated oil base 5
- reduced fat dressing 5
- full fat commercial dressing 2
- I don't use dressing on salads 5

Cooked sauces (eg gravy/white sauce) do you normally use?

- reduced fat milk based 5
- gravy from commercial powder 4
- I don't use cooked sauces 5
- gravy from pan dripping 1
- cream or full cream milk based 1
- sauces with coconut milk 1

14 How often do you trim all the visible fat off the meat you eat (OR purchase pre-trimmed meat) and remove the skin from chicken before cooking?

- always 5
- usually 4
- occasionally 3
- rarely 2
- never 1
- I don't eat meat n/a

15 When cooking meat/fish/chicken, which of the following cooking fats do you normally use?

- butter 1
- solid frying fat 1
- vegetable oil* eg coconut, palm 1
- mono/poly unsaturated oils or sterol margarine 5
- spray oil 5
- I don't use fat in cooking 4

* Vegetable oil eg coconut, palm.

** Mono-unsaturated oil eg olive, canola, pecan, almond, peanut.

*** Polyunsaturated eg corn, soy, cottonseed, safflower, sunflower, walnut, flaxseed, fish.

16 Which of the following cooking methods do you commonly use when cooking meat/fish/chicken?

- steaming 5
- poaching 5
- microwaving 5
- casseroles 5
- grilling 5
- stir fries 5
- dry roasting 5
- deep frying 1
- shallow frying 2
- roasting in fat 2

17 How often do you eat pastries, cake, sweet biscuits or croissants?

- six or more times per week 1
- three to five times 2
- once or twice a week 3
- less than once per week 4
- never, or hardly ever 5

18 How many days a week do you eat take-away style foods such as fried or BBQ chicken, fish and chips, Chinese, pizza, hamburgers etc?

- five or more times per week 1
- three to four times per week 2
- once or twice a week 3
- less than once per week 4
- never, or hardly ever 5

19 Which of the following foods do you eat most often as snacks between meals?

- chocolate bars 1
- crisps, roasted nuts 1
- sweet biscuits 2
- low fat yoghurts 5
- olives, raw nuts 5
- fruit, dried fruit 5
- fruit bread, English muffins 4
- other

20 How often do you use salt:

At the table?

- always 1
- usually 2
- occasionally 3
- rarely 4
- never 5

In cooking?

- always 1
- usually 2
- occasionally 3
- rarely 4
- never 5

21 How often do you use sauces and/or savoury spreads and/or pasta sauces? (eg tomato sauce, fish sauce, soy sauce, BBQ sauce, vegemite, marmite etc)

- always 1
- usually 2
- occasionally 3
- rarely 4
- never 5

22 How many standard drinks do you have on the days you do consume alcohol? (1 standard drink = 1 pot of beer, 1 nip of spirit, 1 medium glass of wine)

- four or more 1
- three m3 f2
- two m5 f4
- one 5
- less than one 5
- I don't drink alcohol n/a

Short fat questionnaire⁹⁰ *(suitable to assess dietary fat intake.)*

Please circle only one number for each question.
Circle the number which applies to your food intake

How often do you eat fried food with a batter or breadcrumb coating?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How often do you eat gravy, cream sauces or cheese sauces?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How often do you add butter, margarine, oil or sour cream to vegetables cooked rice or spaghetti?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How often do you eat vegetables that are fried or roasted with fat or oil?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How is your meat usually cooked?

- 4 Fried
- 3 Stewed or goulash
- 2 Grilled/roasted with added fat
- 1 Grilled roasted without oil/fat
- 0 Eat meat occasionally or never

How many times a week do you eat sausages, devon, salami, meat pies, hamburgers or bacon?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How do you spread butter/margarine on your bread?

- 3 Thickly
- 2 Medium
- 1 Thinly
- 0 Don't use butter or margarine

How many times a week do you eat chips or French fries?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How often do you eat pastries, cakes, sweet biscuits or croissants?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How many times a week do you eat chocolates, chocolate biscuit or sweet snack bars?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How many times a week do you eat potato crisps, corn chips or nuts?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How often do you eat cream?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How often do you eat more than a small serve of ice cream?

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

How often do you eat more than a small piece of cheddar cheese or other hard cheese (semi soft cheese such as camembert or cream cheese?)

- 4 Six or more times a week
- 3 Three to five times a week
- 2 One to two times a week
- 1 Less than once a week
- 0 Never

What type of milk do you drink or use on breakfast cereal or in cooking?

- 4 Condensed or evaporated
- 3 Full cream
- 2 Full cream and reduced fat
- 1 Reduced fat
- 0 Skim

How much of the skin of your chicken do you eat?

- 2 Most or all of the skin
- 1 Some of the skin
- 0 None of the skin/I am vegetarian

How much of the fat on your meat do you eat?

- 2 Most or all of the fat
- 1 Some of the fat
- 0 None of the skin/I am vegetarian

Scoring:	0–17 = Low fat
	18–27 = moderate fat
	28+ = High fat

Malnutrition Screening Tool (MST)⁹¹

The questionnaire has been shown to consistently identify people at high risk of malnutrition.

Please circle the appropriate answer.

Have you lost weight recently without trying?

No 0

Unsure 2

If yes, how much weight (kilograms) have you lost?

5–5 1

10–10 2

15–15 3

>15 4

Unsure 2

Have you been eating poorly because of a decreased appetite?

No 0

Yes 1

TOTAL _____

Score of 2 or more indicates patient is at risk of malnutrition.

References

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