

## NSW Clinical Service Framework for Chronic Heart Failure 2016

**Summary** The NSW Clinical Service Framework for Chronic Heart Failure 2016 provides nine evidence-based standards to assist clinicians to prevent, detect and manage chronic heart failure. Compliance with the Framework will improve patient outcomes and experience, facilitate timely discharge from hospital and reduce the rates of presentations and re-presentations.

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**Distributed to** Divisions of General Practice, Government Medical Officers, Ministry of Health, NSW Ambulance Service, Public Health System, Tertiary Education Institutes

**Audience** VMO; GP; Emergency Department & Aboriginal Medical Services staff; nurses; allied health staff

# NSW CLINICAL SERVICE FRAMEWORK FOR CHRONIC HEART FAILURE

## PURPOSE

The NSW Clinical Service Framework for Chronic Heart Failure (CHF) provides nine evidence-based standards to support clinicians in community and hospital environments to provide best-practice care in the prevention, diagnosis and management of people with CHF across the continuum of care.

Compliance with the Framework will improve patient outcomes and experience and reduce length of stay and re-hospitalisation.

## KEY PRINCIPLES

- Management of people with CHF should align with the nine evidence-based standards described in the Framework.
- The document may be used by general practitioners, nurses, doctors, allied health staff and Aboriginal health service providers.
- The Framework provides guidance for a range of clinical settings including Primary Health Networks (PHNs) and general practices, Aboriginal Community Controlled Health Services (ACCHS), Aboriginal Medical Services (AMS), community health services, hospitals and Local Health Districts (LHDs).
- Health services for people with chronic and complex conditions need to be reconfigured to be more integrated, coordinated and patient focused throughout the continuum of care.
- People with CHF often have multiple comorbidities and physiological and psychosocial needs that change over time. Access to different levels of care at various stages of the disease trajectory is needed to reduce presentations to hospital.
- The General Practitioner (GP) or other primary care provider plays a central coordinating role in the person-centred medical home model where care is delivered in partnership with a multidisciplinary team. The GP may be able to reduce unplanned admissions by early identification of patients with increasing care needs and planned admission for rapid assessment and treatment rather than an emergency hospital presentation.
- Supported self-management underpins the aims of services, therefore, clinical team members should be trained in health behaviour change to deliver the service in partnership with the patient, their family and carers who are central to decision making and setting patient-centred achievable goals.

## USE OF THE GUIDELINE

### Chief Executives

- Should provide the document to staff working in areas where patients may present for example, emergency departments, cardiac and medical wards

### Directors of Clinical Governance and Patient Flow Managers

- Should monitor the implementation of the Framework and its impact on patient experience, outcome and patient flow within their facilities

### Nurse Unit Managers

- Should support their staff to implement the Framework

### Nursing Staff

- Should provide evidence-based care as recommended in the protocol

### Medical Staff (including GPs working in mainstream and Aboriginal Health Services)

- Should assess, risk stratify and manage patients using the 12 evidence-based minimum standards described in the protocol.

## REVISION HISTORY

Version	Approved by	Amendment notes
March 2017 (GL2017_006)	Deputy Secretary	The original documents (Vol. 1: Overview of the framework and its standards; Vol. 2: A practical guide for the prevention, diagnosis and management of heart failure in NSW) have been compiled into a single volume.

## ATTACHMENTS

1. NSW Clinical Service Framework for Chronic Heart Failure: Guideline.

FRAMEWORK

# NSW clinical service framework for chronic heart failure 2016

Cardiac Network



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## Foreword

Chronic heart failure (CHF) affects more than one million Australians, a third of whom live in NSW. It is one of a number of chronic conditions, such as diabetes, mental illness and arthritis that are challenging governments and the health sector to improve the standards and processes of care. As the number of older people in the population is growing, the burden will increase which means that more effort will be required to ensure people with CHF receive high quality, evidenced-based care.

Living with CHF often results in severe limitations on physical activity which impacts on psychological health, social well-being and workforce participation. The subsequent loss of income, status and participation in their social environment can be devastating for patients, families and carers.

Consensus best-practice guidelines are available internationally and nationally to support quality care. However, translating guidelines into practice effectively and efficiently poses a significant challenge which leaves patients at risk of sub-optimal care.

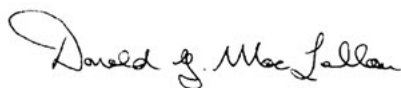
The *NSW clinical service framework for chronic heart failure 2016* (the Framework) is a revision of the original framework published in 2003. It provides a set of nine clinical standards to guide clinicians on preventing, detecting and managing people with CHF. These standards include recommendations on investigation, medication management, the potential need for devices that can augment cardiac function, comprehensive rehabilitation and palliative care. The Framework is centred around an integrated, multidisciplinary approach to management which is both respectful and based on evidence.

The Framework should be read in conjunction with the national guideline documents to help implement best-practice care for people with CHF. It is designed to be used by staff working in primary, community, secondary, hospital and rehabilitation care settings.

The Agency for Clinical Innovation will work in partnership with clinicians, managers and executive team members across the health spectrum in both community services and hospitals to implement the Framework.

I would like to thank everyone who provided feedback on the draft Framework for their willingness to share their knowledge and experience. This input was invaluable in revising the document.

Quality of life for people living with CHF can be increased with implementation of the standards within the Framework, we now just need to work together to incorporate these into care processes in all localities in NSW.



**Professor Donald MacLellan**

Acting Chief Executive  
Agency for Clinical Innovation

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## Abbreviations

ACCHS	Aboriginal Community Controlled Health Service
ACEI	Angiotensin converting enzyme inhibitor
ACI	Agency for Clinical Innovation
AF	Atrial fibrillation
AHLO	Aboriginal Hospital Liaison Officer
AHW	Aboriginal Health Worker
AICD	Automatic Implantable Cardiac Defibrillator
ALOS	Average length of stay
AMI	Acute myocardial infarction
AMS	Aboriginal Medical Service
ARB	Angiotensin II receptor antagonist
ARNI	Angiotensin receptor neprilysin inhibitor
BHI	Bureau of Health Information
BiPAP	Bi-level positive airways pressure
BNP	Brain natriuretic peptide
BP	Blood pressure
CAD	Coronary artery disease
CALD	Culturally and linguistically diverse
CAM	Complementary and alternative medicines
CDM	Chronic disease management
CDMP	Chronic disease management program
CHD	Coronary heart disease
CHF	Chronic heart failure
CKD	Chronic kidney disease
COPD	Chronic obstructive pulmonary disease
CPAP	Continuous positive airways pressure
CPR	Cardiopulmonary resuscitation
CRT	Cardiac resynchronisation therapy
CSANZ	Cardiac Society of Australia and New Zealand
CV	Cardiovascular
CVD	Cardiovascular disease
DRG	Diagnosis related group
ECG	Electrocardiogram
ED	Emergency department
GP	General practitioner
HF	Heart failure

<b>HFPSF</b>	Heart failure with preserved systolic function
<b>HMR</b>	Home Medicines Review
<b>ICD</b>	Implantable cardioverter defibrillator
<b>INR</b>	International normalised ratio
<b>IPD</b>	Invasive pneumococcal disease
<b>IV</b>	Intravenous
<b>KPI</b>	Key performance indicator
<b>LHD</b>	Local Health District
<b>LV</b>	Left ventricular
<b>LVEF</b>	Left ventricular ejection fraction
<b>MBS</b>	Medicare Benefits Scheme
<b>MI</b>	Myocardial infarction
<b>ML</b>	Medicare Local
<b>MRI</b>	Magnetic resonance imaging
<b>NHFA</b>	National Heart Foundation of Australia
<b>NHMRC</b>	National Health and Medical Research Council
<b>NSAID</b>	Non-steroidal anti-inflammatory drug
<b>NOAC</b>	Novel oral anticoagulants
<b>NYHA</b>	New York Heart Association
<b>PBS</b>	Pharmaceutical Benefits Scheme
<b>PHN</b>	Primary Health Network
<b>PNIP</b>	Practice Nurse Incentive Program
<b>QOL</b>	Quality of life
<b>RCT</b>	Randomised controlled trial
<b>RN</b>	Registered nurse
<b>RSMR</b>	Risk-standardised mortality rate
<b>SCRS</b>	State Cardiac Reperfusion Strategy
<b>SHN</b>	Specialty Health Network

# Section 1

## Introduction

Chronic heart failure (CHF) remains a common and burdensome condition and a major stressor on health systems in Australia and around the world. CHF is one of the leading causes of admission and re-admission to hospital.

The estimated annual prevalence of CHF in Australia is approximately 1 million people<sup>1</sup>. As the population ages, there will be a corresponding increase in the burden of CHF on the health system due to the improved survival of people with ischaemic heart disease and more effective treatments for heart failure.

Factors such as the ageing of the population, changes to the ratio of acute and chronic diseases and the development of new medical therapies have resulted in increasing costs to the health system. The likelihood of chronic diseases such as heart failure increase as populations age, placing an enormous strain on health systems. Evidence shows that in Australia, chronic disease accounts for 70% of the total disease burden which consumes 87% of the total recurrent health budget. Many current health models focus on acute, episodic care which does not address the needs of an elderly population, with multiple comorbidities requiring integrated care from a range of providers.<sup>2</sup>

The burden of cardiovascular disease (CVD) is significantly higher for Aboriginal people\* compared to non-Aboriginal people. Aboriginal people when compared to other Australians are 1.3 times as likely to have cardiovascular disease, three times more likely to have a major coronary event, such as a heart attack, more than twice as likely to die in hospital from coronary heart disease and 19 times as likely to die from acute rheumatic fever and chronic rheumatic heart disease. Aboriginal people also have higher rates of risk factors for heart, stroke and vascular disease including smoking, diabetes, high blood pressure and obesity compared to non-Aboriginal people.<sup>3</sup> Appropriate primary healthcare, referral and ongoing care provision by a multidisciplinary team (as described in the standards in the Framework) provides a platform to reduce health disparities between Aboriginal and non-Aboriginal people.

CHF is caused by structural or functional abnormalities of the heart which results in tiredness, fatigue, dyspnoea and oedema, which are chronic, worsen over time and result in poor quality of life.

The management of people with CHF is complex as they often have multiple comorbidities and present to hospital frequently, therefore, a multidisciplinary, integrated approach to management is required.

\*The term Aboriginal people is used throughout this document and includes both Aboriginal and Torres Strait Islander peoples.

## Objective

The revised *NSW Clinical service framework for chronic heart failure 2016* aims to support clinicians and healthcare providers in the community and hospital environments to provide best-practice, evidence-based care in the prevention, diagnosis and management of people with CHF across the continuum of care. An evaluation of the implementation of the Framework will be conducted to identify if there is an associated reduction in hospital admissions and improved quality of life for patients.

## Target audiences

The document may be used by general practitioners, nurses, doctors, allied health staff and Aboriginal health service providers working in a range of settings including general practices, Aboriginal Community Controlled Health Services (ACCHS), Aboriginal Medical Services (AMS), Primary Health Networks (PHNs), community health services and Local Health Districts (LHDs).

## Structure

The Framework has been divided into two sections:

- part one provides details of the clinical standards
- part two describes the background and context of the Framework.

Links to resources are provided throughout the Framework and additional information is provided for each standard at the end of the document.

## How to use the standards in this Framework

The Framework consists of nine standards which cover the full spectrum of services for the prevention, diagnosis and management of CHF. Prevention includes primary and secondary prevention. Diagnosis includes the investigation of causal, precipitating and exacerbating factors. Management includes pharmacological and non-pharmacological management across the spectrum of multidisciplinary care, rehabilitation and palliative care.

Some staff will be interested in particular sections, for example staff working in primary care may choose to only focus on standards 1 (Prevention of CHF), 2 (Detection and management of factors that precipitate and exacerbate CHF) and 3 (Diagnosis of CHF). However, standards 5 (Pharmacological management of CHF) and 7 (Multidisciplinary and continuing care and rehabilitation for patients with CHF) may also be of interest. Staff working in the hospital setting may consider standards 4 (Treatment of the acute symptoms of CHF) and 6 (Devices in CHF management) to be more useful. Some standards, such as 5, 7, 8 (Palliative care for patients with end-stage heart failure) and 9 (Monitoring of quality and outcome indicators) are applicable in the community, primary care and hospital settings.

Figure 1 summarises the nine standards.

**Figure 1: Health service standards for the prevention, diagnosis and management of CHF**

Standard	Key objective
1. Prevention of CHF	To prevent myocardial damage that could lead to CHF
2. Detection and management of factors that precipitate and exacerbate CHF	To detect and manage factors that precipitate or exacerbate CHF in people at increased risk of CHF, those with early asymptomatic disease and those with symptomatic CHF
3. Diagnosis of CHF	To accurately and promptly diagnose CHF, identify reversible causes and assess severity of the disease
4. Treatment of the acute symptoms of CHF	To provide effective emergency treatment to relieve symptoms, prevent damage to other organs, and promote cardiac function
5. Pharmacological management of CHF	To ensure that patients with CHF are prescribed evidence-based medicines at recommended doses and that safety and effectiveness are monitored
6. Devices in CHF management	To ensure that all patients with CHF are considered for appropriate devices which may improve survival and quality of life
7. Multidisciplinary and continuing care and rehabilitation for patients with CHF	To ensure that all patients with CHF receive appropriate non-pharmacological, multidisciplinary management, coordinated continuing care and access to CHF management including rehabilitation services
8. Palliative care for patients with end-stage heart failure	To maximise the quality of life and comfort of patients with advanced CHF and provide psychosocial support to the patient, their family and carers
9. Monitoring of quality and outcome indicators	To collect data on the quality of care and health outcomes to identify opportunities for improving patient care

### What's new: changes to the previous standards

There are several changes to the standards from the 2003 Framework which are designed to reflect advances in our understanding and ability to manage CHF. These include the following:

- revisions to Standard 5 (Pharmacological management) including information on the use of nebivolol, eplerenone, ivabradine, polyunsaturated fatty acids and iron<sup>5</sup> and practical information to support initiation and titration of recommended medications

- development of a new standard (Standard 6) which focuses on the role of devices in CHF as this represents one of the most rapidly advancing and challenging areas of management
- updating the information in Standard 7 to reflect the recommended components of multidisciplinary care based on the National Heart Foundation of Australia (NHFA) 2010 guideline *Multidisciplinary care for people with chronic heart failure: Principles and recommendations for best practice*.<sup>6</sup>

The remaining standards have been revised to align with contemporary evidence-based management of CHF.

## What remains the same?

The overarching aims of the NSW Clinical Service Framework for Chronic Heart Failure 2016 remain consistent with those set out in the 2003 document, namely to:

- continue to guide health services in NSW by defining state-wide, best-practice, evidence-based standards of care for people with CHF
- lead the development of models of care which enable the delivery of services which meet these standards
- recommend service performance standards and indicators that can be used to evaluate the performance and quality of services for the management of CHF
- provide links to other resources that may assist clinicians and service providers to deliver services to communities and individuals (including related NSW Health policy documents, and guidelines, resources from the NHFA and other relevant organisations) and
- highlight areas where action is warranted to improve the organisation and delivery of services.

The Framework incorporates evidence-based strategies to reduce emergency presentations, hospital admissions and early mortality for people with CHF (see [Table 4.2](#)) in line with the NHFA consensus statement on heart failure.<sup>7</sup>

## Related documents

The Framework has been updated to align with contemporary evidence, however, it should also be considered in relation to other clinical guidelines, standards and recommendations including:

- *Aboriginal and Torres Strait Islander Health Performance Framework 2014*
- Agency for Clinical Innovation. *NSW guidelines on the deactivation of implantable cardioverter defibrillators at the end of life*
- Australian Commission on Safety and Quality in Health Care. *National consensus statement: essential elements for safe and high-quality end-of-life care*
- Australian Commission on Safety and Quality in Health Care. *Acute Coronary Syndromes Clinical Care Standards*
- Australian Commission on Safety and Quality in Health Care and NSW Therapeutic Advisory Group. *National quality use of medicines indicators for Australian hospitals*
- Heart Rhythm Society. *The HRS expert consensus statement on the management of cardiovascular implantable electronic devices (CIEDs) in patients nearing end of life or requesting withdrawal of therapy*
- National Aboriginal Community Controlled Health Organisation and Royal Australian College of General Practitioners. *National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people. 2nd Edition*
- *National Aboriginal and Torres Strait Islander Health Plan 2013 – 2023*
- NHFA and Cardiac Society of Australia and New Zealand (CSANZ). *Reducing risk in heart disease*
- NHFA and CSANZ Chronic Heart Failure Guidelines Expert Writing Panel. *Guidelines for the detection, prevention and management of chronic heart failure in Australia. Updated 2011*
- NHFA. *Multidisciplinary care for people with chronic heart failure: principles and recommendations for best practice.*
- NHFA. *Guideline for the diagnosis and management of hypertension in adults – 2016*



- National Health and Medical Research Council. *Australian guidelines to reduce health risks from drinking alcohol*
- National Vascular Disease Prevention Alliance. *Guidelines for the management of absolute cardiovascular disease risk*
- *National evidence-based guideline for the case detection and diagnosis of Type 2 diabetes*
- *National evidence-based guideline for blood glucose control in type 2 diabetes*
- NSW Health. *Advance planning for quality care at the end-of-life: action plan 2013–2018*
- Royal Australian College of General Practitioners and Diabetes Australia. *General practice management of type 2 diabetes 2014–15*
- Royal Australian College of General Practitioners. *Sugar, Nutrition, Alcohol, Physical activity (SNAP). A population health guide to behavioural risk factors in general practice. 2nd Edition*
- Royal Australian College of General Practitioners. *Guidelines for preventive activities in general practice. 8th Edition*
- *The Australian immunisation handbook. 10th Edition*
- *The Essential Service Standards for Equitable National Cardiovascular Care for Aboriginal and Torres Strait Islander People. 2014.*

# Standard 1 – Prevention of chronic heart failure

## Objective

To prevent myocardial damage that could lead to CHF.

## Key points

- Coronary heart disease (CHD) and hypertension are the two leading causes of CHF<sup>1,8</sup> and these conditions are preventable. Effective prevention and management of these two conditions and their risk factors will make a major contribution to the prevention of CHF in the population.
- In 2004–05, 53% of Aboriginal people had three or four risk factors for cardiovascular disease including smoking, physical inactivity, eating less than two serves of fruit daily, eating less than five serves of vegetables daily, high alcohol intake, hypertension, obesity, diabetes and long-term kidney disease.<sup>9</sup> A higher risk profile results in an increased likelihood of developing cardiovascular disease.
- Aboriginal people have a higher risk of developing acute rheumatic fever (which may cause rheumatic heart disease). Therefore, early identification, diagnosis and treatment of acute rheumatic fever and/or rheumatic heart disease are important to prevent damage to the heart valves and the development of CHF. Further information on acute rheumatic fever and rheumatic heart disease is available in the RHD Australia [ARF RHD Guideline](#)
- Other causes of CHF should also be detected and treated. These include causes of cardiomyopathy, such as thyrotoxicosis and excessive alcohol intake. Mitral and aortic valve disease should always be considered as they may lead to progressive left ventricular (LV) dysfunction.
- Cigarette smoking is an independent risk factor for CHD. It increases the blood pressure, reduces the oxygen content of the blood, decreases exercise tolerance and increases the tendency of blood to clot.
- Arrhythmias (tachycardias and bradycardias) can worsen cardiac function and they should be treated appropriately.
- Both obesity and diabetes independently increase the risk of developing CHF in patients without known CHD.<sup>5</sup>
- There is increasing evidence for the role of devices in both primary and secondary prevention of CHF (see Standard 6). Implantation of devices in suitable patients has been shown to reduce mortality.
- People with moderate or severe chronic kidney disease (CKD: defined as persistent proteinuria or eGFR <45 mL/min/1.73 m<sup>2</sup>) or familial hypercholesterolaemia are considered to be at high risk of cardiovascular disease.<sup>10</sup>
- Aboriginal Health Workers (AHW) and other health staff should encourage Aboriginal people to have an annual health assessment (MBS number 715) with their usual GP to facilitate early detection and management of CHF and its risk factors.
- Raising community awareness on the risk of developing cardiovascular disease during opportunistic screening is an important way to deliver key messages about prevention.<sup>10</sup>
- Early recognition of the symptoms of myocardial infarction (MI), prompt ECG transmission and treatment from the first medical contact (which could be a paramedic, registered nurse (RN) or general practitioner (GP)) using the models in the State Cardiac Reperfusion Strategy (SCRS) reduces damage to the heart and lessens the likelihood of these patients developing CHF.<sup>11</sup> Further information on the SCRS is available on the ACI [SCRS webpage](#).

- The prevalence of atrial fibrillation (AF) increases with age in patients with CHF and should be considered in terms of increased mortality and thromboembolic disease which increases the risk of stroke. AF may be identified by assessing the history, examination and ECG.<sup>10</sup> Use of the CHA<sub>2</sub>DS<sub>2</sub>-VASc (Congestive heart failure, Hypertension, Age, Diabetes and Stroke, Vascular disease, previous MI, aortic atheroma) score can determine stroke risk and the need for anticoagulant prescription.<sup>12</sup> Patients taking warfarin require close monitoring of the international normalised ratio (INR).
- Patients taking novel oral anticoagulants (NOACs) require regular monitoring of their renal function. All patients taking oral anticoagulants, their family and carers require education about the potential adverse effects of these medications, potential food and/or drug interactions and the need for monitoring. The use of the HAS-BLED<sup>13</sup> (Hypertension, Abnormal renal/liver function, Stroke, Bleeding history or predisposition, Labile INR, Elderly (age over 65), and Drugs/alcohol concomitantly) score to determine bleeding risk, identify modifiable risk factors for bleeding and monitoring requirements is recommended.
- A range of prevention programs have been developed to support healthy lifestyles and modify the risk factors for chronic diseases. These programs include the NSW Health [Get Healthy](#) telephone coaching service (which aims to encourage and motivate the community to improve their health and includes the Get Healthy at Work program), the NHFA walking groups and local council initiatives such as the Lift for Life Program (which is an eight week, low cost, outdoor resistance training program).
- A number of media campaigns have also been run in NSW including Make Healthy Normal which supports people to make lifestyle changes to improve their health. These campaigns increase community awareness about the risk factors for chronic diseases and promote healthy eating, regular exercise and other activities to improve health and reduce the risk of chronic disease.

Some programs have been specifically developed for Aboriginal people and they focus on community engagement and community decision making to deliver programs in partnerships with communities, the ACCHS, AMS, PHNs, GPs and LHDs. For example, the NSW Aboriginal Knockout Health Challenge is a primary prevention program that encourages and motivates Aboriginal communities to make lifestyle changes to reduce the risk factors for chronic disease.

- AHWs are well placed to promote key health messages about reducing the risk factors for CHF and they should be included in discussions with Aboriginal patients and their families to provide support on risk-factor management.
- Clinicians should provide primary and secondary prevention programs in line with the most recent updates of all relevant consensus guideline documents.
- An assessment of absolute cardiovascular risk using the National Vascular Prevention Disease Alliance risk calculator<sup>10</sup> (see [Australian absolute cardiovascular disease risk calculator](#)) should be made at least every two years for all adults aged 45 years and older who do not have cardiovascular disease (CVD) or who are not considered to be at high risk.<sup>14</sup>
- A comprehensive assessment of the risk factors for CVD is recommended from 18 – 34 years for Aboriginal and Torres Strait Islander people opportunistically and as part of an annual assessment.<sup>15</sup>
- Assessment of absolute cardiovascular risk for Aboriginal and Torres Strait Islander people aged 35 – 74 years is also recommended opportunistically and as part of an annual assessment with review according to the level of risk.<sup>14,15</sup>
- Aboriginal people aged over 74 years are considered to be at high-risk and assessment of absolute cardiovascular risk is recommended. The frequency of review will depend on the specific clinical circumstances.<sup>15</sup>

**Table 1: Standard 1 – Prevention of chronic heart failure**

Standard 1	Detail	Action
<p><b>Regular measurement of blood pressure and tight control of hypertension.</b><sup>5</sup></p>	<p>Measure blood pressure (BP) in all adults aged 18 years and older. BP should be considered in terms of an absolute cardiovascular (CV) risk assessment from age 45 years. Monitor and provide lifestyle advice, education and pharmacotherapy depending on the level of risk/absolute cardiovascular risk.</p> <p>Information for patients is available at the following links from the National Heart Foundation of Australia.</p> <ul style="list-style-type: none"> <li>• <a href="#">Blood pressure (pdf)</a></li> <li>• <a href="#">Blood pressure (webpage)</a></li> </ul>	<p><b>Measure blood pressure</b></p> <ul style="list-style-type: none"> <li>• Every two years – low risk<sup>14</sup></li> <li>• Every 6–12 months – moderate risk<sup>14</sup></li> <li>• Every 6 months – high risk if existing stroke, transient ischaemic attack or CKD<sup>14</sup></li> <li>• Every 6–12 weeks – high risk (clinically determined) or absolute CVD risk &gt; 15%<sup>14</sup></li> </ul> <p><b>Specific considerations for Aboriginal people</b></p> <ul style="list-style-type: none"> <li>• Opportunistically and as part of an annual health assessment for Aboriginal people aged 18–74 years<sup>15</sup></li> <li>• Review depending on clinical context for Aboriginal people 74 years and older<sup>15</sup></li> </ul>
<p><b>Regular assessment of blood lipids and prescription of statins, where indicated.</b><sup>5, 16, 17</sup></p>	<p>Assess fasting lipids every five years from age 45 years. Lipid levels should be considered in terms of an absolute CV risk assessment. Repeat fasting lipid profiles according to the level of absolute CVD risk.<sup>10, 14</sup></p> <p>Provide advice on reducing dietary saturated fat, prescribe statins if indicated and monitor their effect.<sup>10, 14</sup></p> <p>Information for patients is available at the following links from the National Heart Foundation of Australia.</p> <ul style="list-style-type: none"> <li>• <a href="#">Cholesterol (pdf)</a></li> <li>• <a href="#">Fats and cholesterol (webpage)</a></li> </ul>	<p><b>Measure blood lipids</b></p> <ul style="list-style-type: none"> <li>• Every five years – low risk<sup>14</sup></li> <li>• Every two years – moderate risk<sup>14</sup></li> <li>• Every 12 months – high risk if existing CVD or absolute CVD risk &gt; 15%<sup>14</sup></li> </ul> <p><b>Specific considerations for Aboriginal people</b></p> <ul style="list-style-type: none"> <li>• Opportunistically and as part of an annual health assessment with review according to level of risk for Aboriginal people aged 18–74 years<sup>15</sup></li> <li>• Review depending on clinical context for Aboriginal people aged 74 years and older. Assume high risk for CVD<sup>15</sup></li> </ul>
<p><b>Manage psychosocial risk factors such as depression, social isolation, lack of quality social support and acute and catastrophic life events.</b><sup>17, 18</sup></p>	<p>Appropriate contact names and telephone numbers for psychosocial support services (either based within the LHD or in community health services) should be provided so that the patient, their family and carers can seek further support if they wish.</p> <p>Specific questioning about socio-economic status (and appropriate action) is recommended as it is an independent risk factor for cardiovascular disease.<sup>10, 14, 17</sup> Information for patients is available at the following links from the National Heart Foundation of Australia.</p> <ul style="list-style-type: none"> <li>• <a href="#">My heart my family our culture (pdf)</a></li> <li>• <a href="#">Coronary heart disease, anxiety and depression (pdf)</a></li> </ul>	<ul style="list-style-type: none"> <li>• Screen for psychosocial risk factors using a validated tool such as the Patient health questionnaire 2 (PHQ2).</li> <li>• If the response is positive, use the Patient health questionnaire 9 (PHQ9) to assess mood and depression.</li> <li>• The Hospital Anxiety and Depression Scale (HADS) has also been validated for use in primary care and hospitals.</li> </ul>

<p><b>Detection and control of diabetes including regular monitoring of blood glucose.</b><sup>5, 19</sup></p>	<p>As diabetes is a risk factor for CHF, screening should be carried out from the age of 40 or from 18 years for Aboriginal people using the AUSDRISK tool or a blood glucose level depending on the level of risk. People with an AUSDRISK score of 12 or more should have a fasting blood glucose level measured.<sup>14</sup></p> <p>For people considered to be at high risk, annual screening is recommended.<sup>10, 14, 19, 20</sup> Information for patients is available at the following links from Diabetes Australia.</p> <ul style="list-style-type: none"> <li>• <a href="#">Aboriginal and Torres Strait Islanders</a></li> <li>• <a href="#">What is diabetes?</a></li> </ul>	<p><b>Measure AUSDRISK</b></p> <ul style="list-style-type: none"> <li>• Every three years if asymptomatic<sup>14</sup></li> </ul> <p><b>Measure fasting blood glucose</b></p> <ul style="list-style-type: none"> <li>• Every 12 months for high risk patients with impaired glucose tolerance or impaired fasting glucose<sup>14, 21</sup></li> <li>• Every three years if AUSDRISK score is 12 or over or patient is high risk<sup>14</sup></li> </ul> <p><b>Specific considerations for Aboriginal people</b></p> <ul style="list-style-type: none"> <li>• Consider measuring AUSDRISK annually as part of an adult health assessment for Aboriginal people over 18 years at low risk<sup>15</sup></li> <li>• If AUSDRISK &gt;12 measure fasting blood glucose annually as part of an adult health assessment for Aboriginal people at high risk<sup>15</sup></li> </ul>
<p><b>Assess cardiovascular risk and provide primary prevention measures which delay or prevent the development of CHD.</b></p>	<p>General practitioners play a central role in the prevention of CHF and they should provide evidence-based advice on primary prevention including assessment of risk factors and support for people to assist with lifestyle modification.</p>	<ul style="list-style-type: none"> <li>• Screen for the risk factors for CHF detailed in Standard 1.</li> <li>• Education and referral should be provided if appropriate.</li> </ul>
<p><b>Provide access to secondary prevention programs for people with CHD in line with relevant guidelines and recommendations.</b></p>	<p>Clinicians should ensure that people with CVD have access to secondary prevention and they are referred to cardiac rehabilitation providing that there are no contraindications.<sup>10, 17, 22</sup></p> <p>Some cardiac rehabilitation programs have been developed specifically to support Aboriginal people with risk reduction and lifestyle modification. The patient's usual primary healthcare provider may be able to provide details of local programs. The NHFA (NSW) <a href="#">Directory of NSW/ACT Cardiovascular Health Services</a><sup>23</sup> also provides information on programs throughout NSW.</p> <p>Although the evidence demonstrates that optimal outcomes are achieved by access to a specialised CHF multidisciplinary team, it is recognised that disease specific rehabilitation programs may not always be available. In these circumstances, mechanisms to share information and resources through additional staff training, professional meetings and videoconferencing should be considered as options to ensure a comprehensive program can be offered.</p>	<ul style="list-style-type: none"> <li>• Refer appropriate patients to cardiac rehabilitation and secondary prevention programs (unless there are contraindications).</li> </ul>

Services should assess patients and provide education on healthier lifestyle choices as they have been shown to decrease the risk of CHD, diabetes and CHF and are indicated for all patients with hypertension.<sup>5, 8, 19</sup>

As Aboriginal people are at high risk of cardiovascular disease a range of specific resources has been developed to support reducing risk in this population.

<p>The lifestyle risk factors relating to CVD include the following:</p> <ul style="list-style-type: none"> <li>• smoking cessation<sup>5, 17</sup></li> <li>• healthy eating and reduced salt intake<sup>5</sup></li> <li>• weight reduction<sup>5, 17</sup></li> </ul>	<p>Assess smoking status, motivation to stop smoking and nicotine dependence. Offer smoking cessation advice including options for nicotine replacement, other pharmacotherapies and referral to a smoking cessation service, for example the Quitline, which is available by calling 13 78 48.</p> <p>There is also a NSW Aboriginal Quitline available at the same number with an Aboriginal advisor to provide individually tailored support for callers.</p> <p>Information for patients on smoking cessation is available at the following links.</p> <ul style="list-style-type: none"> <li>• <a href="#">iCanQuit</a></li> <li>• <a href="#">Aboriginal communities and smoking</a></li> </ul>	<p><b>Smoking</b></p> <ul style="list-style-type: none"> <li>• Assess smoking status and/or nicotine dependence opportunistically and as part of annual health assessment for Aboriginal and non-Aboriginal people from age 10 years.<sup>14, 15</sup></li> <li>• Offer smoking cessation advice including referral to a smoking cessation service such as the Quitline on 13 78 48.</li> </ul>
	<p>Refer patients to the <a href="#">Australian Dietary Guidelines</a> and provide advice on reducing saturated fat and salt in the diet. Increasing fruit and vegetable consumption is associated with a lower risk of CVD and diabetes and should be promoted.</p> <p>Information for patients on nutrition is available at the following links.</p> <ul style="list-style-type: none"> <li>• National Heart Foundation of Australia <ul style="list-style-type: none"> <li>◦ <a href="#">Healthy eating</a></li> <li>◦ <a href="#">Nutrition (pdf)</a></li> </ul> </li> <li>• NSW Health <ul style="list-style-type: none"> <li>◦ <a href="#">Make healthy normal</a></li> </ul> </li> <li>• Australian Dept of Health <ul style="list-style-type: none"> <li>◦ <a href="#">Eat for health</a></li> </ul> </li> </ul>	<p><b>Dietary</b></p> <ul style="list-style-type: none"> <li>• Refer patients to the <a href="#">Australian Dietary Guidelines</a><sup>15, 27</sup></li> <li>• Advise to reduce saturated fat and salt in the diet and increase fruit and vegetable intake.</li> </ul>
	<p>Provide support and education for individuals who are overweight or obese.</p> <p>Information for patients on healthy weight is available at the following links from the National Heart Foundation of Australia.</p> <ul style="list-style-type: none"> <li>• <a href="#">Healthy weight</a></li> <li>• <a href="#">Body mass index</a></li> <li>• <a href="#">Obesity (pdf)</a></li> </ul> <p>All adults should be advised to participate in 30 minutes of moderate intensity activity on most (and preferably all) days of the week and to avoid prolonged sitting, which is a risk factor for cardiovascular disease.</p>	<p><b>Body mass index (BMI) and waist circumference</b></p> <p>Assess:</p> <ul style="list-style-type: none"> <li>• for people at average risk every two years<sup>14</sup></li> <li>• for people at increased risk every year<sup>14</sup></li> <li>• for people with identified risk every six months.<sup>14</sup></li> </ul> <p>Support patients to reduce weight if indicated.<sup>14</sup></p> <p><b>Specific considerations for Aboriginal people</b></p> <ul style="list-style-type: none"> <li>• Measure BMI and waist circumference opportunistically and as part of annual health assessment for Aboriginal people 18 years and older and review according to level of risk<sup>15</sup></li> <li>• Develop a weight management plan including information on dietary guidelines and physical activity, goal setting, at least one follow-up consultation, referral to specialist, dietician and exercise physiologist (if available) and psychological interventions.<sup>15</sup></li> </ul>

<ul style="list-style-type: none"> <li>• <b>regular physical activity</b> 24, 25</li> </ul>	<p>Information for patients on exercise is available at the following links.</p> <ul style="list-style-type: none"> <li>• National Heart Foundation of Australia <ul style="list-style-type: none"> <li>◦ <a href="#">Get active</a></li> <li>◦ <a href="#">Active living</a></li> <li>◦ <a href="#">Physical activity (pdf)</a></li> </ul> </li> <li>• <a href="#">Exercise is medicine Australia</a></li> <li>• Australian Dept of Health. <a href="#">Australia's physical activity and sedentary behaviour guidelines</a></li> <li>• Healthdirect Australia. <a href="#">Physical activity guidelines for older adults</a></li> </ul>	<p><b>Exercise</b></p> <p>Assess current level of physical activity:</p> <ul style="list-style-type: none"> <li>• every two years for people with average risk<sup>27</sup></li> <li>• every visit to the primary care provider for people with increased risk.<sup>27</sup></li> </ul> <p><b>Specific considerations for Aboriginal people</b></p> <ul style="list-style-type: none"> <li>• Assess current level of physical activity opportunistically and as part of annual assessment for Aboriginal people.<sup>15</sup></li> </ul>
<ul style="list-style-type: none"> <li>• <b>safe alcohol use</b><sup>26, 27</sup></li> </ul>	<p>All adults should be advised to follow the current Australian guidelines to reduce health risks from drinking alcohol.<sup>26</sup> Patients who have alcohol-related cardiomyopathy should abstain from alcohol. In other patients, alcohol intake should not exceed 10–20 g per day i.e. 1–2 standard drinks per day.<sup>27</sup></p>	<p><b>Assess alcohol consumption</b></p> <ul style="list-style-type: none"> <li>• Ask about quantity and frequency of alcohol consumption for all patients aged 15 years and older.<sup>15, 27</sup></li> <li>• Abstain for people with alcohol-related cardiomyopathy.<sup>29</sup></li> <li>• 1–2 standard drinks per day for all other people.<sup>27</sup></li> </ul> <p><b>Specific considerations for Aboriginal people</b></p> <ul style="list-style-type: none"> <li>• Assess opportunistically and as part of annual health assessment for people 15 years and over</li> <li>• Review for comorbid disease and other chronic disease risk factors for people with hazardous and harmful alcohol consumption opportunistically and as part of an annual health assessment for Aboriginal people.<sup>15</sup></li> </ul>
<ul style="list-style-type: none"> <li>• <b>safe caffeine intake</b></li> </ul>	<p>Patients should limit their daily caffeine intake to a maximum of 1–2 caffeinated beverages (coffee, tea, energy drinks and some soft drinks). Excessive caffeine intake may worsen arrhythmias, increase the heart rate and blood pressure and affect plasma electrolyte levels.<sup>5</sup></p>	<p><b>Caffeine</b></p> <ul style="list-style-type: none"> <li>• Maximum 1–2 caffeinated beverages per day.<sup>5</sup></li> </ul>
<ul style="list-style-type: none"> <li>• <b>avoidance of illicit substance use (such as cocaine, amphetamines including MDMA (Ecstasy) and opioids).</b><sup>5</sup></li> </ul>	<p>Most illicit substances can have adverse CV effects ranging from abnormal heart rate to MI, stroke and tachyarrhythmias that may cause dilated cardiomyopathy as well as collapsed veins and bacterial infections of heart valves.<sup>5</sup></p> <p>Cocaine use is associated with increased aortic stiffening, higher systolic BP and increased left ventricle mass as well as chest pain and MI.<sup>28</sup> Use of illicit drugs whether social or due to addiction is growing in older adults as the population ages.</p>	<p><b>Illicit drugs</b></p> <ul style="list-style-type: none"> <li>• Avoid all illicit drugs.<sup>5</sup></li> </ul>

## Standard 2 – Detection and management of factors that precipitate and exacerbate chronic heart failure

### Objective

To detect and manage factors that precipitate or exacerbate CHF in people at increased risk of CHF, those with early asymptomatic disease and those with symptomatic CHF

### Key points

- All clinicians should be aware of the factors that precipitate or exacerbate CHF and should aim to prevent, identify and treat precipitating causes in all patients who present with CHF or are at increased risk of CHF. These factors may be cardiac conditions (including myocardial ischaemia or infarction, elevated blood pressure, arrhythmias and new or worsening valvular dysfunction) and non-cardiac conditions (including anaemia, infection, non-adherence to medications, salt and fluid overload, excessive alcohol intake, obesity, thyroid dysfunction and pulmonary embolism). Delay in seeking treatment may also hinder management. More than one factor is often present in patients presenting with worsening CHF.
- The inclusion of AHWs in regular education sessions on CHD would build capacity to better identify, monitor and report on factors that contribute to or worsen CHF in local communities. This would enable AHWs to build relationships with local multidisciplinary teams to facilitate early referral and management.
- Patients at increased risk of CHF, those with early asymptomatic disease and those who already have CHF should be investigated for conditions that precipitate or exacerbate CHF.
- A comprehensive medication history including drug allergies and intolerances as well as prescription, over-the-counter and complementary and alternative medicines should be carried out to identify medicines that may precipitate or exacerbate CHF. These include corticosteroids, non-steroidal anti-inflammatory drugs (NSAIDs), COX-2 inhibitors and negative inotropic medications. Use of these medicines requires review. Poor medication use, for example, with diuretics, may also precipitate or exacerbate CHF.
- All patients with asymptomatic LV systolic dysfunction should be treated with angiotensin converting enzyme inhibitors (ACEIs) indefinitely, unless they cannot tolerate these medications.<sup>5</sup> Angiotensin II receptor antagonists (ARBs) should be considered for people with systolic CHF who are intolerant of ACEIs or for people who remain symptomatic despite receiving ACEIs and beta-blockers.<sup>5</sup>
- Patients with LV dysfunction and a wide QRS complex who are on maximal therapy should be considered for cardiac resynchronisation therapy (CRT) as evidence from randomised controlled trials (RCT) supports the favourable effects of prophylactic CRT on left-ventricular remodelling in these patients.<sup>30</sup>



**Table 2: Standard 2 – Detection and management of factors that precipitate and exacerbate chronic heart failure**

Standard 2	Detail	Action
<p><b>Promote immunisation against influenza and pneumococcal disease in all patients with CHF.</b></p>	<p>People with coronary artery disease (CAD) and CHF are at increased risk of complications from influenza infection and pneumococcal disease. Therefore, GPs should take steps to encourage opportunistic immunisation for adults including people with CHF to align with the <a href="#">National immunisation strategy for Australia 2013–2018</a>.</p> <p>Offer influenza vaccination to all adults over 65 years and to people at increased risk of complications from influenza infection.</p> <p>Clinicians should inform all patients with CHF who are admitted or present to emergency departments (EDs) about the benefits of influenza and pneumococcal vaccination as patients with CHF are at increased risk of respiratory infection.</p> <p>The risk of developing invasive pneumococcal disease (IPD) is higher in Aboriginal people due to risk factors such as higher smoking rates in Aboriginal populations compared to non-Aboriginal people.</p> <p>Influenza and pneumococcal vaccinations are provided free of charge for Aboriginal people under the National Immunisation Program. These vaccinations can be accessed through the ACCHS and GPs. Further information is available from the <a href="#">Immunise Australia Program</a>.</p>	<p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>• Every 12 months offer influenza vaccination to all adults.</li> </ul> <p><b>Pneumococcal disease</b></p> <ul style="list-style-type: none"> <li>• All adults aged 65 years and older (who have not been previously vaccinated) should be offered pneumococcal vaccination.</li> </ul> <p><b>Specific considerations for Aboriginal people</b></p> <ul style="list-style-type: none"> <li>• Offer pneumococcal vaccination to Aboriginal people aged 50 years and over. Re-vaccination is recommended five years after the first dose for people initially vaccinated at age 50 years or over.<sup>31</sup></li> </ul>
<p><b>All medical practitioners should be aware of the potential for specific medications to precipitate or exacerbate CHF.</b></p>	<p>Clinicians should prescribe these medications with due caution in patients who have, or are at increased risk of CHF and should seek specialist advice where necessary. Details of contraindicated medications are available in <a href="#">Appendix A</a>.<sup>5</sup></p> <p>Home medicine review (HMR) should be considered to assist patients to self-manage their condition and to decrease medication errors.</p> <p>An additional HMR may only be provided if there has been a significant change in the patient's condition or medication regimen. Further information on HMR is available in the <a href="#">MBS Online</a>.</p>	<ul style="list-style-type: none"> <li>• Consider HMR annually.</li> </ul>
<p><b>Facilities with IV capacity prevent fluid overload in patients with CHF.</b></p>	<p>All facilities that manage acutely ill patients should have intravenous (IV) fluid protocols that guide safe administration, including identification of the symptoms of fluid overload and how to correct overload if it occurs.</p>	<p>Refer to local IV fluid protocols before prescribing IV fluids or blood products.</p>

## Standard 3 – Diagnosis of chronic heart failure

### Objective

To accurately and promptly diagnose CHF, seek reversible causes, particularly ischaemia, and assess the severity of the disease.

### Key points

- All patients with suspected CHF should have a comprehensive clinical assessment and investigations to diagnose CHF including an assessment of the severity of their condition and identification of reversible causes.<sup>5</sup>
  - Some people are at higher risk of developing acute rheumatic fever and rheumatic heart disease, including Aboriginal people, Maori people, Pacific Islanders and migrants from developing countries. Clinicians should ask these high-risk groups about childhood illnesses such as acute rheumatic fever and rheumatic heart disease (RHD) which may lead to CHF. Careful questioning may be required to confirm whether someone has had acute rheumatic fever and/or rheumatic heart disease in the past. Further information on acute rheumatic fever and rheumatic heart disease is available in the RHD Australia [ARF RHD Guideline](#).
  - Clinicians must notify all newly confirmed and probable episodes of acute rheumatic fever, including recurrences and all cases of RHD in people aged 35 years and younger to the local Public Health Unit. NSW Health has established a register for people with acute rheumatic fever/RHD to improve the long-term clinical care and follow-up of patients.
  - RHD Australia has developed e-learning modules and phone apps that support both clinicians and AHWs in the management of acute rheumatic fever/RHD. Information is also available for patients and their families and may be accessed on the [RHD Australia website](#).
- The diagnosis of CHF should be based on symptoms, clinical examination and diagnostic investigations including electrocardiogram, chest X-ray, pathology, echocardiogram, exercise tolerance and response to treatment.<sup>5</sup>
  - The patient and their family should be informed and counselled about the disease and its nature, using appropriate and plain language. Patients should be encouraged to be involved in their own care, using preventive and management measures which are described in the Framework. Resources such as [Living well with chronic heart failure](#) and [Living every day with my heart failure](#) have been developed for patients and their families to support self-management.  
  
Additional information is also available on the NHFA website [Chronic heart failure – the facts](#).
  - It may be difficult to diagnose older people with heart failure as the classical signs and symptoms that contribute to the diagnosis of heart failure lose their specificity in the elderly. The cause of dyspnoea is often multifactorial (e.g. respiratory disease and poor physical fitness in addition to heart failure) and requires an integrated approach.<sup>5</sup>
  - Early referral to specialist services should be considered if the diagnosis is uncertain, or when causative factors have not been readily identified, or where the patient may benefit from specialty clinical assessment or advanced diagnostic procedures.

### TOOLS TO ASSIST IN THE DIAGNOSIS AND CLASSIFICATION OF THE SEVERITY OF CHF

#### New York Heart Association classification of CHF<sup>5</sup>

The New York Heart Association (NYHA) functional classification system classifies the severity of heart failure according to the patient's symptoms during everyday activities relating to their quality of life. This classification is often used to guide management for patients with CHF (see [Appendix B](#)).

## Framingham clinical criteria for the diagnosis of CHF

The Framingham clinical criteria for the diagnosis of CHF requires the simultaneous presence of at least two major criteria or one major criterion in conjunction with two minor criteria<sup>32</sup> (see [Appendix C](#)). Minor criteria are

acceptable only if they cannot be attributed to another medical condition (such as pulmonary hypertension, chronic lung disease, cirrhosis, ascites, or the nephrotic syndrome). The Framingham Heart Study criteria are 100% sensitive and 78% specific for identifying people with definite CHF.

**Table 3: Standard 3 – Diagnosis of chronic heart failure**

Standard 3	Detail	Action
<b>Complete a comprehensive clinical assessment.</b>	<p>Clinicians should document the history, physical examination and diagnostic investigations. All patients with a clinical diagnosis of CHF should have an echocardiogram performed.</p> <p>AHWs and other health staff should encourage Aboriginal people to have an annual health assessment with their usual GP. The Medicare Benefits Scheme (MBS) item number 715 <i>Medicare health assessment for Aboriginal and Torres Strait Islander people</i> (and other follow-up item numbers such as individual allied health service (10950–10970), team care arrangements (723) and GP management plan (721)) will facilitate early detection, diagnosis and intervention for common and treatable conditions that cause morbidity and early mortality.</p>	<p>Record the following information:</p> <ul style="list-style-type: none"> <li>• patient history</li> <li>• physical examination</li> <li>• diagnostic investigations including electrocardiogram (ECG), chest X-ray, echocardiogram, full blood count and serum biochemistry.</li> </ul>
<b>Consider additional investigations if the clinical assessment and diagnostic investigations indicate that they are necessary.</b>	<p>Additional diagnostic investigations may be required to confirm the diagnosis.</p> <p>If the diagnosis is uncertain or the causative factors are unclear, or where the patient may benefit from specialty clinical assessment or advanced diagnostic procedures, referral for cardiology review is recommended.</p> <p>One possible result is the diagnosis of heart failure with preserved systolic function (HFPSF or diastolic heart failure). Further discussion on HFPSF follows this table.</p>	<p>Arrange (or refer) the patient for the following investigations if appropriate:</p> <ul style="list-style-type: none"> <li>• serum iron and ferritin levels</li> <li>• thyroid function tests</li> <li>• viral studies</li> <li>• brain natriuretic peptide (BNP) or pro-BNP</li> <li>• coronary angiography</li> <li>• haemodynamic measurements</li> <li>• MRI scan</li> <li>• endomyocardial biopsy.</li> </ul>
<b>Assess disease severity for all patients who have symptoms of CHF.</b>	<p>Clinicians should assess the exercise capacity of patients with CHF using valid and reliable methods such as the NYHA classification of heart failure<sup>5</sup> (see <a href="#">Appendix B</a>) and the information must be recorded.</p>	<p>Assess the disease severity and record the result in the patient's medical record.</p>
<b>Discuss the diagnosis of CHF and its natural history with patients, their family and carers.</b>	<p>Clinicians should discuss the diagnosis and management of CHF with the patient, their family and carers and provide evidence-based advice supported by appropriate educational resources.</p> <p>Information for patients such as <a href="#">Living well with chronic heart failure</a> and <a href="#">Living every day with my heart failure</a> (which provides information for Aboriginal patients) and other information and resources are available at the following link. <a href="#">Chronic heart failure - the facts</a></p> <p>A tailored, person-centred management plan should be developed in collaboration with the patient, their family and carers and clinical team members. The plan should include both non-pharmacological and pharmacological measures.</p>	<p>Discuss the diagnosis of CHF and the disease trajectory with patients and their families.</p> <p>Include the multidisciplinary team members in care provision.</p> <p>Develop an individualised management plan with the patient, their family and carers.</p>

## Heart failure with preserved systolic function (HFPSF or diastolic heart failure)

It is commonly reported in studies that between 30% and 50% of patients presenting clinically with CHF may not have significant LV systolic dysfunction.<sup>5</sup> While there is no consensus on a precise definition for HFPSF, it affects more women than men, with some studies indicating a higher than average age and burden of comorbid conditions compared to patients with systolic CHF.<sup>33</sup> Prognosis is poor and HFPSF represents a significant portion of potentially avoidable admissions for patients with CHF in NSW hospitals. Given the lack of conclusive randomised data on the efficacy of specific pharmacological therapy,<sup>5</sup> this Framework does not include specific standards related to the management of HFPSF.

Due consideration should be given to appropriate diagnostic methods, the identification of coronary and valvular heart disease and the role of hypertension, age and diabetes in developing a comprehensive management strategy for HFPSF.<sup>5</sup> Management for all patients with CHF, including those with HFPSF, should incorporate non-pharmacological and pharmacological approaches targeted to the individual's risk-factor profile, psychosocial status, physiological functioning and comorbidities. Commonly, a coordinated approach to care involving multiple service providers, including a heart failure management program, will be required to optimally manage patients with HFPSF. Current recommendations for the management of HFPSF are outlined in Table 3.1.<sup>5</sup>

<b>Diagnosis</b>	<b>Investigations</b>	<b>Treatment (empirical at this stage)</b>
<ul style="list-style-type: none"> <li>• Clinical history of CHF</li> <li>• Exclusion of myocardial ischaemia, valvular disease</li> <li>• Objective evidence of CHF (X-ray consistent with CHF)</li> <li>• Ejection fraction <math>\geq</math> 45% (echocardiography, gated blood pool scanning, left ventriculography)</li> <li>• Echocardiographic or cardiac catheterisation evidence of diastolic dysfunction, where possible</li> <li>• Use of plasma brain natriuretic peptide (BNP) measurement for diagnosis of diastolic heart failure is not proven.</li> </ul>	<p><i>Echocardiography</i></p> <ul style="list-style-type: none"> <li>• Pseudonormal or restrictive filling pattern demonstrated by mitral inflow (age appropriate)</li> <li>• Left atrial enlargement</li> <li>• Reduced septal annular velocity (Ea) on tissue Doppler imaging</li> <li>• Ratio of E wave to Ea &gt; 15</li> </ul> <p><i>Cardiac catheterisation</i></p> <ul style="list-style-type: none"> <li>• Elevated LV end diastolic pressure</li> <li>• Prolonged Tau.</li> </ul>	<ul style="list-style-type: none"> <li>• Aggressive risk-factor reduction</li> <li>• Hypertension – BP reduction; consider ACEIs or angiotensin II receptor antagonists to reduce LV hypertrophy</li> <li>• Diabetes mellitus – strict glycaemic and BP control; consider ACEIs or angiotensin II receptor antagonists early, using lower BP recommendations for treating hypertension in diabetic patients.</li> </ul>

Source: NHFA Guidelines for the detection, prevention and management of chronic heart failure in Australia. P49

## Standard 4 – Treatment of the acute symptoms of chronic heart failure

### Objective

To provide effective emergency treatment directed at relieving symptoms, preventing damage to other organs and promoting cardiac function.

### Key points

- An acute exacerbation of CHF is a medical emergency with life-threatening consequences.
- Assessment of the precipitating or exacerbating factors must be carried out as part of the management of all acute presentations of CHF and the treatment of these factors should be a priority.

**Table 4: Standard 4 – Treatment of the acute symptoms of chronic heart failure**

Standard 4	Detail	Action
ED protocols for the assessment and management of patients with an acute exacerbation of CHF should be available.	The essential components for ED protocols are provided in <a href="#">Table 4.1: Steps in the management of an acute exacerbation of CHF: Step 2: Immediate management in hospital</a> . If EDs do not have a protocol they should develop their own or network with other hospitals to share their resources.	ED protocols should be available and used for the assessment and management of an acute exacerbation of CHF.
Patients with a severe, acute exacerbation of CHF should be urgently transferred to an acute care facility or tertiary referral centre for management, if indicated.	Transfer protocols should be available to facilitate timely patient transfer. Clinical handover should be carried out in line with the <a href="#">NSW Health Policy Directive Clinical Handover – Standard Key Principles</a> . <sup>34</sup>	Urgently transfer patients with acute CHF to acute care facilities or tertiary referral centres.
Patients with less severe acute exacerbations of CHF may be discharged from the ED with an appropriate management plan.	After initial treatment, some patients may be suitable for discharge from the ED. It is important that a management plan is developed to support the patient, their family and carers in the community which may reduce hospitalisations. Aboriginal people presenting to an acute care health setting (e.g. hospitals and multi-purpose health services) may be worried and feel frightened, sad, home-sick or isolated. An Aboriginal Hospital Liaison Officer (AHLO) could be included in discussions (if they are available) to provide cultural support, advocacy, liaison and referral to help Aboriginal people and their families understand the care that is being provided during a hospital admission. Additional information on the role of the AHLO is available in the NSW Health Information bulletin <a href="#">Definition of an Aboriginal health worker</a> . It is important for hospital staff to maintain a culturally respectful and safe environment for Aboriginal people and to link with primary care providers including the ACCHS to assist with appropriate discharge planning and referrals to support care after discharge. Clinical handover should be carried out in line with the NSW Health policy directive <a href="#">Clinical handover – standard key principles</a> . <sup>34</sup>	Provide a management plan on discharge including early follow-up with the GP (including the ACCHS if appropriate) and specialist and referral to the multidisciplinary team.

**Table 4.1: Steps in the management of an acute exacerbation of CHF**

### Step 1: Immediate resuscitation outside hospital and transfer to hospital

A likely diagnosis of pulmonary oedema can usually be established by a focused medical history and physical examination. Immediate resuscitation measures are determined by the setting and the length of time for the patient to reach hospital.

**Basic measures should include:**

- sitting the patient in an upright position
- administering oxygen in high concentration via a face mask, if available.

**For longer transfer times, the patient should have:**

- an intravenous cannula (if possible)
- furosemide (frusemide) 20–80 mg intravenously
- morphine 2.5–5 mg intravenously if not contraindicated
- nitroglycerin 0.4–0.6 mg sublingually considered and repeated as needed
- a 12-lead ECG recorded and continuous monitoring, if possible
- urgent transfer to hospital.

### Step 2: Immediate management in hospital

All EDs in NSW should have a protocol for the assessment and management of patients with an acute exacerbation of CHF which should include the following.

**Immediate assessment and monitoring should include:**

- a focused review of the history and physical examination
- intravenous cannula
- ECG – 12-lead and continuous monitoring
- haematology – full blood count
- serum biochemistry including electrolytes, creatinine, cardiac enzymes (particularly creatinine kinase and troponin)
- chest X-ray
- accurate assessment of fluid balance (which may require insertion of an indwelling urinary catheter)

**Urgent efforts to establish the cause**

The diagnosis of an acute exacerbation of CHF should be accompanied by urgent efforts to establish (and if possible correct) the cause. It is important to promptly detect treatable causes of the exacerbation, such as:

- acute MI
- severe mitral regurgitation
- tachyarrhythmias or bradyarrhythmias
- pericardial tamponade and
- pulmonary embolism.

**Immediate treatment**

Immediate treatment includes:

- sitting the patient upright and administering high-concentration oxygen using a face mask to help the patient to breathe. If the patient is still breathless, provide non-invasive assisted ventilation using either:
  - continuous positive airways pressure (CPAP), which is the first-line modality
  - bi-level positive airways pressure (BiPAP), which may be useful where type II respiratory failure with hypercapnoea coexists with acute pulmonary oedema.<sup>5</sup>

Endotracheal intubation and mechanical ventilation may be required in very severe cases.

If the patient remains breathless and hypoxic:

- Administer intravenous morphine or an equivalent opiate or opioid to alleviate breathlessness, anxiety, myocardial oxygen demand and reflex peripheral vasoconstriction.
- Administer diuretics and vasodilators to reduce pulmonary congestion and load on the heart using:
  - furosemide (frusemide), which can provide particularly rapid relief because it is a rapid-onset potent diuretic, particularly when given intravenously
  - nitroglycerin which can be used as a first-line vasodilator.
- Palliative care should be considered if it is appropriate.

Response to these measures will determine whether second-line pharmacological treatment and advanced management is necessary.

### Step 3: Second-line pharmacological treatment and advanced management\*

- Intravenous sodium nitroprusside is a potent vasodilator and may be used as a second-line pharmacological treatment.
- Inotropic agents such as dopamine or dobutamine, or levosimendan\*\* may improve tissue perfusion by stimulating the heart (if necessary).
- Antiarrhythmic therapy such as digitalis or amiodarone can be used (if necessary).
- Circulatory assist devices may be indicated for short-term use:
  - if there is a possibility of spontaneous recovery (e.g. with peri-partum cardiomyopathy or myocarditis), or
  - as a bridge to cardiac surgery or transplantation.
- Intra-aortic balloon counter-pulsation may be useful if mechanical assist device support is required.
- Individual hospital protocols should specify criteria for considering transfer of a patient with severe refractory disease to a specialist treatment facility.

\* If CHF symptoms are refractory, or the precipitating cause is not identifiable, consider referral to a CHF specialist centre.

\*\* Refer to local policy as these patients may require a central line and cardiac monitoring.

An algorithm for the management of pulmonary oedema and acute exacerbations of CHF in general practice are provided in [Appendix D](#). Further details on the assessment and management of acute cardiogenic pulmonary oedema and cardiogenic shock can be found in the [Guidelines for the prevention, detection and management of chronic heart failure in Australia 2011](#)<sup>5</sup> section 10: Acute exacerbations of CHF.

**Table 4.2: Themes and principles to reduce emergency presentations, hospitalisations and premature death among patients with chronic heart failure<sup>7</sup>**

Theme	Principle
CHF model of care	Current evidence clearly identifies that accessible, multidisciplinary, guideline-based CHF care improves outcomes.
Access to meaningful data for management and benchmarking	Collecting outcome data is the only accurate way of determining the effectiveness and cost of individual treatments; practice standards can then be based on up-to-date comparative effectiveness research. Adequate patient information is a pre-requisite for reducing unnecessary hospital admissions and medical errors.
Workforce planning	An appropriately trained workforce with access to specialist cardiology support can deliver evidence-based care.
Research	Research is essential to support an evidence base.

## Standard 5 – Pharmacological management of chronic heart failure

### Objective

To ensure that patients with CHF are prescribed evidence-based medicines at recommended doses and that safety and effectiveness are monitored.

### Key points

- Adherence to recommended pharmacological therapy is critical to maintaining optimal management and quality of life for patients with CHF.
- In addition to prescribing the correct medications in appropriate doses, clinicians should put in place strategies to promote adherence. These may include appropriate clinical handover of medication lists and target therapy to the patient's GP, recommendation to the GP for a Home Medicines Review (HMR), referral for follow-up in a nurse-led CHF management service and linking to local AHWs and other health staff for promotion and support of self-management and adherence to therapies.
- All patients with CHF, their family and carers should receive a current, accurate and comprehensive medication list and advice from a clinical pharmacist (if possible) at discharge from hospital. Some Aboriginal people are uncomfortable seeking advice about medications and often consumer information is culturally inappropriate and difficult to understand, which may result in poor medication use. Clinicians and pharmacists should provide patient information and explain medication use in a way that is meaningful for the patient.
- A 48-hour follow-up program has been implemented throughout NSW for Aboriginal people aged over 15 years, with chronic diseases, who are admitted to an acute public hospital. The follow-up involves a phone call within two working days of discharge to check if discharge medications or a script were provided, confirm that the patient understands how to take their medications, make sure that follow-up appointments have been made and check on general wellbeing.
- The Closing the Gap Pharmaceutical Benefits Scheme (PBS) Co-payment Measure improves access to medicines for eligible Aboriginal people living with, or at risk of, chronic disease as these prescriptions are provided either free or at a lower cost.
- Dose administration aids such as individualised blister packs of medications for use at home may be required for some patients with CHF at discharge and follow-up supplies may be arranged through the community pharmacy.
- The healthcare professionals that will be responsible for ongoing care should receive the patient's discharge summary with a current, accurate and comprehensive medication list in a timely manner.



**Table 5: Standard 5 – Pharmacological management of chronic heart failure**

Standard 5	Detail	Action
All patients with systolic CHF should be prescribed an ACEI. An ARB may be substituted in the presence of ACEI-induced cough.	Clinicians should clearly document any intolerance or contraindication to ACEIs and ARBs in the patient’s medical record.	Prescribe an ACEI (or an ARB) providing there are no contraindications.
All patients with systolic CHF should be considered for HF-approved beta-blocker therapy once signs and symptoms of fluid retention (if present) have been corrected.	Clinicians should clearly document any intolerance or contraindication to a HF-approved beta-blocker in the patient’s medical record.	Prescribe a HF-approved beta-blocker for euvolemic patients providing there are no contraindications.
All prescribers should have access to titration schedules for ACEIs, ARBs, and HF-approved beta-blockers.	Hospital clinicians should provide a clear discharge plan for all patients with systolic CHF discharged on ACEIs (or ARBs) and/or beta-blockers for the patient’s GP to follow. A suggested titration strategy for these medications should also be provided. <a href="#">Heart Online</a> provides examples of titration schedules.  This information should also be available for the community pharmacist and in the patient-controlled electronic health record, which is now known as <a href="#">My Health Record</a> .	All prescribers should use dosage titration schedules for prescribing ACEIs, ARBs and HF-approved beta-blocker therapy (see <a href="#">Appendix E</a> ).

It is recommended that the Quality Use of Medicines indicator 5.2 (percentage of patients with systolic heart failure that are prescribed appropriate medicines at discharge) and indicator 5.3 (percentage of discharge summaries that include medication therapy changes and explanation for changes)<sup>35</sup> are used to monitor performance and adherence with the National Safety and Quality Health Service Standards 1, 4 and 6. A tool is available on the Australian Commission for Safety and Quality in Health Care/National Prescribing Service website to assist staff to collect this information and it is available at [Resources to implement the NSQHS Standards: monitoring tool](#).

## RECOMMENDATIONS

A summary of the recommendations for optimal pharmacological management of CHF follows:

- Unless contraindicated, ACEIs should be taken by all patients with symptomatic or asymptomatic CHF resulting from impaired left ventricular function.**

An ACEI should be prescribed (with or without diuretic therapy) and continued even if CHF signs and symptoms resolve with diuretic therapy, unless contraindicated. An ARB may be substituted for an ACEI when ACEI-induced cough is present. The dose should be titrated to the maximum tolerated dose of ACEI (or ARB) as a higher dose has been demonstrated to be more effective than a lower dose at reducing morbidity and mortality in patients with systolic CHF in major clinical trials (see [Appendix E](#)).<sup>5</sup>

## 2. Diuretics should be prescribed for patients who have evidence of fluid retention.<sup>5</sup>

Diuretics should be used at the lowest dose needed to relieve fluid retention and breathlessness and adjusted as required as they show no mortality benefit.<sup>5, 36</sup> Diuretics may also compromise achievement of target doses of beneficial medicines and cause adverse effects. All patients prescribed diuretics should be educated on the role and use of these medications. Patients who have a good understanding of heart failure and the role of diuretics should be provided with an individualised flexible diuretic dosing regimen as part of their CHF action plan, with clear instructions on when and how to increase their diuretic dose in response to symptoms of fluid retention. Patients who are unable to independently manage a flexible diuretic regimen should be advised to contact their heart failure or cardiac rehabilitation nurse or GP for guidance on adjustment of their diuretic dose.

## 3. Heart failure-approved beta-blockers should be considered for patients with CHF who:

- are already being treated with an ACEI
- are euvolaemic and clinically stable
- have CHF in NYHA classes I-III.<sup>5</sup>

The dose should be titrated to the maximum tolerated dose of beta-blocker shown to be of benefit in major clinical trials (see [Appendix E](#)).

## 4. Aldosterone antagonists should be considered for patients who remain symptomatic despite being treated with diuretics and an ACEI and have serum potassium <5.0 mmol/L and creatinine <0.22 mmol/L.<sup>5</sup>

- The addition of low doses of spironolactone to an ACEI has been shown to reduce the risk of death and hospitalisation in patients with CHF in NYHA Class III or IV.<sup>5</sup>
- Eplerenone is a selective aldosterone antagonist without anti-androgenic effects which has been shown to reduce cardiovascular mortality and hospitalisation in patients with mild CHF and is recommended for patients with NYHA Class II CHF.<sup>5</sup> There are currently PBS restrictions for the prescription of this medication.

## 5. Digoxin should be considered in patients with CHF who:

- have atrial fibrillation and who need control of their ventricular rate
- have moderately severe symptomatic CHF (NYHA Class III or IV) and remain symptomatic despite treatment with diuretics and ACEI therapy, but are unable to tolerate an ACEI or ARB.

Randomised controlled trials and meta-analyses have shown that digoxin reduces the signs and symptoms of CHF and improves exercise capacity when used alone or in combination with diuretics.<sup>5</sup>

Note that digoxin toxicity may occur, particularly in the presence of impaired renal function.<sup>29</sup> Low-dose digoxin (0.0625–0.125 mg) therapy may be as effective as a higher dose. Monitoring of the dose effect is required.

## 6. Supplementary use of ARBs

ARBs may also be considered for people with systolic CHF who remain symptomatic despite receiving ACEIs and beta-blockers.<sup>5</sup> However, the combination carries an increased risk of hyperkalaemia and renal impairment. This risk would dramatically increase if the patient is already taking an aldosterone antagonist. Patients intolerant of ACEIs/ARBs and beta-blockers should be referred to a heart failure specialist.

Care should be taken to aim for target doses from major trials as a higher dose has been demonstrated to be more effective than a lower dose at reducing morbidity and mortality in patients with systolic CHF.<sup>5</sup>

## 7. Polyunsaturated fatty acids

Evidence from trials demonstrates that a small reduction in mortality and cardiovascular-related hospital admissions may be achieved by the addition of one gram daily of n-3 polyunsaturated fatty acids for patients with CHF.<sup>5</sup>

## 8. Direct sinus node inhibitors

Ivabradine has PBS approval for the treatment of symptomatic CHF in the following circumstances:

- for patients with NYHA classes II or III with documented LVEF <35%
- in adult patients in sinus rhythm and with a heart rate at or above 77 beats per minute
- in combination with optimal standard CHF treatment which must include the maximum tolerated dose of HF-specific beta-blockers unless contraindicated or not tolerated.<sup>5</sup>

## 9. Iron

Research confirms that iron deficiency is common in patients with CHF and is an independent predictor of unfavourable outcomes. Supplementation in this population may improve prognosis, symptoms, sub-maximal exercise tolerance and quality of life.<sup>5</sup> Investigation and reversal of potential causes is necessary if iron deficiency is confirmed.

## 10. Complementary and alternative medicines (CAM)

Patients should ensure that their healthcare professionals are aware of any CAM that they may be taking. This is important as studies have reported that between half and a third of patients do not inform their GPs, specialist physicians and hospital healthcare professionals that they are taking CAM.<sup>37, 38</sup> This may have implications for the safe and effective use of prescribed medicines as well as exposing the patient to unnecessary harm from the use of CAM.

In general, there is a lack of evidence demonstrating benefit from the use of CAM in heart failure.<sup>5</sup> CAM is never a substitute for evidence-based prescription medicines such as ACEIs and beta-blockers. There is some evidence that co-enzyme Q10 at a dose of 100 mg three times a day may reduce the symptoms of CHF and hospitalisations.<sup>39</sup> However, it has not been shown to have an effect on survival. Co-enzyme Q10 may interact with warfarin or cause adverse gastro-intestinal effects and it is also costly. Use of this product, as with all CAM, should be discussed with the patient's cardiologist, GP and other healthcare professionals to ensure that its safety and effectiveness are evaluated and monitoring occurs if CAM use is trialled.

## EMERGING THERAPIES

### Angiotensin receptor neprilysin inhibitors (ARNI)

Sacubitril/valsartan (Entresto) is a new oral medicine which is a combination of a neprilysin inhibitor, (sacubitril) and an angiotensin receptor antagonist/blocker (valsartan). The evidence demonstrating the benefits of Entresto is primarily from the PARADIGM-HF trial. This randomised, double-blind, controlled trial compared sacubitril/valsartan with enalapril in 8442 adults with symptomatic HF (NYHA Class II to IV) with a LVEF of  $\leq 35\%$ . The majority of patients were taking standard, evidence-based therapies including beta-blockers (93%) and aldosterone antagonists (56%) at baseline. Trial participants had previously been taking a stable dose of ACEIs or ARBs (equivalent to 10 mg of enalapril or more) before the study began.

As sacubitril/valsartan is a new drug with only one published mid-size trial demonstrating its benefit at this stage, it should be used with caution. Dose titration and monitoring is required and the current recommendation is that this medication should only be prescribed by a heart failure specialist with access to a multidisciplinary team. Recommendations for prescribing sacubitril/valsartan are available from the National Institute for Health and Care Excellence website [Sacubitril valsartan for treating symptomatic chronic heart failure with reduced ejection fraction](#).

## Standard 6 – Devices in CHF management

### Objective

To ensure that patients with CHF are considered for suitability of devices and surgical interventions that may improve quality of life and reduce their risk of adverse events and mortality.

### Key points

- Decisions regarding devices in the management of CHF are complex and require specialist review and monitoring.
- Prophylactic implantation of implantable cardioverter defibrillators (ICDs) in patients with LV dysfunction has been shown to reduce mortality.<sup>5</sup>
- All patients should be provided with appropriate education and support and be aware of their device review schedule. Consideration should be given to appropriate deactivation of devices at the end of life. ICD activation may become undesirable if death by other causes is thought likely and imminent.<sup>40</sup> These issues are addressed further in Standard 8.
- Consultation or discussion with a heart transplant physician or heart transplant unit may be appropriate for selected patients.

**Table 6: Standard 6 – Devices in CHF management**

Standard 6	Detail	Action
Screening protocols and processes should be in place to identify potential candidates for CRT.	<p>Clinicians should ensure that CRT (with or without an ICD) is considered in patients:</p> <ul style="list-style-type: none"> <li>• in whom implantation of an ICD is planned to reduce the risk of sudden death; or</li> <li>• with CHF who fulfil each of the following criteria: <ul style="list-style-type: none"> <li>○ NYHA symptoms Class III–IV on treatment</li> <li>○ dilated CHF with LVEF <math>\leq 35\%</math></li> <li>○ QRS duration <math>\geq 120</math> ms</li> <li>○ sinus rhythm</li> <li>○ on optimal treatment and referred to a HF management program.<sup>5</sup></li> </ul> </li> </ul> <p>Clinicians should refer these patients for consideration of device implantation using local referral pathways.</p>	Refer appropriate patients for consideration of CRT device implantation using local referral pathways.
Screening protocols and processes should be in place to identify potential candidates for an ICD.	<p>Clinicians should ensure that ICD implantation is considered in patients with CHF who fulfil any of the following criteria:</p> <ul style="list-style-type: none"> <li>• survived cardiac arrest resulting from ventricular fibrillation or ventricular tachycardia not due to a transient or reversible cause</li> <li>• spontaneous sustained ventricular tachycardia in association with structural CHD</li> <li>• LVEF <math>\leq 30\%</math> measured at least one month after acute MI, or three months after coronary artery revascularisation surgery</li> <li>• symptomatic CHF and LVEF <math>\leq 35\%</math> on optimal treatment.<sup>5</sup></li> </ul>	Refer appropriate patients for consideration of an ICD using local referral pathways.

<p><b>Clinicians working with patients with CHF should be aware of appropriate triggers for a conversation relating to ICD deactivation.</b></p>	<p>Protocols should be developed locally with input from cardiology teams, physicians and device manufacturers to ensure that ICDs are deactivated appropriately according to the health status of the individual patient.<sup>40</sup></p> <p>If a patient with an ICD dies and the family is planning a cremation, it is important that the ICD is deactivated as there is a significant risk of explosion of the device when heated, which may cause structural damage and injury.<sup>41</sup></p>	<p>Conversations concerning ICD deactivation should begin early and continue during regular review of the device and ongoing care.</p> <p>Triggers for a conversation relating to ICD deactivation are provided in Table 6.1.</p>
<p><b>Refer select patients with advanced CHF for cardiac transplantation.</b></p>	<p>Protocols and screening processes should be in place to identify and refer select patients with end-stage CHF to an appropriate centre or specialist service for consideration for cardiac transplantation.</p>	<p>Refer patients for consideration of cardiac transplantation using local referral pathways.</p>

**Table 6.1: Triggers for a conversation relating to ICD deactivation<sup>6, 40</sup>**

- Insertion of an ICD
- Presence of a 'No Cardiopulmonary Resuscitation (CPR)' order
- Advanced age with deteriorating quality of life
- Refractory symptoms of a cardiac condition despite optimal therapy
- Patients with CHF who have three episodes of decompensation in six months related to disease progression
- A significant and permanent change in the ability to undertake activities of daily living
- Cardiac cachexia
- Resistant hyponatraemia
- Serum albumin <25 g/L
- Multiple shocks related to disease progression
- Comorbidities with a poor prognosis e.g. malignancy
- Change in cognitive function
- When developing an Advance Care Plan

## Standard 7 – Multidisciplinary and continuing care and rehabilitation for patients with chronic heart failure

### Objective

To ensure that all patients with CHF have access to:

- appropriate specialist medical review and management
- continuing care by a multidisciplinary, coordinated, comprehensive CHF management service including access to a rehabilitation program.

### Key points

#### Primary care

- Primary care clinicians can be empowered to lead multidisciplinary care to improve the health of patients with CHF. Involvement of a cardiologist or a general physician with an interest in cardiology has been shown to be effective in promoting optimal medication therapy, reducing hospital admissions and improving prognosis for patients with CHF and should be considered for all patients with CHF particularly where the underlying cause is uncertain.<sup>5</sup>
- Patients may gain significant benefit from the input of other specialty physicians such as geriatricians, psychiatrists, palliative care, renal and respiratory specialists.
- Many GPs use health pathways (or medical maps) to guide care and referral to the multidisciplinary team. It is important that the evidence-based recommendations in the Framework are built into health pathways to support best-practice management of patients with CHF. Similarly, LHDs and SHNs should align their in-patient guidelines and pathways on CHF with the Framework to standardise the treatment that is provided across the continuum of care between the community and hospital.

- The effective use of existing funding incentives facilitates multidisciplinary, evidence-based care for patients with CHF. The Practice Nurse Incentive Program (PNIP) provides funding for practice nurses and AHWs in general practice, with loading provided for ACCHS and rural areas. Further information is available on the [PNIP website](#).
- The Medicare Benefits Scheme (MBS) also provides payment for one health assessment every nine months for Aboriginal people (Item number 715) and the use of other follow-up item numbers (such as individual allied health service (10950–10970), team care arrangements (723) and GP management plan (721)) supports the provision of multidisciplinary care.

The MBS Chronic Disease Management (CDM) items provide incentives to establish and deliver telehealth services and may provide innovative opportunities to increase specialist involvement in the care of people with CHF living in regional and rural areas. Further information on the telehealth and MBS CDM items is available in the [Medicare benefits schedule book](#) and the ACI [Guidelines for the use of telehealth for clinical and non-clinical usage in NSW](#).

- A review of the MBS began in 2015 and it was expected to be completed in December 2016. The review will assess all current MBS items and the services they describe. The review will not address innovative funding models for people with chronic and complex conditions (such as CHF) as this is being considered by the Primary Health Care Advisory Group's report [Better outcomes for people with chronic and complex health conditions](#).<sup>42</sup> Further information on the review of the MBS is available at [About the Medicare benefits schedule review](#).

## Multidisciplinary care

Diagnosis and therapy for CHF in older people can be complicated by comorbidities and age-related changes and requires an integrated approach.

- An individualised management plan is recommended as a tool to support the coordination of multidisciplinary care between providers in community and hospital settings. A management plan may also be developed at the time of hospital discharge to facilitate coordinated, early care provision by healthcare providers in the community.
- Following hospitalisation, a copy of the Heart Failure Discharge Checklist should be provided for the patient, their GP, the cardiologist and the heart failure nurse to optimise treatment provision and care (see [Appendix F](#)). The checklist should be provided in addition to an individualised management plan.
- All patients with CHF should have access to individually tailored, disease management and rehabilitation services offered on an outpatient or community basis. These services should be multidisciplinary, they are usually coordinated by an RN with expertise in CHF management and they should address the special needs of patients with CHF<sup>5</sup> including:
  - education on the nature and disease progression of CHF
  - clinical monitoring to establish a baseline and symptom control
  - ongoing medication monitoring and dose adjustment
  - advice from specialist pharmacists to promote the correct use of medications
  - management of devices
  - promotion of self-management
  - psychosocial assessment
  - exercise programs
  - dietary advice
  - comprehensive follow-up
  - advance care planning and
  - patient information on when and how to access professional help.<sup>5</sup>
- Integrated Care and CDM staff employed by each LHD are accessible to primary care providers. These staff may be able to assist in linking patients to the multidisciplinary team if it is not possible to provide CHF specific multidisciplinary management due to limited capacity and resourcing, or where a patient has significant multiple comorbidities that impact on their function.
- In areas where there is a shortage of allied health providers, professional networks may provide opportunities for collaboration, sharing of resources and support. Mechanisms to share information and resources through professional meetings and videoconferencing should assist in this process. Existing staff may receive additional training in relevant skills such as exercise prescription to ensure that a comprehensive program can be offered. While it is recognised that not all centres will be able to maintain a CHF specific multidisciplinary management service, the strongest evidence for achieving optimal outcomes from these treatment strategies is based on specialised CHF multidisciplinary care.<sup>5</sup> LHDs and SHNs should develop strategies to ensure that expertise in the management of CHF is available in the local service area.
- The importance of referral to rehabilitation programs should be promoted to clinicians and AHWs in primary and acute care settings. When appropriate, Aboriginal people should be offered either a referral into a mainstream rehabilitation program<sup>23</sup> (where staff are able to provide a culturally respectful and safe environment for Aboriginal people) or referral to an Aboriginal specific program such as the [Aunty Jean's Good Health Team Program](#) (which provides health promotion, education and self-management to support a healthy lifestyle for Aboriginal people with chronic and complex care needs).
- There is also a range of programs that are used by LHDs to improve access to services and referral for Aboriginal people including 48-hour follow-up telephone calls after discharge from hospital.

- Health providers should encourage AHLOs and AHWs to participate in local in-service education sessions to upskill the workforce, develop capacity and strengthen links to the multidisciplinary team so that they can work in partnership with mainstream health providers to provide additional support to Aboriginal people with CHF.
- Cardiac rehabilitation services should focus on improving links with AHWs and community programs and consider formal clinical placements for community-based AHWs.
- Comprehensive discharge planning combined with follow-up support for older patients with CHF can significantly reduce re-admission rates and may improve health outcomes such as survival and quality of life (QOL) without increasing costs.<sup>5</sup> Effective communication between specialist services, GPs, community pharmacists and other health providers is critical to ensure that patients with CHF receive the right medications at the right doses at the right times and that care is integrated and coordinated. Inadequate communication between hospital and community-based healthcare staff is an important cause of sub-optimal care.

### Self-management

- As support for self-management underpins the aims of services, clinical team members should be trained in health behaviour change and deliver the service in partnership with the patient, their family and carers who are central to decision making and setting patient-centred achievable goals.
- Non-pharmacological measures are critical to the successful management of CHF. All clinicians treating patients with CHF should be able to provide advice on non-pharmacological interventions for the management of CHF. These interventions should include self-care measures such as daily weight monitoring, fluid restriction, limiting salt intake to 2 g per day, the importance of diet and exercise, and regular monitoring and follow-up.
- Additional educational resources and further information and support for patients, their family and carers should be made readily available in the main community languages in the local area with appropriate use of interpreter services for consultations.
- Self-management support such as health coaching may be available through the integrated care programs and initiatives or the [Get Healthy](#) telephone coaching service for those patients likely to benefit.



**Table 7: Standard 7 – Multidisciplinary and continuing care and rehabilitation for patients with CHF**

Standard 7	Detail	Action
<p><b>Refer patients with CHF for specialist review.</b></p>	<p>Patients admitted to hospital with CHF should be referred to a cardiologist or a general physician and other specialists (if indicated) for review and advice on management to improve patient outcomes.</p> <p>Patients with CHF in the community should also be considered for cardiology and specialist referral to support optimal management.</p>	<p>Refer to a cardiologist or general physician and other specialist physicians if indicated.</p>
<p><b>A multidisciplinary, coordinated and integrated approach to management is recommended for patients with CHF.</b></p>	<p>Effective communication and linkages between primary care, hospitals, CDMS, integrated care and community-based services facilitates comprehensive, multidisciplinary care provision.</p> <p>Involvement of allied health providers and AHWs is important to provide advice and support for patients.</p> <p>An individualised management plan is a valuable tool to assist with the coordination of multidisciplinary care between providers.</p>	<p>Refer patients to allied health and AHWs when indicated.</p> <p>Patients discharged from hospital should have an individually tailored multidisciplinary management plan prompt follow-up with their GP and specialist, referral to a CHF management program (if available) and a CHF Action Plan (see <a href="#">Appendix G</a>) describing when and how to seek professional help.</p>
<p><b>Patients with CHF should have access to cardiac rehabilitation services.</b></p>	<p>Cardiac rehabilitation reduces the likelihood of further cardiac events, reduces the risk factors for CHD, improves quality of life and reduces mortality.</p>	<p>Refer patients to cardiac rehabilitation services providing that there are no contraindications.</p>

## Standard 8 – Palliative care for patients with end-stage heart failure

### Objective

To maximise the quality of life and comfort of patients with CHF approaching the end of life and provide psychosocial support to the patient, their family and carers.

### Key points

- Patients with advanced symptoms despite optimal pharmacological and non-pharmacological management and with the strong possibility of death within 12 months<sup>43</sup> should have access to quality care from the multidisciplinary team including assessment of need for palliative care services.
  - While a palliative approach is integrated across the CHF illness trajectory, access to specialist palliative care services is appropriate where an individual has symptoms for which first-line treatment has been ineffective or where there is psychosocial or family and carer distress.
  - The aim of palliative care is effective relief from symptoms, delivering information about end-stage interventions and support for patients, their family and carers. Provision of information and support on advance care planning and end of life decisions is also important.
  - Palliative care knowledge and expertise should be available to patients based on assessed need in their homes and in institutional settings including acute hospitals, hospices and residential aged care facilities.
- The core elements of advance care planning are the early and ongoing discussion of end of life issues with patients, their family and carers.<sup>44</sup> These conversations should aim to:
    - optimise forward planning for when the patient's health deteriorates, particularly if the patient is unable to make decisions about their own treatment and care
    - avoid non-beneficial treatments and investigations
    - limit distress to patients, their family and carers at the end of life.

Details of advance care planning for patients with CHF, including a checklist of steps to facilitate comprehensive discussion and planning, are included in [Multidisciplinary care for people with chronic heart failure: Principles and recommendations for best practice](#) and [Advance planning for quality care at the end of life: Action plan 2013–2018](#).<sup>6, 44</sup> It is important to consider providing education for AHLOs in the acute care setting and AHWs who predominantly work in the community, on advance care planning and end of life care so that they are better equipped to offer culturally safe support for Aboriginal community members nearing the end of their life. Information on advance care planning for Aboriginal people is available on the start2talk [Resources for aboriginal health workers](#) webpage.

It is also important for non-Aboriginal staff to be trained to work with local Aboriginal communities to provide culturally appropriate support and management at the end of life.

**Table 8: Standard 8 – Palliative care for patients with end-stage heart failure**

Standard 8	Detail	Action
All patients with a diagnosis of CHF should receive information on their likely prognosis. Goals of care should be developed with the patient, their family and carers including discussion on advance care planning.	Clinicians in multidisciplinary CHF management services should ensure that appropriate information on the common illness trajectory for CHF and advance care planning is included as standard components of the service delivery for discussion with people who have CHF and are being managed by their service. <sup>6,44</sup>	Discuss the trajectory of illness with patients, their family and carers and establish patient-centred goals of care and advance care planning.
Patients with CHF approaching or reaching the end of life should have symptom management and access to appropriate palliative care services based on assessed need.	Palliative care protocols should consider the appropriate management of patients with CHF including deactivation of devices at the end of life. <sup>6,40</sup>	Referral for palliative care assessment should be based on assessed needs and processes should be in place between CHF services and specialist palliative care services.

GPs and other clinicians should be aware that people with CHF have a worse prognosis than those with many common cancers.<sup>45</sup> The quality of life and symptom prevalence of patients with severe CHF, especially those with NYHA Class IV CHF is comparable to that of end-stage cancer, AIDS, chronic obstructive pulmonary disease (COPD) and chronic kidney disease.<sup>45</sup> While the course of the illness can still be unpredictable and the hospice model may not always be suitable, referral to specialist palliative care services for patients with end-stage CHF is currently under-utilised in the context of life-limiting illnesses.<sup>5</sup>

Some markers of poor prognosis which indicate the need to undertake an assessment of unmet needs as a person approaches or reaches the end of life and that may prompt a discussion of palliative care in CHF may include:

- advanced age
- NYHA Class IV symptoms
- recurrent hospitalisation for worsening CHF and/or a related diagnosis with optimum tolerated conventional medications and no identifiable reversible precipitant
- failure to respond promptly to adjustments in vasodilators or diuretics
- worsening renal function
- cardiac cachexia
- low sodium concentration
- refractory hypotension necessitating withdrawal of medical therapy.<sup>5</sup>

#### SYMPTOM MANAGEMENT IN END-STAGE HEART FAILURE

CHF most commonly causes dyspnoea, orthopnoea, paroxysmal nocturnal dyspnoea and fatigue, but patients may also experience anxiety or depression, anorexia and cachexia, disordered sleep, cough, nausea, ascites and abdominal bloating, as well as pain due to numerous mechanisms including angina pectoris, liver capsule distension and lower limb swelling.<sup>46</sup>

Symptom assessment and management is an important focus of care.

As a patient's CHF progresses, less focus should be placed on the treatment of risk factors such as hyperlipidaemia and greater efforts should be made to manage the current symptom burden.<sup>46</sup>

The information in Standard 8 aligns with the principles detailed in the national standards for palliative care which promote holistic care, working in partnership with patients, their family and carers and ongoing needs assessment to provide support at the end of life.<sup>47</sup>

#### DEACTIVATION OF DEVICES

As the indications for ICD implantation expand, the number of people living with these devices continues to grow. Preserving quality of life during end of life care and ensuring a dignified and peaceful death means that discussion with this patient group regarding ICD deactivation at an appropriate time must be considered.<sup>40</sup>

## Standard 9 – Monitoring of quality and outcome indicators

### Objective

To ensure that data is:

- collected on quality and outcome indicators regarding patients with CHF who are hospitalised or who are managed in the community
- used by clinicians as part of local quality assurance initiatives to identify gaps in service delivery, improve patient care and facilitate benchmarking between hospitals in future.

### Key points

- Key performance indicators (KPIs) should reflect the priorities and measure progress against the nine standards outlined in the Framework.
- KPIs should:
  - represent a balance of the key aspects of the system they seek to measure
  - be feasible to collect and report
  - provide feedback on achievements as well as on areas for improvement.
- Robust, reliable information regarding progress is essential to develop effective health policies and services, support the integration and better coordination of treatment and care and improve patient outcome and experience.
- KPIs should be reported separately for Aboriginal people to monitor equity of access to services and identify and address disparities at an early stage.

**Table 9: Standard 9 – Monitoring of quality and outcome indicators**

Standard 9	Detail	Action
Strategies to record and provide timely feedback on designated process and outcome indicators to improve quality of care should be developed by health providers.	<p>Clinicians should work towards establishing mechanisms for recording process and outcome measures (ideally using electronic tools) to facilitate timely feedback to clinicians to link into local quality improvement processes.</p> <p>Feedback should be used to assess service provision and patient outcome and experience.</p> <p>If challenges to service delivery are identified, the executive, managers and clinical teams should work together to address the limitations.</p> <p>Table 9.1 provides a list of suggested KPIs based on evidence for improved outcomes associated with specific aspects of care.<sup>5,6</sup> These KPIs are provided to help health professionals, planners and policy makers monitor multidisciplinary CHF care and improve its effectiveness.<sup>6</sup></p>	<p>Until a state or national minimum data set has been developed, collect the five variables described in Table 9.1.</p> <p>Develop local data collection processes and record KPIs on process and outcomes of care until state-wide data collection and reporting is available electronically.</p> <p>Discuss KPIs locally and use the results to improve the quality of care provided.</p>

Table 9.1 provides a list of suggested KPIs based on evidence for improved outcomes associated with specific aspects of care.<sup>5, 6</sup>

The quality of CHF care should be monitored, and protocols and systems should be modified in response to the measured outcomes. Potentially useful performance KPIs include process-related measures (e.g. the proportion of patients receiving target doses of ACEIs) and outcome-related measures (e.g. the proportion of patients readmitted to hospital over a set period).

It is expected that the standards and requirements outlined in this Framework will direct service improvement for patients with CHF. Progress should be monitored at LHDs, SHNs, PHNs, general practitioner and ACCHS levels and through a range of state-wide initiatives such as the assessment of clinical variation.

The monitoring and reporting process aims to establish quality improvement processes within available resources. For example, monitoring may involve a selected sample of patients over a limited time period, rather than monitoring all patients managed by a service.

<b>Table 9.1: Suggested key performance indicators for heart failure services<sup>6</sup></b>	
<b>Measure</b>	<b>Timing</b>
Referral to specialised multidisciplinary CHF team	N/A
Documented echocardiography	At enrolment or time of diagnosis Reassess every two years
Referral to GP, with heart failure plan and written discharge summary	On discharge
Early discussion on an Advance Care Plan	As the patient's condition deteriorates
Death	Within 28 days of hospitalisation or commencing heart failure program

Adapted from *Guidelines for prevention, detection and management of chronic heart failure*

Local teams may choose to collect additional data and a list of supplementary variables that may be useful is included in [Appendix H](#).

# Section 2

## Part two – Background and context

### Background

#### Chronic heart failure characteristics

CHF is a complex clinical syndrome with typical symptoms such as dyspnoea and fatigue that can occur at rest or on effort, and is characterised by objective evidence of an underlying structural abnormality or cardiac dysfunction that impairs the ability of the ventricle of the heart to fill with or eject blood (particularly during physical activity). A diagnosis of CHF may be further strengthened by improvement in symptoms in response to treatment.<sup>5</sup>

Common causes of CHF include CHD, previous MI, hypertension, cardiomyopathy, diabetes, valvular disease, chronic arrhythmia and thyroid dysfunction. The disease trajectory for CHF is difficult to determine and may span from months to many years with a steady decline in health status and quality of life.

#### NSW initiatives to improve the management of CHF

Following the publication of the initial Framework, a range of initiatives and strategies were introduced to improve the provision of quality care through better coordination and stronger partnerships between healthcare providers including primary care and ACCHSs and empowering patients to actively participate in their care. These strategies include:

- integrated care initiatives, consisting of:
  - risk stratification<sup>48</sup>
  - patient reported measures (outcome and experience)
  - chronic disease management services
- [Chronic Care for Aboriginal People \(CCAP\)](#)
- the person-centred medical home.

There is also an ongoing statewide focus on unwarranted clinical variation and unplanned re-admission to hospitals throughout NSW.

In 2011, the eight former Area Health Services in NSW were divided to create 15 Local Health Districts (LHDs) to improve health service provision to the local populations.

A number of changes have also occurred in community health with the transition from Divisions of General practice to Medicare Locals (ML) in 2010 which was driven by factors such as changes in the health needs of the population, the organisation of the workforce, and advances in medical care. The Medicare Locals were part of the Australian Government's National Health Reform and were established to coordinate primary healthcare delivery, address local healthcare priorities, support health professionals and improve access to primary care.

In 2015, the Medicare Locals were disbanded and PHNs were established to increase the efficiency and effectiveness of medical services for patients, particularly those at risk of poor health outcomes, and improve coordination of care to ensure patients receive the right care in the right place at the right time.

There has also been cross government investment to support the national Closing the Gap Framework. ACCHSs have played a central role in building healthier Aboriginal communities focusing on prevention, early intervention and comprehensive care. The ACCHSs use the patient-centred medical home model, family-centred primary health care and comprehensive, team-based care to support the needs of Aboriginal people.

## Case for change

The evidence base has evolved since publication of the initial clinical service framework in 2003, with new evidence supporting the role of multidisciplinary care, new pharmacological interventions and devices that may improve survival and quality of life. Another important Australian development has been the injection of funds into the primary care sector supporting and reimbursing continuing care for individuals with CHF that require coordination of care by the multidisciplinary team. The use of MBS items for care planning, case conferencing, HMR and reimbursement of allied health services facilitate implementing CHF care in the community.<sup>49</sup> Innovation and advancements in telehealth, coupled with the addition of telehealth consultation item numbers to the MBS also provides new opportunities.

In March 2016, the Australian federal government announced \$21 million in funding for the Healthcare Homes Trial in 200 general practices across Australia for people with chronic disease. This model keeps the coordination of care as close to a person's home as possible and GP practices or ACCHS act as coordinators of all medical, allied health and out-of-hospital services. Bundled quarterly payments will be made to practices involved in the trial to allow for flexibility in care provision and shared care planning. The Healthcare Homes trial is scheduled to commence in July 2017. Further information on the Healthcare Homes trial is available at [A Healthier Medicare for chronically-ill patients](#).

Despite these advances, evidence continues to emerge that the current provision of care is often sub-optimal with limited use of best-practice guidelines and there is an inequity of care particularly comparing city and rural areas.<sup>7, 29, 50, 51</sup> The 2011 update to NHFA and CSANZ [Guidelines for the prevention, detection and management of chronic heart failure in Australia](#)<sup>5</sup> and the NHFA best practice guideline [Multidisciplinary care for people with chronic heart failure: Principles and recommendations for best practice](#)<sup>6</sup> readily provide evidence-based guidance on CHF management. The challenge now is how to translate these guidelines into practice as effectively and efficiently as possible. To that end, the *NSW clinical service framework for chronic heart failure* 2016 should be used by LHDs, SHNs, PHNs,

GPs, ACCHS and other service providers in conjunction with the national guideline documents to assist in their translation into evidence-based, best-practice care for people with CHF.

As highlighted in the NHFA/CSANZ guidelines, strong evidence of efficacy in reducing both CHF specific and all-cause hospitalisation and mortality for patients with CHF supports the provision of specialist-led, multidisciplinary, hospital-based CHF management programs. In the context of the viability and sustainability of local health services across NSW it is recognised that broad implementation of such highly specialised services is not always possible. However, this evidence highlights the role of specialist knowledge within the multidisciplinary CHF team which service planners and managers should consider when structuring services and setting professional development programs for staff managing patients with CHF.

Best-practice management of CHF involves evidence-based, multidisciplinary, patient-centred care which leads to better health outcomes. A CHF model of care is required to achieve this outcome. Although CHF management programs exist, ensuring access for everyone remains a challenge particularly for marginalised populations such as Aboriginal peoples, those from non-metropolitan areas, people from culturally and linguistically diverse (CALD) populations and people from lower socio-economic backgrounds.<sup>7</sup> Providing education and support to AHWs is one of the key elements to improving the health of Aboriginal people as they are able to build trust and rapport within communities to support patients to understand and manage chronic conditions such as CHF.

## Chronic heart failure separations, bed days and average length of stay

Analysis relating to data on heart failure separations from NSW public hospitals between 2009–10 and 2013–14 showed that the provision of treatment to people with heart failure as a primary diagnosis is resource intensive. There were 157,000 separations where heart failure was coded as either a primary diagnosis or within the first five positions of diagnoses coded. Of these, there were over 70,000 separations with heart failure as a primary diagnosis which resulted in over 491,000 bed days used. Table 10 details the number of separations, bed days used and the average length of stay (ALOS) for each financial year.

Financial year	Separations	Bed days	Average LOS
2009–10	12,129	86,638	7.1
2010–11	13,876	100,411	7.2
2011–12	14,358	101,760	7.1
2012–13	14,747	100,641	6.8
2013–14	15,213	101,606	6.7
<b>Total</b>	<b>70,323</b>	<b>491,056</b>	<b>7.0</b>

Data extracted from the NSW Health SAPHaRI system May 2015.

Despite a fall in ALOS, the number of bed days has remained relatively stable and the number of separations with a principal diagnosis of heart failure has grown each year with a total increase of more than 25% over the five-year period.

The top ten diagnosis related groups (DRGs) by volume are listed in Table 11. The DRGs which require intensive use of resources such as F62A (heart failure and shock with catastrophic complications/comorbidities) account for a significant part of the overall activity.

**Table 11: Top 10 diagnosis-related groups and number of separations 2009–10 to 2013–14**

DRG	Separations
F62B Heart failure and shock without catastrophic complications/comorbidities	46,453
F62A Heart failure and shock with catastrophic complications/comorbidities	19,070
F43Z Circulatory system diagnosis with non-invasive ventilation	1,159
F42A Circulatory disorders without AMI with invasive cardiac investigative procedure with catastrophic or severe complications/comorbidities	1,117
F42B Circulatory disorders without AMI with invasive cardiac investigative procedure without catastrophic or severe complications/comorbidities	525
F42C Circulatory disorders without AMI with invasive cardiac investigative procedure, same day	240
F01B Implantation or replacement of AICD, total system without catastrophic complications/comorbidities	187
F40A Circulatory system diagnosis with ventilator support with catastrophic complications/comorbidities	178
A06B Tracheostomy with ventilation >95 hours without catastrophic complications/comorbidities or tracheostomy/ventilation >95 hours with catastrophic complications/comorbidities	151
F01A Implantation or replacement of AICD, total system with catastrophic complications/comorbidities	146

Over the five-year period, the total inpatient cost for patients with a principal diagnosis of CHF was almost \$531 m.

As the current growth trends in hospital separations outweighs the decline in average length of stay, it is likely that the total cost for treating people with heart failure in hospital will continue to grow.



## Unwarranted clinical variation

In May 2016, the NSW Bureau of Health Information released a report highlighting the wide variation in standardised rates of admission for people with CHF. Across NSW public hospitals in the period July 2009–June 2012, there were 28,877 hospitalisations with a principal diagnosis of congestive heart failure (CHF). Of these, 6,751 (23%) were followed by an unplanned re-admission within 30 days of discharge. Statistical models were used to take account of the case mix (or risk profile of patients) for each hospital. The resulting risk-standardised re-admission rate ranged across hospitals from 16 to 38 per 100 hospitalisations.

Effectiveness was also assessed in terms of deaths within 30 days of hospital admission, using a risk-standardised mortality rate (RSMR). In the period July 2009–June 2012, 25,437 patients were hospitalised for CHF one or more times. Of these, 3,770 (15%) died within 30 days of admission. Across NSW public hospitals, the risk-standardised mortality rate ranged from 3 to 27 per 100 patients.<sup>52</sup>

Data from the Australian Atlas of Healthcare Variation also demonstrate variation in hospital admissions for people with CHF in Australia. In 2012–13, NSW had the highest number of admissions for CHF per 100,000 people aged 40 years and over and admission rates were highest in areas with low socio-economic status.<sup>53</sup> As the NSW Health system redesigns itself to better meet the health challenges of the future including the delivery of better healthcare, improving patient experience and outcomes and providing value for money in line with the NSW State Health Plan,<sup>54</sup> it is timely to again provide a document designed to assist clinicians, individual health providers and LHDs, SHNs, PHNs, GPs and ACCHS to provide evidence-based care for people with CHF in partnership with primary care, community service providers and other stakeholders.

## Integrated care for people with chronic conditions

The NSW government has committed \$120 million over six years (2014–19) to plan and implement innovative models of integrated care across NSW. These models aim to provide the right care, in the right place, at the right time in partnership with the patient, their family and carers to meet their physical, psychological and emotional needs. LHDs and SHNs are working in close partnership with primary, community and acute care providers across the public, private and not-for-profit sectors to better coordinate care provision according to the availability of local teams and resources to ultimately improve the patient experience and health outcomes.<sup>54</sup>

The Integrated Care strategy includes key enablers such as risk stratification, patient reported measures and electronic health technologies.

### RISK STRATIFICATION

[\*The patient identification and selection handbook, the NSW guide to risk stratification\*](#), was released in October 2015 and provides a guide for health service providers who are establishing or expanding risk stratification approaches. It also outlines a methodology to deliver integrated care initiatives, building on international evidence and the results of the Chronic Disease Management Program (CDMP) evaluation.

### PATIENT REPORTED OUTCOME MEASURES

Patient reported outcome measures (PROM) and patient reported experience measures (PREM) support the integrated care strategy by providing information on the patient's experience and perception of their healthcare and how illness or care impacts on their health and wellbeing.

PROMs and PREMs provide real-time information so that there is an opportunity for a more timely response to identified issues and local service improvement, a more realistic gauge of patient satisfaction and further support for integration of care. PROMs and PREMs will be important to evaluate the new systems of integration and collaborative models of care.

## Chronic disease services

In 2009 the NSW Health CDMP Connecting Care in the Community was implemented by LHDs and SHNs across NSW. Some Medicare Locals (MLs) were also involved in the program and they partnered with LHDs to deliver care.

The CDMP aimed to support people with chronic disease to better manage their health conditions, access appropriate services in order to improve health outcomes and quality of life, prevent complications and reduce the need for hospitalisation. Specifically, the program delivered a suite of interventions including care coordination and self-management for patients with CHF, CAD, COPD, diabetes and hypertension, recognising that people with these diseases often have comorbidities such as depression, arthritis and dementia.

In 2011, The George Institute began an independent review of the CDMP. The state-wide evaluation of the Program demonstrated the abilities developed by the public health system to better link community-based and hospital services to the needs of the patient. The evaluation has provided important insights for the implementation of the Integrated Care Program initiatives.

Following the evaluation of the CDMP, a redesign process was used to align the CDMP with the Integrated Care Program. Once fully implemented, it is expected that there will be a single, consistent model for local delivery of integrated care to people with chronic conditions in NSW. The model will be complemented by the ongoing work by LHDs and SHNs and their partners to develop and deliver integrated care initiatives for locally-specified patient populations. Implementation of the redesigned Integrated Care for Patients with Chronic Conditions model will be a phased approach during 2016–17. In the meantime, LHDs will continue to deliver chronic disease management services.

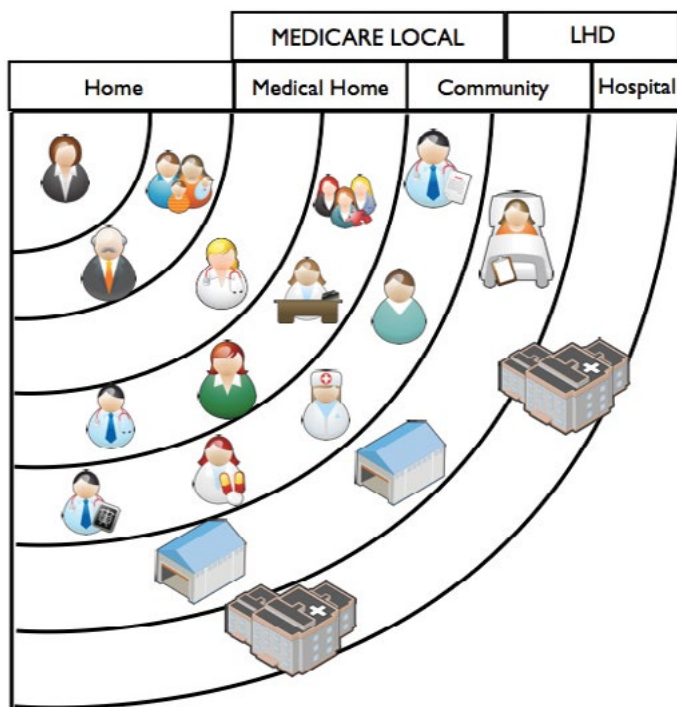
## Person-centred medical home

There is an increasing recognition at both the national and international level that health services for people with chronic and complex conditions need to be reconfigured to be more integrated, coordinated and patient focused throughout the continuum of care. People with CHF often have multiple comorbidities and physiological and psychosocial needs that change over time. Access to different levels of care at various stages of the disease trajectory is needed to reduce presentations to hospital.

The integration of care provides an opportunity to reduce unplanned admissions by early identification of patients with increasing care needs and planned admission for rapid assessment and treatment. The person-centred medical home model supports this approach by appointing a primary health provider (usually a GP), working in partnership with a multidisciplinary team, to coordinate care provision (see Figure 2). As the GP plays a central coordinating role, they may be able to identify people that are suitable for direct admission rather than an emergency hospital presentation.<sup>55</sup>

The person-centred medical home model also promotes patient self-management and increasing involvement in their own care. This enables patients to be active managers of their healthcare through increased awareness of healthy lifestyle choices, disease triggers and identification and management of early signs and symptoms of acute episodes or exacerbations.

The ACI has developed [Navigating the Healthcare Neighbourhood](#) which is a website and community of interest to help inform the healthcare community about the person-centred medical home model and how it fits within the NSW healthcare system.



**Figure 2: Person-centred medical home**  
 (Image reproduced with permission from T Lembke (2016))

**Chronic Care for Aboriginal People**

The role of the Chronic Care for Aboriginal People (CCAP) program is to provide practical methods to improve access to chronic disease services for Aboriginal people, build working relationships between Aboriginal health and chronic disease service providers in NSW and identify and share best practice in meeting the needs of Aboriginal people with chronic disease.

The CCAP program has developed and implemented a number of strategies and initiatives across NSW that facilitate and support both local and state-wide initiatives that optimise access to appropriate chronic disease services by Aboriginal people. These include a model of care for Aboriginal people, the 48 Hour Follow-Up program that links discharged patients back to their GP and 1 Deadly Step (a community screening and follow-up event which is held at a number of sites across the state).

**Partnerships with Aboriginal health service providers**

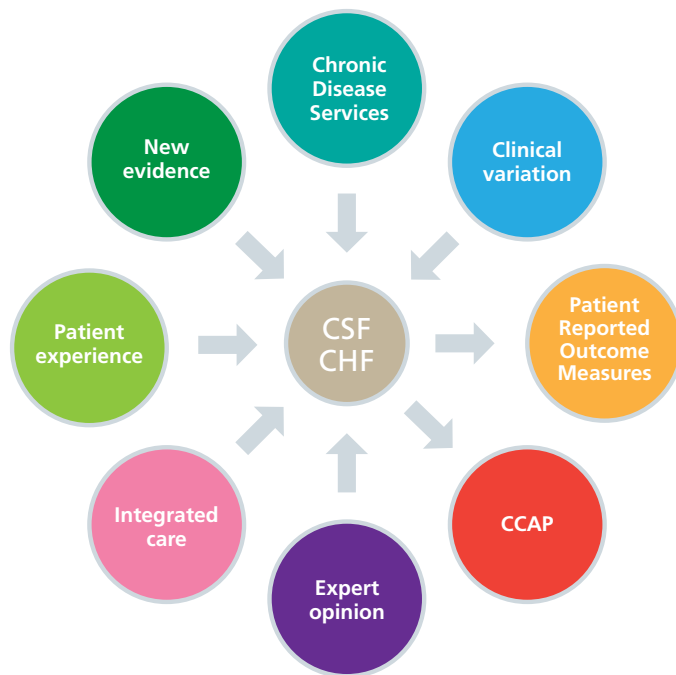
ACCHSs provide holistic healthcare to address the physical, social, emotional and spiritual needs of their clients. These services include preventive health, crisis intervention, emergency care, treatment of acute illness and long-term management for chronic conditions. It is important for mainstream health providers to develop effective partnerships with local Aboriginal health service providers such as the AMS to improve cardiac health and life expectancy, as the highest burden of cardiovascular disease disproportionately is amongst Aboriginal communities.

Including AHWs in educational activities and providing support by developing relationships and networking with the multidisciplinary team are key elements to improving the health of Aboriginal people. AHWs are able to build trust and rapport within communities which supports patients to understand and manage chronic conditions such as CHF. The development of referral pathways from the acute to the community setting also provides an important opportunity to build relationships between healthcare providers.

AHLOs are able to assist with discharge planning for Aboriginal people in hospital, referrals to appropriate care pathways for both mainstream and community services and to care after discharge from hospital including outpatient services, LHD programs and services, and community and other government and non-government services.

## Impact of changes to health service provision

All of the initiatives and changes described in the background section have impacted on service provision in the NSW Health system and they have been considered in the review of the Clinical Service Framework for CHF (see Figure 3).



**Figure 3: Changes in the NSW health system impacting on care provision for people with CHF**

## Case studies

The typical patient with CHF is elderly (and often over 80 years of age), male, lives alone and is socially isolated. All of these factors are indicators for poor health outcomes. There is also evidence to show that people who are socially isolated are at high risk of repeat hospitalisation.<sup>56</sup>

The following case studies reflect examples of poor and ideal management of people with CHF that consider these factors in relation to self-management of the individual's health needs.

## Case study 1: John

John is an 81-year-old man who lives alone. He does not have a close relationship with his extended family who live interstate and his daughter has recently moved to Dubai for work. John had a heart attack when he was 55 years old.

He lives on the top floor of a building with no lift access and his exercise capacity is poor so he is not able to leave his home easily. John has a regular GP who he visits when he needs a 'check-up' or scripts for his medication.

Recently, John feels as though he has been slowing down, he is very short of breath and his legs are swelling. Last week his breathing became so difficult that he called an ambulance and he was admitted to hospital for six days.

John was commenced on new medications in hospital, he says that the doctors and nurses told him that he had heart failure when he was at the hospital and he should see his GP three days after discharge home.

John feels that he was given a lot of information in hospital and he sometimes forgets things when he doesn't have them written down. John says that he understood some of what the doctor said, but not everything. He didn't want to ask too many questions because he knows how busy the doctors and nurses are and he didn't want to take up their time. John was provided with three days' supply of medications on discharge from hospital which was to be reviewed and re-prescribed by his GP at his appointment three days after discharge.

John is happy to be home and feels better, but he doesn't realise that he needs ongoing treatment for his heart failure, he doesn't know how to manage it or that it is important to see his GP. John didn't make a follow-up appointment with his GP because he thought that his heart failure had been treated at the hospital.

Over the next week, John's breathlessness increases, his ankles begin to swell again and he finished his medications a few days ago. John's neighbour is becoming concerned and makes him chicken soup and encourages him to drink.

After eight days at home John notices that he is struggling to breathe again and during the evening he becomes quite panicky and calls an ambulance because he thinks he may have heart failure again.



### REFLECTIONS

In John's case, he has not been given the opportunity to learn about his heart condition or what he can do to manage his symptoms. He has no family support. He lives in a unit up several flights of stairs and as his exercise capacity is poor, he rarely leaves his unit. A referral to a social worker while in hospital may have resulted in discussions on options for alternative housing for John. He requires support to connect him to community services to improve his quality of life. Overall, it is important to link people like John to the heart failure service or other chronic care services to improve their knowledge about CHF, provide self-management support over time, and to facilitate follow-up appointments and referrals to other services as required.

## Case study 2: Mai

Mai is an 80-year-old Chinese woman who lives alone and is supported by her daughter who lives nearby.

Her English language is limited as her first language is Mandarin, however, she has many friends that she knows through church, who regularly visit, and her granddaughter visits every day after school.

Recently, Mai was admitted to hospital with shortness of breath and swollen ankles and she was diagnosed with heart failure.

On the second day of her admission, the heart failure (HF) nurse visited Mai with an interpreter and they agreed that they needed to meet again with her daughter in attendance to plan her ongoing management. The nurse and interpreter met with Mai and her daughter before discharge to plan the support she would need to go home. The discussion included Mai's immediate self-management plan and arranging a date and time for a home visit within the next week. Mai and her daughter were given written information in Mandarin with details on what to do if she had further symptoms.

The HF nurse and the healthcare interpreter visited Mai and her daughter in her home to assess her condition, her knowledge about heart failure and her capacity to self-manage her heart failure. The nurse provided health education for Mai and her daughter and together they developed an individualised care plan to optimise her care which included links to other healthcare providers when needed, strategies she can use to self-monitor her CHF and what to do if her signs and symptoms are not within acceptable ranges.

The HF nurse made sure Mai and her daughter had linked to her regular GP and she was able to make the visit to her cardiologist in two weeks' time. Mai and her daughter were provided with further written information on heart failure management in Mandarin and the nurse made sure they had the contact numbers for her healthcare providers,

including the HF nurse. She was encouraged to call if she had any questions or needed assistance. It was agreed that the HF nurse would phone Mai, using the Telephone Interpreter Service, within the next week and plan another home visit in two weeks' time.

At this visit the nurse will check on Mai's progress and understanding of the information that was provided on how to manage her CHF and when and how to seek assistance.

The HF nurse was satisfied Mai and her daughter were managing well and wrote to her GP and cardiologist with a summary of the first home visit.



### REFLECTIONS

Although Mai has limited English language, she understands her condition and has been provided with information in her own language. Her daughter has been involved in developing her discharge and care plan. She knows how treatment works, how to monitor her CHF and when to call for help. Mai and her daughter feel that they have the knowledge to manage her care at home with support from her healthcare providers.

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# Section 3

## Appendix A: Drugs to avoid in CHF

- Antiarrhythmic agents (apart from beta-blockers and amiodarone).
- Non-dihydropyridine calcium-channel blockers (verapamil, diltiazem).
- Tricyclic antidepressants.
- Non-steroidal anti-inflammatory drugs and COX-2 inhibitors.
- Clozapine.
- Thiazolidinediones (pioglitazone, rosiglitazone).
- Corticosteroids (glucocorticoids and mineralocorticoids).
- Tumour necrosis factor antagonist biologicals.
- Dronedarone has been associated with increased mortality in patients with NYHA Class IV CHF or NYHA Class II-III CHF with a recent decompensation requiring hospitalisation and is contraindicated in such patients.
- Trastuzumab has been associated with the development of reduced LVEF and heart failure. It is contraindicated in patients with symptomatic heart failure or reduced LVEF (< 45%). Baseline and periodic evaluation of cardiac status including assessment of LVEF should occur.
- Tyrosine kinase inhibitors such as sunitinib have been associated with hypertension, reduced LVEF and heart failure. The risk–benefit profile needs to be considered with these agents in patients with a history of symptomatic heart failure or cardiac disease. Baseline and periodic evaluation of LVEF should be considered, especially in the presence of cardiac risk factors.
- Moxonidine has been associated with increased mortality in patients with heart failure and is contraindicated in such patients.
- Metformin appears to be safe to use in recent analysis of patients with heart failure, except in cases of concomitant renal impairment.

Source: *Guidelines for the prevention, detection and management of chronic heart failure in Australia*. Updated October 2011; p28

## Appendix B: New York Heart Association classification of chronic heart failure

New York Heart Association classification of chronic heart failure		
NYHA grading	Objective assessment	Metabolic equivalent (MET)*
Class I	No limitations. Ordinary physical activity does not cause undue fatigue, dyspnoea or palpitations (asymptomatic LV dysfunction).	> 7
Class II	Slight limitation of physical activity. Ordinary physical activity results in fatigue, palpitations, dyspnoea or angina pectoris (mild CHF).	5
Class III	Marked limitation of physical activity. Less than ordinary physical activity leads to symptoms (moderate CHF).	2 - 3
Class IV	Unable to carry on any physical activity without discomfort. Symptoms of CHF present at rest (severe CHF).	1.6

\*MET (metabolic equivalent) is defined as the resting  $VO_2$  for a 40 year old 70 kg man. MET = 3.5 mL  $O_2$ /min/kg body weight.

Source: *Guidelines for the prevention, detection and management of chronic heart failure in Australia*. Updated October 2011.

## Appendix C: Framingham clinical criteria for the diagnosis of chronic heart failure

Framingham clinical criteria for the diagnosis of chronic heart failure	
Major criteria	Minor criteria
<ul style="list-style-type: none"><li>• Paroxysmal nocturnal dyspnoea</li><li>• Neck vein distention</li><li>• Rales</li><li>• Radiographic cardiomegaly (increasing heart size on chest radiography)</li><li>• Acute pulmonary oedema</li><li>• S3 gallop</li><li>• Increased central venous pressure (&gt;16 cm H<sub>2</sub>O at right atrium)</li><li>• Hepatojugular reflux</li><li>• Weight loss ≥ 4.5 kg in 5 days in response to treatment</li></ul>	<ul style="list-style-type: none"><li>• Bilateral ankle oedema</li><li>• Night cough</li><li>• Dyspnoea on ordinary exertion</li><li>• Hepatomegaly</li><li>• Pleural effusion</li><li>• Decrease in vital capacity by one third from maximum recorded</li><li>• Tachycardia (heart rate ≥ 120 beats per minute)</li></ul>

Source: Mahmood S, Levy D, Vasan R. The Framingham heart study and the epidemiology of cardiovascular disease: a historical perspective. *Lancet*. 2014;383(9921):999-1008.<sup>32</sup>

## Appendix D: Algorithm for the management of pulmonary oedema and exacerbations of CHF in general practice

**Table 12: Emergency management of suspected cardiogenic Acute Pulmonary Oedema (APO)**

<b>A (airway)</b>	<ul style="list-style-type: none"> <li>Exclude obstruction</li> </ul>
<b>B (breathing)</b>	<ul style="list-style-type: none"> <li>Hypoxaemia ( → oxygenation)</li> <li>Respiratory fatigue ( → mechanical ventilation)</li> </ul>
<b>C (circulation)</b>	<ul style="list-style-type: none"> <li>Heart rate/rhythm ( → anti-arrhythmics/cardioversion)</li> <li>Hypotension ( → inotropes/intra-aortic balloon pump)</li> </ul>
<b>D (differential diagnosis)</b>	<ul style="list-style-type: none"> <li>Cardiogenic APO</li> <li>Non-cardiogenic pulmonary oedema</li> <li>Acute exacerbation of airways disease</li> <li>Acute massive pulmonary embolism</li> <li>Pneumothorax</li> <li>Foreign body aspiration</li> <li>Hyperventilation syndrome</li> </ul>
<b>E (aetiology) (cardiogenic APO)</b>	<ul style="list-style-type: none"> <li>Precipitants</li> <li>Ischaemia, tachyarrhythmia, fluid overload, medicine</li> <li>Underlying pathology</li> <li>Systolic LV dysfunction – CHD, dilated cardiomyopathy, mitral regurgitation</li> <li>Diastolic LV dysfunction – hypertensive heart disease, hypertrophic cardiomyopathy, aortic stenosis</li> <li>Normal LV function – mitral stenosis</li> </ul>

Source: *Guidelines for the prevention, detection and management of chronic heart failure in Australia*. Updated October 2011. p44

## Appendix E: Dose initiation and titration schedules

### Examples of treatment doses for heart failure

ACE inhibitor		
Drug	Starting dose	Target dose
Enalapril	2.5 mg BD	10–20 mg BD
Lisinopril	2.5–5 mg daily	20–35 mg daily
Ramipril	1.25–2.5 mg daily	5 mg BD
Trandolopril	0.5–1 mg daily	4 mg daily
Captopril	6.25 mg TDS	50 mg TDS
Perindopril	2 mg daily	10 mg daily

Beta-blocker		
Drug	Starting dose	Target dose
Carvedilol	3.125 mg BD	25–50 mg BD
Metoprolol slow-release	23.75 mg daily	190 mg daily
Bisoprolol	1.25 mg daily	10 mg daily
Nebivolol	1.25 mg daily	10 mg daily

Angiotensin II receptor blocker		
Drug	Starting dose	Target dose
Candesartan	4–8 mg daily	32 mg daily
Valsartan	20–40 mg BD	160 mg BD
Irbesartan	75 mg daily	300 mg daily

Mineralocorticoid receptor antagonist treatment		
Drug	Starting dose	Target dose
Spironolactone	12.5–25 mg daily	50 mg daily
Eplerenone	25 mg daily	50 mg daily

Korczyk, D, Marwick, T, Kaye, G. *Fast facts: heart failure*. Oxford UK: Health Press Ltd; 2012.

Similar guidelines for target dosing are available in additional resources such as:

[2009 focused update incorporated into the American College of Cardiology/American Heart Association 2005 Guidelines for the diagnosis and management of heart failure in adults](#) and [2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure](#).

Source: National Heart Foundation of Australia. [Heart Online](http://www.heartonline.org.au/resources). [www.heartonline.org.au/resources]. Reviewed November 2014.

# Appendix F: Heart failure discharge checklist

**OFFICE USE LABEL:**

i.e. Patient name, MRN, address, phone numbers  
(3 spaces: 2 for patient and 1 for relative/carer),  
Medicare number, sex, next of kin

**Cause of HF:**  Ischaemia  Valvular  Dilated Cardiomyopathy  Hypertension  Other: \_\_\_\_\_

<b>HF Support Service:</b>		<b>Phone:</b>	
<b>GP:</b>		<b>Phone:</b>	
<b>Cardiologist:</b>		<b>Phone:</b>	
<b>Other contacts:</b>		<b>Phone:</b>	

<b>ECHO:</b> <input type="checkbox"/> Reduced EF <input type="checkbox"/> Preserved EF EF % _____ <input type="checkbox"/> No echo	<b>Current BP:</b> _____ <b>Sitting:</b> _____ <b>Standing:</b> _____	<b>Heart rate:</b> <input type="checkbox"/> Regular <input type="checkbox"/> Irregular <input type="checkbox"/> Paced	<b>Current weight:</b>	<b>Dry weight:</b>	<b>AICD:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Awaiting
--	--	--	------------------------	--------------------	--

**History:**  IHD  Diabetes  Obstructive apnoea  AF  Renal disease  COPD  Dementia  Depression  
 Cognitive impairment  Social isolation  Other: \_\_\_\_\_ Patient/family/carer updated  Yes  No

**ACEI/ARB:** \_\_\_\_\_  
 at target /  intolerant /  not indicated /  below target –  titration in progress: next due \_\_\_\_\_  
Reason why not indicated \_\_\_\_\_

**Beta-blocker:** \_\_\_\_\_  
 at target /  intolerant /  not indicated /  below target –  titration in progress: next due \_\_\_\_\_  
Reason why not indicated \_\_\_\_\_

**Warfarin/NOAC:** \_\_\_\_\_  
 at target /  below target /  intolerant /  not indicated \_\_\_\_\_  
Reason why not indicated \_\_\_\_\_

**NB: This section and the boxed patient information may be crossed out if the patient will not be using a flexible diuretic regimen**

**Will this patient be using a flexible diuretic regimen?**  Yes  No If yes, current diuretic: \_\_\_\_\_  
Dose: \_\_\_\_\_

**OVERLOAD:** If weight increases 2 kg in 2 days, increase dose to: \_\_\_\_\_  
and call your HF Nurse/GP for advice within 3 days

**DEHYDRATED:** If weight decreases by more than 2 kg below stable weight in 2 days, decrease dose to: \_\_\_\_\_  
and call your HF Nurse/GP for advice within 3 days

**EDUCATION:**

<input type="checkbox"/> Fluid restriction	<input type="checkbox"/> Medicine review
<input type="checkbox"/> Low and no added salt diet	<input type="checkbox"/> Follow-up appointment
<input type="checkbox"/> Daily weight monitoring	<input type="checkbox"/> Personalised written action plan ( <a href="#">Appendix G</a> )
	<input type="checkbox"/> Discuss Advance Care Directives

**AHLO present (for Aboriginal people)**  Yes  No **Referral to community AHW, ACCHS or AMS if appropriate**

**Does patient consent to 48-hour follow-up (for Aboriginal patients)?**  Yes  No

<b>Your heart failure support nurse:</b>		<b>Phone:</b>	
<b>Name of person completing form:</b>		<b>Signature:</b>	<b>Date:</b>

## Appendix G: Chronic heart failure action plan

**Note:** If you experience any new symptoms, existing symptoms worsen or you are worried, you should speak to your doctor or heart failure nurse. Use this action plan as a guide to what you should check daily, and who to call if your symptoms change.

### Every day:

- Weigh yourself and keep track of your weight.
- Restrict your fluid intake and salt intake as recommended by your doctor.
- Take your medicines as prescribed.
- Be physically active.
- Remember to call for medical assistance when the need arises (see below).

### Call your doctor or heart failure nurse as soon as possible if:

- you gain or lose more than 2 kilograms over 2 days
- you have worsening shortness of breath with your normal activities
- your heart is beating very quickly
- you are very dizzy, or you pass out (faint)
- your angina is getting worse
- there is increased swelling in your ankles, legs or abdomen
- you are coughing a lot – especially at night
- you are generally feeling more tired or sad than usual.

### When you have angina:

\*If calling 000 does not work on your mobile phone, try 112.

- Immediately stop and rest.
- If rest alone does not bring rapid or effective relief, take a dose of your angina medicine
- If the angina is not relieved within 5 minutes, take another dose of your angina medicine
- If the angina is not completely relieved within 10 minutes of onset by rest and medicine OR is severe OR gets worse quickly, **this is an emergency. Get help fast. Call Triple Zero (000)\* and ask for an ambulance.** Don't hang up. Wait for advice from the operator.

### Call Triple Zero (000)\* and ask for an ambulance if:

You suddenly have severe shortness of breath, or you are experiencing new 'blackouts'

\*If calling 000 does not work on your mobile phone, try 112.

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## Appendix H: Suggested key performance indicators for heart failure services

Measure	Timing
Referral to specialised multidisciplinary CHF team	N/A
Documented echocardiography	At enrolment or time of diagnosis Reassess every 2 years
Assessment of functional capacity	At enrolment, 12 weeks after commencing or at discharge
Prescription of ACE Inhibitor/ARB if indicated	At enrolment, 12 weeks after commencing or at discharge
ACEI /ARB is at recommended dosage	At enrolment, 12 weeks after commencing or at discharge
Prescription of beta blocker if indicated	At enrolment, 12 weeks after commencing or at discharge
Beta blocker is at recommended dosage if indicated	At enrolment, 12 weeks after commencing or at discharge
Warfarin prescribed	At enrolment, 12 weeks after commencing or at discharge
Medication adherence assessed	At enrolment, 12 weeks after commencing or at discharge
Pneumonia immunisation	At enrolment, 12 weeks after commencing or at discharge
Influenza immunisation	At enrolment, 12 weeks after commencing or at discharge
Risk factor assessment (smoking, nutrition, salt, alcohol intake, activity)	At enrolment, 12 weeks after commencing or at discharge
Personalised management plan (medical and risk factor management)	At enrolment, 12 weeks after commencing or at discharge
Personalised exercise program	At enrolment, 12 weeks after commencing or at discharge
Personalised written action plan	12 weeks after commencing or at discharge
Ability to self-care assessed	12 weeks after commencing or at discharge
Health literacy assessed	12 weeks after commencing or at discharge
Cognitive function assessed	12 weeks after commencing or at discharge
Screen for depression	12 weeks after commencing or at discharge
Quality of life assessed	12 weeks after commencing or at discharge
Referral to GP, with heart failure plan and written discharge summary	On discharge
Advance Care Plan	12 weeks after commencing or at discharge
Discharged from CHF program within a specified timeframe	N/A
Re-admission to hospital within 28 days	
Death	

Adapted from: National Heart Foundation of Australia. *Multidisciplinary care for people with chronic heart failure: principles and recommendations for best practice*. Australia: 2010.<sup>6</sup>

## Appendix I: Resources to support the standards

### Resources to assist clinicians comply with standards 1–9

#### Guideline documents

The following four documents will assist clinicians to comply with all nine standards in the Clinical Service Framework for CHF. In addition, further information is provided for the individual standards.

- [\*Guidelines for the prevention, detection and management of chronic heart failure in Australia.\*](#) Updated October 2011 NHFA/CSANZ 2011.
- [\*Multidisciplinary care for people with chronic heart failure: principles and recommendations for best practice.\*](#) NHFA 2010.
- [\*A systematic approach to chronic heart failure care: a consensus statement.\*](#) NHFA 2013.
- [\*A systematic approach to chronic heart failure care: a consensus statement: recommendations.\*](#) NHFA 2013.

### Resources to assist clinicians comply with standard 1

#### Guideline documents

A range of guidelines are available from the NHFA website, [Clinical information: resources for health professionals page](#).

- [\*Guidelines for the diagnosis and management of hypertension in adults.\*](#) NHFA 2016.
- [\*Guidelines for the assessment and management of absolute cardiovascular disease \(CVD\) risk.\*](#) NHFA 2012.
- [\*Australian absolute cardiovascular disease risk calculator.\*](#) National Vascular Disease Prevention Alliance 2012.
- [\*Reducing risk in heart disease.\*](#) NHFA 2012.
- [\*Recommended framework for cardiac rehabilitation 2004.\*](#) NHFA 2004.
- [\*Managing my heart health.\*](#) NHFA 2013.
- [\*My heart: my life.\*](#) NHFA. This app helps patients manage their medicines, blood pressure and cholesterol and learn about the warning signs of heart attack and what action to take.

#### Screening tool for depression

- [\*Depression in patients with coronary heart disease.\*](#) NHFA 2013.

#### Chronic kidney disease

Resources for consumers and health professionals are available via the following links.

- [Kidney Health Australia](#)
- [\*Chronic kidney disease management in general practice.\*](#) Kidney Health Australia 2015.

#### Diabetes

Resources for consumers and health professionals are available via the following links.

- [Diabetes Australia](#)
- [\*General practice management of type 2 diabetes 2016-18.\*](#) RACGP, Diabetes Australia 2016.
- [\*National evidence based guideline for the case detection and diagnosis of type 2 diabetes.\*](#) Diabetes Australia, NHMRC 2009.

## Smoking cessation

The following NSW Health resources are available via the links below.

- [Managing Nicotine Dependence: A guide for NSW Health Staff](#)
- [NSW Health Smoke-free Health Care Policy](#)
- [NSW Aboriginal Quitline](#)
- [Services to help you quit](#)
- [iCanQuit: further resources](#)

## Resources specific to primary care

- Royal Australian College of General Practitioners (RACGP).
  - [Quality Improvement and Continuing Professional Development Program](#). RACGP.
  - [Guidelines for preventive activities in general practice](#) (The red book) 9th ed. 2016.
  - [National guide to a preventive health assessment for Aboriginal and Torres Strait Islander peoples](#). 2nd ed. RACGP. 2012.
  - [Putting prevention into practice](#) (The green book) 2nd ed. RACGP. 2006.
  - [Supporting smoking cessation: a guide for health professionals](#). Revised ed. RACGP. 2014.
  - [Smoking, nutrition, alcohol, physical activity \(SNAP\): a population health guide to behavioural risk factors in general practice](#). 2nd ed. RACGP. 2015.
- [Divisions of General Practice National Performance Indicators List](#). Primary Health Care Research & Information Service. 2016. Performance indicators related to chronic disease risk factor management.
- [Australian Primary Care Collaboratives Programme](#). Australian Dept of Health.

## Resources to support Aboriginal people

- [Coronary heart disease](#). NHFA 2103. Fact sheet for Aboriginal people.
- [Flavours of the coast: Koori cookbook](#). NHFA 2014.
- [Obesity](#). NHFA 2013. Fact sheet for Aboriginal people.
- [Healthy weight](#). NHFA
- [My heart, my family, our culture](#). NHFA 2103. Fact sheet for Aboriginal people on feeling sad and lonely, social isolation and depression.
- [Diabetes Australia](#)
- [Quitline](#). Australian government.
- [iCanQuit](#). Cancer Institute of NSW.
- [Get Healthy](#). NSW Health. This website includes a range of resources and information on alcohol reduction, good health in pregnancy, Get Healthy for Aboriginal people and multicultural communities.
- [Make Healthy Normal](#). NSW Health.

## Resources to assist clinicians comply with standard 2

### Guideline documents

- [NSW Immunisation Programs](#). NSW Health.
- [The Australian immunisation handbook](#). Australian Dept. of Health. 10th ed 2013.

### Resources specific to primary care

- [Guidelines for preventive activities in general practice](#) (The red book) RACGP 9th ed. 2016.
- [Standards for General Practices: including Interpretive guide for Aboriginal and Torres Strait Islander health services](#). RACGP. 4th ed. 2013.
- [Primary Health Networks Grant Programme Guidelines](#). Australian Dept. of Health. 2016.

## Resources to assist clinicians comply with standard 3

### Websites

- [RHD Australia](#) has developed e-learning modules and phone apps that support both AHWs and clinicians in the management of acute rheumatic fever/RHD. The resources provide useful information to guide conversations with patients in case people do not understand these conditions. A framework to assist NSW health service providers create local approaches to manage these conditions has been developed. Information is also available for patients and their family and carers via the following links.
- [Acute Rheumatic Fever and Rheumatic Heart Disease fact sheet](#). NSW Health.
- [Heart Failure Society of America](#)
- [American Association of Heart Failure Nurses](#)
- [European Society of Cardiology](#)
- [American Heart Association](#)

## Resources to assist clinicians comply with standard 4

### Documents

Local hospital policies.

### Resources

The [HEART Online](#) website provides a range of useful resources such as assessment tools, information on fluid monitoring and action plans to assist with the management of people with CHF.

## Resources to assist clinicians comply with standard 5

### Documents

Information on the following indicators:

- National quality use of medicines (QUM) Indicator 5.2: Percentage of patients with systolic heart failure that are prescribed appropriate medicines at discharge
- National QUM Indicator 5.3: Percentage of discharge summaries that include medication therapy changes and explanations for changes
- National QUM Indicator 5.8: Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines
- National QUM Indicator 5.9: Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge

is available in the [National Quality Use of Medicines \(QUM\) for Australian Hospitals](#). ACSQHC and NSW Therapeutic Advisory Group 2014.

National QUM Indicators are also available for evaluation of management of acute coronary syndrome and atrial fibrillation. Data specifications, data collection tools and guidance for optimal use of the National QUM Indicators are available in the [National Quality Use of Medicines \(QUM\) for Australian Hospitals](#). ACSQHC and NSW Therapeutic Advisory Group 2014.

The [National medicines policy](#), Australian Dept. of Health 2014 includes information on the Quality Use of Medicines.

### Resources

The National Prescribing Service (NPS) News provides a review of medicines for the management of systolic CHF which is available at [Systolic heart failure – improving treatment](#) 2011.

### Websites

[NPS MedicineWise](#) (formerly the National Prescribing Service) includes information for patients/consumers and professionals.

Information on the Medicare Benefits Schedule is available at [MBS Online](#).

## Resources to assist clinicians comply with standard 6

### Documents

[NSW guidelines for Deactivation of Implantable Cardioverter Defibrillators at the End of life](#), ACI 2014.

## Resources to assist clinicians comply with standard 7

### Resources

- An example of a [General practice management plan for coronary heart disease](#) is available from the Heart Foundation website.
- The [Living well with chronic heart failure](#) patient information sheet and CHF action plan in multiple languages) and informational DVD is available via the Heart Foundation website or by calling 1300 36 27 87.
- The [HEART Online](#) website provides a range of useful resources such as assessment tools, information on fluid monitoring and action plans to assist with the management of people with CHF.
- Information on Home Medicines Reviews is available from [The Pharmacy Guild of Australia](#).
- [MBS Online](#)

### Websites

- [CareSearch Palliative Care Knowledge Network](#)
- [Australian Indigenous HealthInfoNet](#)
- [MBS Online](#)
- [Diabetes Australia](#)
- [NPS MedicineWise](#) (formerly the National Prescribing Service)
- [MBS telehealth information](#)
- [Australian Lung Foundation](#)
- [Arthritis Australia](#)
- List of [NSW Hospitals / Health Services](#) searchable by location.

## Resources to assist clinicians comply with standard 8

### Documents

- End of life: [NSW Guidelines for Deactivation of Implantable Cardioverter Defibrillators at the End of life](#), ACI 2014.

### Websites

- The NSW Health [Advance care planning](#) website includes policy directives and guidelines such as:
  - [Using resuscitation plans in end of life decisions \(PD2014\\_030\)](#)
  - [Consent to medical treatment: patient information \(PD2005\\_406\)](#)
  - [Advance care directives \(NSW\) – using \(GL2005\\_056\)](#)

Information for patients, families and carers including:

- [Dignity, respect and choice: advance care planning for end of life for people with mental illness – a comprehensive guide](#)
- ACI. [Palliative Care Network](#)
- [Palliative and end of life care – a blueprint for improvement](#)
- Clinical Excellence Commission. [End of Life Program](#)
- [End of life decisions, the law and clinical practice: information for NSW health practitioners](#) is a microsite of the NSW government's [Planning ahead tools](#) website which has been endorsed by NSW Health, the Australian Medical Association (NSW), the Australian Salaried Medical Officers Foundation (NSW) and the NSW Nurses and Midwives Association.
- [CareSearch Palliative Care Knowledge Network](#)
- Therapeutic Guidelines Limited. [Palliative Care](#) version 3, 2010.
- [Palliative Care Australia](#)
- Advance Care Planning Australia. [New South Wales](#).

## Resources to assist clinicians comply with standard 9

### Documents

- [Multidisciplinary care for people with chronic heart failure: principles and recommendations for best practice](#) includes key performance indicators (p27).
- The [HEART Online](#) website provides a range of useful resources such as assessment tools, information on fluid monitoring and action plans.

Information on the following indicators:

- H1.6 Percentage of patients with atrial fibrillation that are discharged on oral anticoagulants
- 5.2 Percentage of patients with systolic heart failure that are prescribed appropriate medications at discharge
- Percentage of patients whose current medications are documented and reconciled at admission
- 5.8 Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines
- 5.9 Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge

is available in the [National Quality Use of Medicines \(QUM\) for Australian Hospitals](#). ACSQHC and NSW Therapeutic Advisory Group 2014.

### Resources specific to primary care

- [Standards for General Practices: including Interpretive guide for Aboriginal and Torres Strait Islander health services](#). RACGP. 4th ed. 2013.
- [Primary Health Networks Grant Programme Guidelines](#). Australian Dept. of Health. 2016.