Government of **Western Australia**
Department of **Health**

WA Chronic Health Conditions Framework 2011–2016

Prepared in consultation with the WA Health Networks

December 2011



Delivering a **Healthy WA**

Suggested Citation

Department of Health, Western Australia. WA Chronic Health Conditions Framework 2011–2016. Perth: Health Networks Branch, Department of Health, Western Australia; 2011.

Important Disclaimer:

Table of contents

List of figures

List of tables

Acknowledgements

The following people are acknowledged for contributing to developing and reviewing the WA Chronic Health Conditions Framework 2011–2016:

- Dr Helen Bell
- Dr Scott Blackwell
- Dr Andrew Briggs
- Ms Pat Cambridge
- Dr Jacquie Garton-Smith
- Dr Joey Kaye
- Dr Peter Kendall
- Ms Bronwyn Middleton
- Ms Helen Mitchell
- Ms Tanya Mokdad
- Mr Mark Slattery
- Ms Denise Smith
- Dr Stephen Stick
- Dr Simon Towler
- Ms Belinda Whitworth

The following chronic condition health networks are also acknowledged:

- Cardiovascular Health Network
- Diabetes and Endocrine Health Network
- Musculoskeletal Health Network
- Renal Health Network
- Respiratory Health Network

Foreword

Chronic health conditions impose a profound personal and societal burden that is expected to become more pronounced in the future. The current and projected impact of chronic health conditions needs to be urgently addressed in Western Australia (WA). Effective prevention and management of chronic health conditions rely on integrating and coordinating services for consumers across the continuum of care.

Although WA is fortunate to have a range of services for chronic health conditions delivered by various private, not-for-profit, and government organisations, especially in the primary care sector, these services are not always well integrated and linked. Further, in rural and remote WA unique access issues to health services exist.

The *WA Chronic Health Conditions Framework 2011–2016* (the Framework) was developed by the WA chronic conditions health networks in broader consultation with all the health networks in WA. It provides a guide to principles of effective prevention and management of chronic health conditions. The Framework brings together common health service delivery recommendations from the existing WA chronic health conditions models of care to provide a platform for their implementation across chronic health conditions and the continuum of care. It complements (and does not replace) the condition-specific models of care.

The Framework recommends the establishment of a Chronic Health Conditions Network, potentially responsible for coordination and integration of services for people with chronic health conditions in WA, similar to the WA Cancer and Palliative Care Network. Working in parallel with the Framework are the *WA Primary Health Care Strategy*, which outlines recommendations for optimising service delivery in the primary care sector, and the *WA Chronic Conditions Self-Management Strategic Framework 2011–2015*, which outlines the directions for self-management of chronic health conditions in WA.

Like other networks, success relies on engaging and establishing effective partnerships between and across providers, consumers and purchasers of health services. It is essential that the priorities and activities of the proposed network are developed through consultation.

On this basis, the chronic conditions health networks will undertake a consultation, and I welcome feedback and ideas from primary care providers, non-government providers, consumers and carers. I hope this Framework will initiate these discussions and act as a vehicle for improving services for Western Australians with chronic health conditions.

Dr Simon Towler
Chief Medical Officer
Department of Health (WA)
December 2011

Executive summary

Chronic health conditions are largely preventable, yet reducing their incidence and burden continues to present a significant challenge. A more coordinated and integrated approach to prevention (primary, secondary and tertiary) and optimal management are needed to minimise the impact of chronic health conditions. This approach includes meeting the growing proportion of people living with one or more chronic health conditions (co-morbidities), and the impact of workforce shortages in delivering the range and complexity of services needed with adequate safety and quality.

To address these challenges, the *WA Chronic Health Conditions Framework 2011–2016* (the Framework) has been developed as an overarching guide to providing **the right care at the right time by the right team in the right place**[2] for Western Australians with chronic health conditions. It does this by bringing together the commonalities across the current condition-specific models of care developed by the WA chronic conditions health networks. Implementing the full suite of the WA Health Network's chronic health conditions models of care is challenging. Recognising this challenge, the Framework offers service providers a simpler and clearer blueprint to implement the chronic health conditions models of care with minimal duplication and avenues for managing co-morbidities.

The Framework is complemented by further detail contained in the condition-specific models of care, draft *WA Health Promotion Strategic Framework 2012–2016*, the *WA Primary Health Care Strategy*, and *WA Chronic Conditions Self-Management Strategic Framework 2011–2015*. Collectively, these policies provide the required level of detail regarding health service delivery for specific conditions, preventing chronic conditions, the role of partnerships in effective service delivery in the primary health care sector, and integrating self-management into core service delivery principles for consumers with chronic health conditions. The translation of these policies into practice will be determined by organisations tasked with planning and implementing service delivery.

According to a set of guiding principles, the Framework describes the priority areas for action, service delivery components across the continuum of care and system enablers.

The Framework is guided by the following principles:

1. **Integration and service coordination**
2. **Interdisciplinary care planning and case management**
3. **Evidence-based and consumer-centred care**
4. **Health literacy and self-management for chronic health conditions.**

The guiding principles focus the Framework on slowing the progression of chronic conditions and enabling early intervention across the continuum of care – from the well population to end of life. The Framework therefore applies to those at risk of developing a chronic health condition and those with an established chronic health condition.

Importantly, the Framework also provides an avenue for managing consumers affected by more than one chronic condition. Effective management of more than one chronic condition requires integrating and coordinating several health services that are equipped to deal with co-morbidities.

Prevention, particularly primary prevention, is recognised as fundamental to addressing the burden associated with chronic health conditions. The draft *WA Health Promotion Strategic Framework 2012–2016* provides a policy direction for primary prevention of chronic health conditions. This policy on primary prevention dovetails into the Framework's focus on service delivery, and secondary and tertiary prevention for consumers with established chronic health conditions.

To take the Framework forward, the two recommendations are to:

1. engage with health service providers and key stakeholder groups, especially within primary care and rural areas, through a consultation process to develop an implementation plan for the Framework
2. establish a Chronic Health Conditions Network to complement existing condition-specific networks and drive the implementation plan in partnership with key service providers and planners (e.g. metropolitan and country health services, non-government organisations, Medicare Locals).

The functions of the proposed network apply to all chronic health conditions and may include, but are not limited to:

- determining funding and resource requirements for the delivery of services in the community, including rural and remote areas of WA
- developing and managing a purchasing strategy to fund service providers to deliver evidence-based services in a coordinated and integrated manner across the continuum of care. This will include integration with the *WA Chronic Conditions Self-Management Strategic Framework 2011–2015* and the Better Health Improvement Program (BeHIP)
- supporting the implementation of related strategies such as those within the *WA Chronic Conditions Self-Management Strategic Framework 2011–2015*, *WA Primary Health Care Strategy*, and draft *WA Health Promotion Strategic Framework 2012–2016*
- developing a set of measurable quality and performance indicators for service providers
- providing leadership to maximise integration among the Commonwealth and state health funders, private, for-profit and not-for-profit hospital and community service providers
- building workforce capacity
- supporting research and quality improvement through effective partnerships with research organisations and academics.

A snapshot of WA chronic conditions epidemiology, health impact and risk factor relationships is provided for diabetes, cardiovascular disease, chronic obstructive pulmonary disease (COPD), chronic kidney disease (CKD) and musculoskeletal conditions in **Appendix 2**.

These conditions have been selected for the snapshot, as they represent conditions for which a model of care has been produced by the chronic conditions health networks, while acknowledging that other chronic health conditions are also relevant to WA consumers (e.g. persistent pain, mental health issues, cancer and neurological conditions).

1. Introduction

1. 1 What is the Chronic Health Conditions Framework?

The *WA Chronic Health Conditions Framework 2011–2016* (the Framework) is an overarching guide to:

- implement health service delivery components that are common across the condition-specific models of care[1] for chronic health conditions. The information presented is therefore purposely generic, rather than condition-specific. The models of care contain detailed condition-specific information.
- optimally manage consumers living with one or more chronic health condition.

The Framework is targeted at all organisations tasked with planning and implementing service delivery for consumers of all ages with chronic health conditions in Western Australia (WA). Importantly, these and other key stakeholders will inform, through consultation, how the Framework will be implemented.

Prevention, particularly primary prevention, is recognised as fundamental to addressing the burden associated with chronic health conditions. The draft *WA Health Promotion Strategic Framework 2012–2016* provides a policy direction for primary prevention of chronic health conditions. This policy on primary prevention dovetails into the Framework's focus on service delivery, and secondary and tertiary prevention for consumers with established chronic health conditions.

The Framework has been developed alongside the new and updated policies for primary health care, self-management of chronic health conditions, and prevention of chronic health conditions in well and at-risk populations in WA.

The content of the Framework is set out as follows:

Section 2 defines the scope of the Framework and explains its context relative to the existing condition-specific models of care, specific areas in the health sector and other sectors.

Section 3 describes:

- priority areas for action based on the existing models of care and to provide a starting point for implementation
- key service components of **the right care, at the right time, by the right team, in the right place**,[2] across the continuum of care
- system enablers for implementation.

Section 4 discusses the background and rationale for the Framework.

[1]All models of care are available at www.healthnetworks.health.wa.gov.au/modelsofcare

Why a Chronic Health Conditions Framework?

The increasing prevalence and burden of chronic health conditions, combined with the ageing population and high community expectations for improved quality of life, requires a flexible and responsive health system that can deliver services across the continuum of care*.

Services need to be delivered in an integrated and coordinated manner that is seamless for the consumer and family/carer(s). While effective prevention and management initiatives are available in the health system for specific conditions (e.g. osteoarthritis, diabetes), there remains a lack of overall coordination and integration for consumers with multiple chronic conditions.

Our State and Commonwealth Government health systems are undergoing significant reform to optimise health service delivery, particularly in the context of chronic health conditions. Therefore, it is important to articulate how optimal management of chronic health conditions can be achieved within the context of existing and new policy directions and health services.

The Framework does this by:

- identifying priority areas for action to be undertaken by WA Health and its partners
- identifying the commonalities across the models of care in chronic conditions
- providing the overarching strategic direction to support the implementation of the models of care, producing a generic Framework upon which common standards and priorities for implementation can be articulated
- recognising that for the majority of people with chronic conditions their health care is self-managed or provided in the primary care setting[3] and that services need to accommodate and manage co-morbid health conditions.

The Framework will also facilitate opportunities for:

1. meaningful partnerships and collaboration among WA Health, private and not-for-profit providers, consumers, and carers
2. greater ease in navigating the health system for consumers
3. research and quality improvement across the health system for preventing and managing chronic health conditions
4. coordination and integration of services, funding, and workforce development to build capacity in the health system.

A detailed rationale for the Framework can be found in **Section 4** of this document.

* A continuum of care is a concept involving an integrated system of care that guides and tracks patients over time through a comprehensive array of health services spanning all levels of intensity of care and stage of disease[1].

1.2 What are chronic conditions?

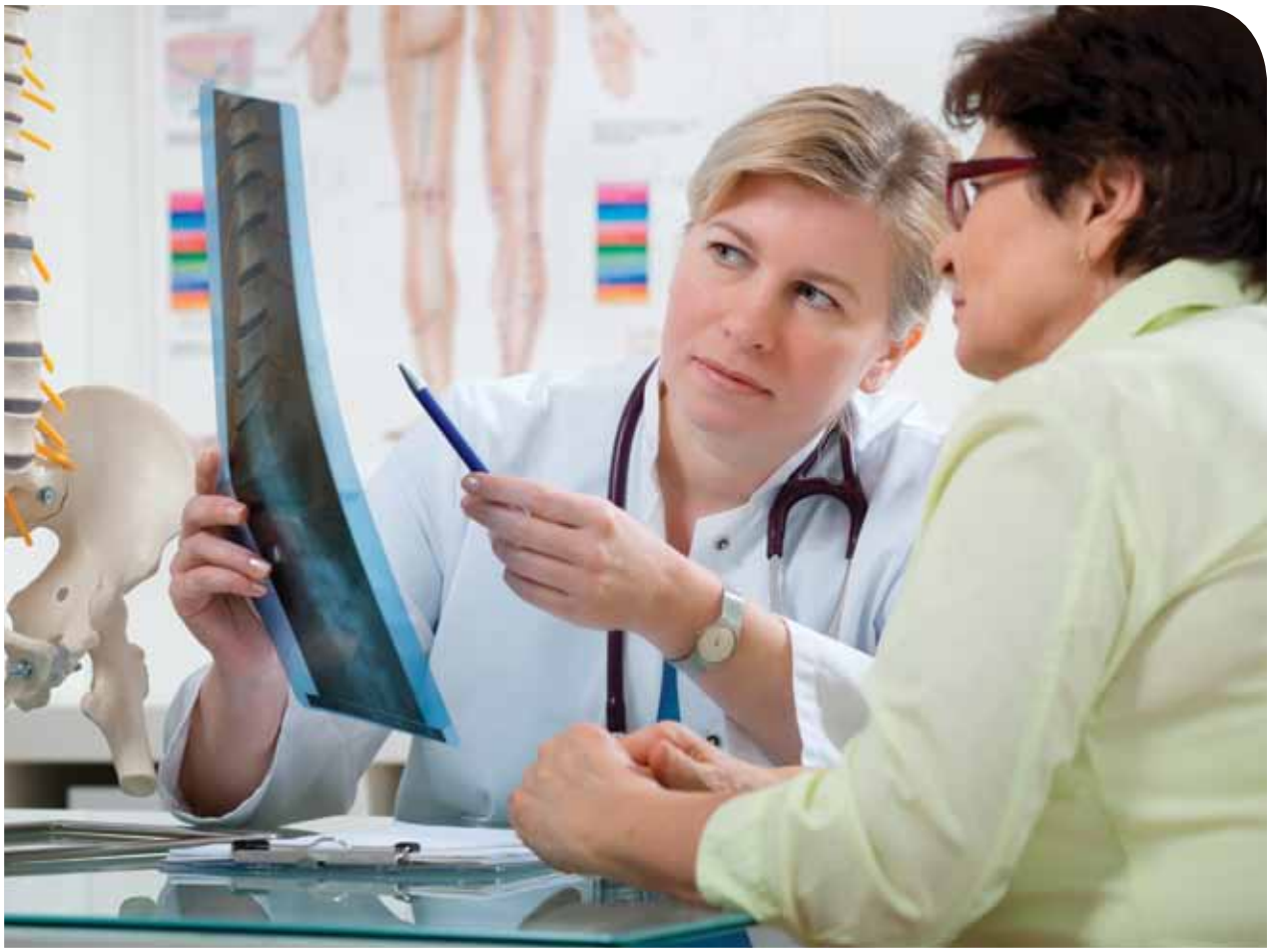
Many health conditions can be characterised as a 'chronic' condition.[4] Although most chronic conditions lead to a gradual deterioration in health, some chronic conditions are associated with outcomes that are immediately life threatening, such as stroke or heart attack.

Chronic conditions share the following characteristics:[4]

- They have multiple and complex causes and risk factors.
- They follow a pattern of recurrence or deterioration.
- They are permanent.
- They occur across the lifespan with increased prevalence in the aged.
- They can result in functional impairment or residual disability.

The **World Health Organization** recognises that:

- chronic diseases are a major cost and a profound economic burden to individuals, their families, health systems, and societies worldwide
- these costs will increase without implementing effective interventions
- investment in interventions to arrest the burden of chronic diseases will bring appreciable economic benefits.[5]



2. Scope and context of the Framework

2.1 What does the Framework cover?

The Framework applies to people of any age living with one or more chronic health conditions, or who are at risk of developing a chronic condition or co-morbidity. This includes but not limited to Aboriginal people from culturally and linguistically diverse (CaLD) backgrounds, although it is recognised that targeted and culturally-specific services may be required for these groups.

The Framework focuses on health conditions that:

- impose the greatest burden of disease
- are largely preventable through lifestyle and behavioural modification, environmental adaptation, and health and social policy changes
- share common risk factors
- have an existing model of care developed by chronic conditions health networks that describes integrated and coordinated health service delivery across the continuum of care.

These conditions include chronic kidney disease (CKD), chronic lung conditions (chronic obstructive pulmonary disease and asthma), diabetes, cardiovascular disease (heart failure and stroke) and chronic musculoskeletal conditions (osteoporosis, osteoarthritis and rheumatoid arthritis). A snapshot of the epidemiology and health impact of these chronic health conditions is provided in **Appendix 2**. While the Framework draws on the models of care for these conditions, the principles and service components may be applied to other chronic health conditions, which for example, may be co-morbidities, such as persistent pain, neurological conditions, and mental health conditions.

Cancer is recognised as a chronic health condition which imposes a significant personal and societal burden.[6] Although the principles and service components of the Framework may apply to aspects of cancer care, managing cancer is within the scope of the WA Cancer and Palliative Care Network (WACPCN), which is funded by WA Health to coordinate cancer services across WA. The Framework and proposed Chronic Health Conditions Network will work alongside the WACPCN and integrate where appropriate with existing services.

2.2 Where does the Framework sit within the broader policy context?

Currently in WA, there are 17 health networks by condition or population group (e.g. Cardiovascular Health Network and Child and Youth Health Network) which have been tasked with producing condition and population-specific policies (e.g. *Heart Failure Model of Care* and *Paediatric Chronic Diseases Transition Framework*). These policies are consumer and carer-focused and evidence-based.

The policies, such as the models of care, describe **the right care, at the right time, by the right team, in the right place**,[2] across the continuum of care. For example, they identify when it is appropriate for consumers to move from acute settings to the community setting for ongoing management of their chronic condition.

The Framework complements this existing structure by describing the common core service components of condition-specific models of care, and thus sits hierarchically above the models of care. The generic nature of the Framework, informed by commonalities across the condition-specific models of care, provides a blueprint for implementing consumer-focused health services for addressing more than one chronic condition and implementing more than one model of care. Importantly, the Framework does not replace condition-specific models of care.

The Framework is linked to, and will be implemented in alliance with, specific areas in the health sector and other sectors, in particular:

- **Prevention** of chronic conditions in the well population and at-risk population addressed by the draft *WA Health Promotion Strategic Framework 2012–2016*.
- **Primary care:**
  - *WA Primary Health Care Strategy*, which provides strategies on managing health care in the community (metropolitan, rural and remote), where appropriate, and creating strong linkages with the hospital sector
  - *WA Chronic Conditions Self-Management Strategic Framework 2011–2015*, which provides detailed strategies to promote active participation by people in their own health care in their own communities
- **Hospital sector** by engaging with health services to develop strategies for the Framework's implementation in line with the *WA Health Clinical Services Framework 2010–2020* and Activity Based Funding and Management approach
- **Rural and remote health** by engaging with country health services to develop strategies for the Framework's implementation, in alignment with their primary health care, service delivery, and workforce development policies
- **Aboriginal and Culturally and Linguistically Diverse** groups as priority populations for the Framework (see section 3.1)
- **Social determinants of health** through working with partner organisations such as local government, the aged care sector, Office of Multicultural Interests, Department of Housing, Department of Education, Disability Services Commission and other sectors to plan and integrate relevant services to support managing chronic conditions and health more broadly in the community. Partnership with non-health sectors reinforces a holistic approach to health care.

In a broader context, Commonwealth and State Government health reforms provide the infrastructure and policy environment for the Framework to operate successfully. More detail of these critical relationships can be found in Appendix 1.

A consumer experience with the WA Health system

When things work well (post hospital discharge)

At age 48 I spent two months in hospital, half in the intensive care unit on a ventilator. Before discharge I was told that the infection and complications had damaged my lungs, giving me chronic lung disease. I would get somewhat better, and then stay about the same. I needed plenty of rehabilitation although I had no idea what this really meant. I'd had no experience with the hospital system, public or private, and few expectations about how I would get better at home.

By the time I got home, an oxygen concentrator had been delivered and my carer was told how I should use it. An occupational therapist had been and gone, advising on home modification and equipment I'd need in the short-term. A hand rail was fitted at the front steps and various bits of furniture to assist me were delivered on free loan. I was amazed! A home visiting physiotherapist came and worked with me on some exercises I could do. Walking near my home was difficult because I live on a hill. She drove me and my carer in her car to a flatter location nearby. It was glorious to be outdoors, though still very difficult to walk. Someone rang to invite me to a pulmonary rehabilitation program which I started five or six months after I left hospital. This two month program led to exercise maintenance classes in the community. Everything seemed to link well together.

Consumer experiences with accessing services in primary care

When things are not easily accessible

Consumers with musculoskeletal pain living in regional Western Australia were interviewed about access to information and health services in their local communities. This was part of the Musculoskeletal Health Network's 2010-11 "Rural Roadshow for Spinal and Musculoskeletal Pain" program.

"The information is just not there, it is not available. I suppose it is if you know where to look but there is nobody giving you a pamphlet and saying this is where you go for support services, so I don't even know what is available in Albany." (Female, 64 years)

"You have got to go to Perth [for health services]…so you have to pay your own accommodation and 'cos I can't drive that distance I have to pay for my flights down and my own accommodation and all that sort of thing so…it is just something that I cannot afford to do." (Male, 47 years)

"Something I have always found quite difficult is getting reliable information or guidance about managing pain in a kind of holistic sense." (Female, 58 years)

3. The Chronic Health Conditions Framework

The Framework is underpinned by four guiding principles which have been identified through evidence provided in the models of care. The principles include:

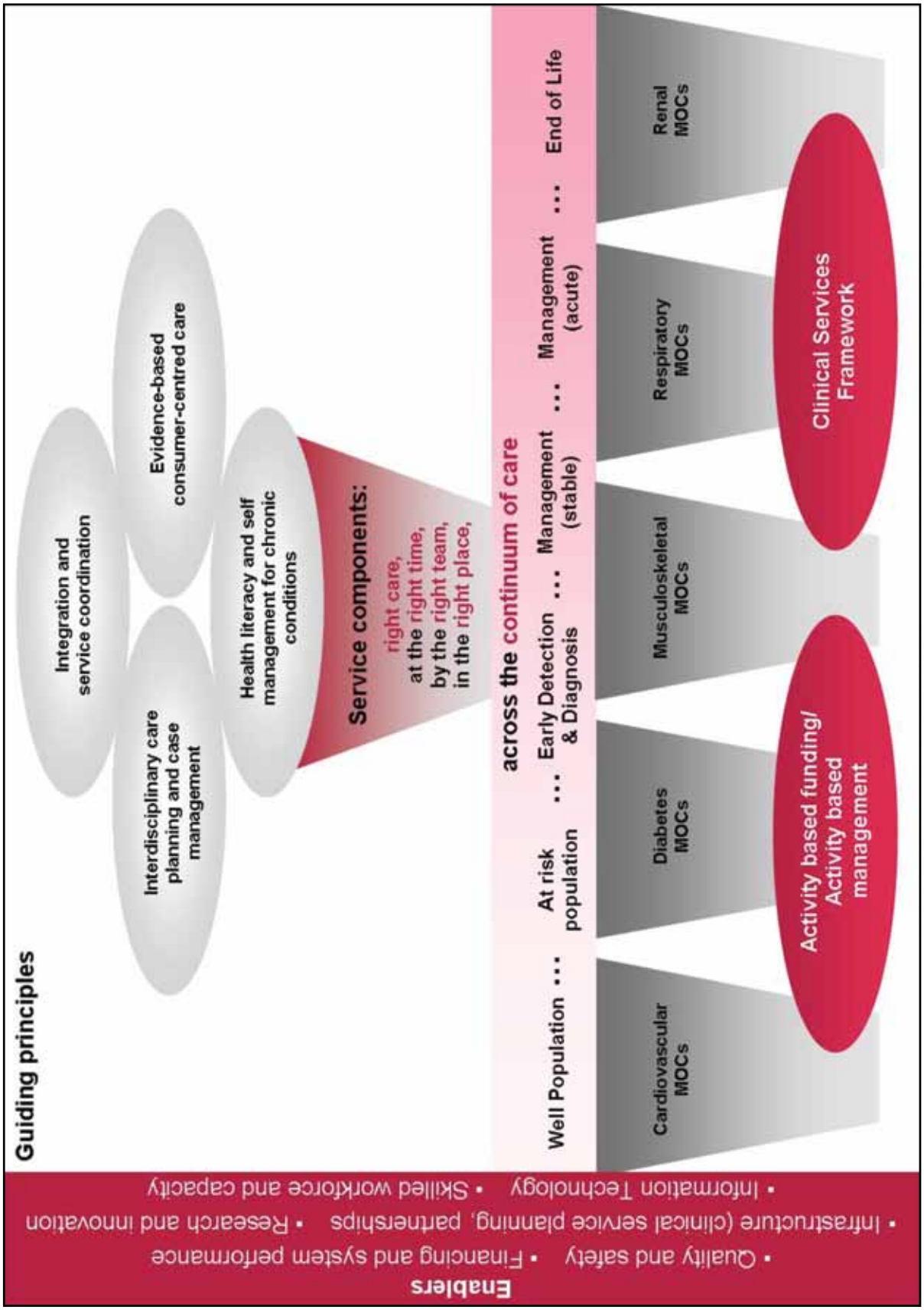
- Integration and service coordination
- Interdisciplinary care planning and case management
- Evidence-based and consumer-centred care
- Health literacy and self-management for chronic health conditions.

Based on these guiding principles, the Framework describes:

- priority areas for action
- service delivery components across the continuum of care common to chronic health conditions
- recommendations for addressing service delivery for consumers with chronic health conditions
- system enablers to achieve service delivery improvements.

These elements are informed by the relevant models of care (MOC), within the context of contemporary State and Commonwealth Government health policy. Figure 1 illustrates the relationship between the guiding principles for the optimal management of chronic health conditions, service components across the continuum of care and enablers, as set out in the WA Health Networks models of care. At a system level, service delivery is supported by key policy directions (refer to Appendix 1).

Figure 1. Relationships between policy and service delivery for chronic health conditions



3.1 Priority areas

The priorities for action have been identified from the guiding principles, WA Health Networks models of care, and key national and state strategies to meet the impact of chronic conditions on the health system and community. They concentrate on prevention, consumer-focused care, workforce, and system requirements to reduce the risk and rate of progression of disease, improving access, and overcoming the fragmented, duplicated and high cost service models.[7, 8]

Importantly, the priorities underpin reducing disparities in access to services and health status between metropolitan and rural consumers, and improving the access to health services and health status for Aboriginal people and people from CaLD backgrounds.

The table below sets out priority areas and implementation strategies. The manner in which these priorities and strategies are addressed will be informed through broad stakeholder consultation.

Priority Areas	Strategies
Prevention of chronic health conditions	▪ Implement the forthcoming draft *WA Health Promotion Strategic Framework 2011–2016*, and primary, secondary and tertiary prevention strategies to prevent or reduce the impact of chronic health conditions. ▪ Health promotion and prevention initiatives developed and delivered in a culturally appropriate manner.
Priority populations: **Aboriginal people and people from CaLD backgrounds**	▪ Ensure Council of Australian Governments (COAG) Closing the Gap programs are evidence-based and aligned with the service components set out in the Framework. ▪ Work with COAG National Partnership Agreement partners to identify priorities, advocate for sustainable change and influence national health policy. ▪ Coordinate the COAG Tackling Smoking initiative statewide. ▪ Use Aboriginal health workers more broadly to help bridge cultural barriers in providing care in the community and the hospital sector. ▪ Identify and support programs and initiatives that demonstrate best practice in culturally competent chronic condition management. ▪ Collaborate with communities, and multicultural and ethno-specific community and health service providers to develop targeted programs for people from CaLD backgrounds.

Priority Areas	Strategies
Consumer participation, and consumer-centred information and education	▪ Align information and education with the WA Health Consumers, Carer, and Community Engagement Framework. ▪ Enable consumer participation in health system planning and service design, and actively making decisions about their own health care aligned with *My Life, My Way – Self-Directed Supports in Western Australia.* ▪ Create linkages with the social determinants of health to ensure a more holistic approach to health care. ▪ Implement the *WA Chronic Conditions Self-Management Strategic Framework 2011–2015.* ▪ Develop and disseminate culturally-appropriate consumer and carer resources, particularly resources aimed at system navigation and optimal self-management for chronic conditions. ▪ Partner with consumers, their families, and carers to ensure a person-centred focus, improved health outcomes and quality of life. ▪ Encourage collaboration and partnership with communities to identify and address local community needs to prevent and manage chronic health conditions. ▪ Implement programs from the Better Health Improvement Program (BeHIP) and support service providers to achieve sustainability in terms of funding and capacity to continue delivering services without duplication in areas of need.

Priority Areas	Strategies
Service coordination, case management and interdisciplinary care planning	▪ Identify gaps in service coordination and undertake action to fill the gaps; for example, local directories of services in communities and pathways created for a specific community (including rural and remote areas) and population groups (people from CaLD background and Aboriginal people). ▪ Facilitate care transition services between hospital and community-based providers and phases of care (e.g. transition from child to adult services and to end-of-life services) through strategies such as the appointment of care coordinators. ▪ Facilitate use of Medicare-supported and evidence-based individual care plans for all people with chronic health conditions, considering cultural, linguistic and religious needs. ▪ Facilitate and promote eHealth records and secure information sharing between health providers. ▪ Establish partnerships with non-health sectors such as local government, education providers, community-based consumer health organisations and Department of Housing to facilitate healthy lifestyle choices and activities for consumers. ▪ Review other jurisdictions' service coordination models, for example the Victorian model.
Access to integrated and coordinated primary and community-based care	▪ Support metropolitan and country health services to build partnerships with Medicare Locals and non-government organisations to develop referral pathways, care plans and self-management resources in communities. ▪ Forge partnerships between community organisations and support groups to facilitate coordinating and integrating community resources and services (e.g. through local government). ▪ Strengthen linkages at all levels and settings across the primary, secondary and tertiary care providers to reduce duplication, resulting in more efficient resource use. ▪ Develop service models that meet the needs of people living with a chronic health condition in rural and remote locations and those from CaLD backgrounds. ▪ Implement the *WA Primary Health Care Strategy.* ▪ Enhance consumer information and education to enable self-management and access to care and services in their region (see the priority on consumer participation, and consumer-centred information and education). For consumers in regional and remote WA, access to electronic resources will be particularly important. ▪ Support access to community-based programs for self-management, including peer-led programs.

Priority Areas	Strategies
Services are based on evidence-based model of care/ guidelines	▪ Promote and facilitate the use of Advance Health Directives in end-of-life planning for people with chronic health conditions, while considering the cultural, linguistic and religious needs of individuals from CaLD backgrounds. ▪ Work in collaboration with community services and non-government organisations to ensure services are accessible, evidence-based, and aligned to the models of care. ▪ Implement the *WA Paediatric Chronic Diseases Transition Framework* to facilitate optimal transition from paediatric to adult health services for young people with chronic health conditions. ▪ Promote high-quality research to inform evidence-based practice and clinical decision-making, particularly those that involve the application of research tools and designs into service delivery and practices. Establishing and strengthening partnerships with research and development organisations and WA academics will underpin success in this area. ▪ Develop opportunities to collaborate with research providers within and outside of WA Health, through partnerships with the health networks as well as the State Health Research Advisory Council (SHRAC), the WA Health Quality Incentive Program (QuIP), and National Health and Medical Research Council (NHMRC) partnership grants scheme. Establishing academic-service provider partnerships is critical to research and health in WA.[9] Involving research organisations and academics in establishing a Chronic Health Conditions Network may facilitate these partnerships.

Priority Areas	Strategies
Building the capacity of the workforce	▪ Recognise, through education, training and curriculum development, that building workforce capacity not only requires developing knowledge and skills, but also a shift in attitudes and service cultures in order to effectively support consumers to self-manage. ▪ Facilitate and support education institutions and training organisations to ensure the curriculum for all health undergraduate and postgraduate programs meet national competencies and standards with appropriate training in cultural security and competency. ▪ Support the accreditation and monitoring of standards for health care organisations where appropriate. ▪ Recruit and train Aboriginal health workers in the community and hospital sector to support Aboriginal people and other health care providers. ▪ Support health care providers to deliver health services in rural and remote WA, consistent with country health services workforce policies. For example, a framework for competency development in allied health staff has been reported recently.[10] ▪ Ensure all students and staff are trained in cultural security and competency (e.g. Diverse WA training), self-management support, and carer identification and awareness.

3.2 Service components across the continuum of care

Models of care developed by WA Health Networks identify the need for programs and services to be delivered across the continuum of care. The emphasis is on self-management, self-management support, and joint responsibility of the consumer and health care providers (i.e. co-care) to minimise or delay the need for more complex or specialist level care - that is, slow the rate of severity of the condition(s).

Implementing the *WA Chronic Conditions Self-Management Strategic Framework 2011–2015* is therefore critical to meet this goal and drive the shift in health care culture. The emphasis on self-management and co-care does not replace the need for episodic hospital care delivered by specialist teams. Hospital care has a critical role in the overall management of chronic health conditions, particularly during acute episodes of ill health.

Critical to the success of improving the management of people with chronic conditions, particularly the increasing number of people with co-morbid conditions, is integrated and coordinated care. This requires a seamless interface among primary care, community care providers, paediatric services, emergency departments and inpatient hospital services. This interface can be achieved through shared understanding and clear pathways for referral, self-management education, planning and management of health care, end-of-life planning and palliation.

Facilitating a transition of care between hospitals and the community so that people can be cared for within their community is also an important feature of episodic hospital care. Strategies to achieve care transition are described in the *WA Primary Health Care Strategy* and this Framework.

Delivering health services in the community requires innovative and flexible service models that give consumers access to a wide range of affordable services they need, at flexible hours, delivered by a team of health professionals.

To optimise health outcomes, it is necessary that preventing chronic conditions through health promotion activities reflects the needs of people of all ages, genders, and cultural, linguistic and religious backgrounds in all communities whether they be urban, rural or remote. Prevention remains fundamental to reducing the burden of chronic health conditions. The draft *WA Health Promotion Strategic Framework 2012–2016* provides direction for primary prevention of chronic health conditions in WA, covering the well and at-risk populations in the continuum of care. This policy for primary prevention dovetails into this Framework's focus on service delivery, and secondary and tertiary prevention for consumers with established chronic health conditions.

Table 1 sets out the key service components of **the right care, at the right time, by the right team, in the right place**,[2] across the continuum of care for chronic health conditions experienced by Western Australians of all ages. Success in working together, especially with consumers, to deliver care in line with the prescribed service components is best achieved in an environment that promotes trust, respect and humility.

Table 1 should be interpreted as cumulative in terms of service provision. For example, the service components listed in the well population are also applicable to at-risk and early detection phases. Consumer and carer involvement is a key component at all stages across the continuum of care.

Table 1 **Service components across the continuum of care common to chronic conditions described in the models of care**

Chronic conditions models of care	Continuum of Care					
	Well population	**At-risk population**	**Early detection and diagnosis**	**Chronic conditions management: stable**	**Chronic conditions management: acute**	**End-of-life**
Objective	Prevent movement to the 'at-risk' stage	Prevent progression to established chronic condition	Prevent or delay progression of disease and minimise complications and co-morbidities	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Ensure informed planning and decision-making, with safe and high-quality end-of-life planning and care
Right care	• Population-based health awareness and promotion campaigns and social marketing to address established modifiable risk factors (e.g. smoking, physical inactivity, poor nutrition). This includes targeted and culturally-appropriate health promotion for Aboriginal people and people from CaLD backgrounds • Health promotion across the lifespan from early childhood to adulthood	• Systematic use of evidence-based measurements, e.g. spirometry for COPD, blood pressure screening for cardiovascular and renal disease, bone density testing for osteoporosis, and blood glucose monitoring for diabetes • Appropriate use of genetic testing	• Systematic use of evidence-based measurement, especially of at-risk populations for early diagnosis • Access to evidence-based health information/ education and resources • Promotion and education of self-management and access to support organisations • Medication management and reviews • Consumer care and action plans	• Self-management resources (e.g. education, interdisciplinary care planning) and support available in English and non-English languages • Social and psychological support • Care coordination, especially in transition and linkage between hospital and community-based care • Risk factor and management plans	• Referral guidelines for access to appropriate health care providers • Secondary and tertiary prevention programs to maintain optimal health • Clinical interventions are delivered according to the complexity of the situation in line with evidence-based practice • Access to ongoing rehabilitation and health maintenance programs	• Evidence-based pathways and care plans for end-of-life and palliation are implemented, e.g. Liverpool Care Pathway,11 while considering the cultural, linguistic and religious needs of individuals from CaLD backgrounds • Support for families and carers

Chronic conditions models of care	Continuum of Care					
	Well population	**At-risk population**	**Early detection and diagnosis**	**Chronic conditions management: stable**	**Chronic conditions management: acute**	**End-of-life**
Objective	Prevent movement to the 'at-risk' stage	Prevent progression to established chronic condition	Prevent or delay progression of disease and minimise complications and co-morbidities	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Ensure informed planning and decision-making, with safe and high-quality end-of-life planning and care
Right care			• Carer support through care plans • Transition care from paediatric to adult services	• Outpatient review where applicable • Palliative symptom control, in alignment with the National Standards Assessment Program of Palliative Care Australia	• Palliative symptom control, in alignment with the National Standards Assessment Program of Palliative Care Australia	• Palliative symptom control, in alignment with the National Standards Assessment Program of Palliative Care Australia
Right time	• Appropriate use of MBS items for 45–50 year old Health Checks and Aboriginal Health Checks	• Timely access to assessment and screening by primary health care providers • Self-management support for those identified at risk • Consumers and carers monitoring their health checks	• Timely access to assessment and screening by primary health care providers • Timely access and referral to self-management programs • Monitor and recall for follow up, supported by secure ICT systems	• Improved access to medical management and symptom review to improve health outcomes and quality of life • Monitor and recall for follow-up supported by secure ICT systems • Services available in the community with flexible hours	• Planning for end stage and palliation • Direct hospital admission of 'known' patients (avoid emergency departments)	• Appropriate high-quality and safe care is delivered in a timely manner

Chronic conditions models of care	Continuum of Care					
	Well population	**At-risk population**	**Early detection and diagnosis**	**Chronic conditions management: stable**	**Chronic conditions management: acute**	**End-of-life**
Objective	Prevent movement to the 'at-risk' stage	Prevent progression to established chronic condition	Prevent or delay progression of disease and minimise complications and co-morbidities	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Ensure informed planning and decision-making, with safe and high-quality end-of-life planning and care
Right team	• Health promotion teams • Appoint and support Aboriginal health workers, especially in regional WA • Cross-sector engagement, e.g. local government through recreation facilities and community-based consumer health organisations	• Development of appropriate resources and guides to ensure evidence-based care is delivered and received • Primary health care providers take the lead role in provision of health care in community settings, supported by local services and workforce development opportunities	• Primary health care teams with clear referral pathways and access to specialist services, both in hospital and community-based settings • Interdisciplinary teams across primary, secondary and tertiary health providers	• Consumers actively self-managing their condition with the support of their carers and families • Primary health providers will have access to specialist services in hospital and community-based settings • Health providers work in a coordinated interdisciplinary team • Local government engaged for support services e.g. transport, support groups	• The hospital team provides timely discharge planning to primary and community care providers • All health providers in a coordinated interdisciplinary team • Consumers and carers actively participate in the decision making process for all aspects of their care	• Consumers and carers actively participate in the decision making process • Promotion of Advance Health Directives (AHD) • Coordinated interdisciplinary Palliative Care Team

Chronic conditions models of care	Continuum of Care					
	Well population	At-risk population	Early detection and diagnosis	Chronic conditions management: stable	Chronic conditions management: acute	End-of-life
Objective	Prevent movement to the 'at-risk' stage	Prevent progression to established chronic condition	Prevent or delay progression of disease and minimise complications and co-morbidities	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Ensure informed planning and decision-making, with safe and high-quality end-of-life planning and care
Right team		• Consumers and carers actively participate in preventing progression to established chronic condition(s)		• Specialist care provided in outpatient review clinics, where applicable • Opportunities for specialist care to be provided in community-based facilities, where appropriate	• The hospital team provides timely discharge planning to primary and community care providers • All health providers in a coordinated interdisciplinary team • Consumers and carers actively participate in the decision making process for all aspects of their care	

Chronic conditions models of care	Continuum of Care					
	Well population	**At-risk population**	**Early detection and diagnosis**	**Chronic conditions management: stable**	**Chronic conditions management: acute**	**End-of-life**
Objective	Prevent movement to the 'at-risk' stage	Prevent progression to established chronic condition	Prevent or delay progression of disease and minimise complications and co-morbidities	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Support self-management, minimise acute episodes and hospitalisation, prevent deterioration in health	Ensure informed planning and decision-making, with safe and high-quality end-of-life planning and care
Right place	• Home and community-based services	• Home and community-based service delivery	• Services will be provided in the community • Access to telehealth for rural and remote consumers and carers to reduce travel to regional and metropolitan centres • Priority response to patients using telemonitoring/ telehealth showing early signs of deterioration	• Services will be provided in the community, where possible, or in hospitals for acute/ episodic care with transition pathways back to community-based care	• Where possible services will be delivered in the community by primary care providers • Hospital in the Home • Home hospital secondary or tertiary hospitals based on clinical need	• Unless clinically required end-of-life care and palliation will not be in tertiary settings
Enablers	• Quality and safety • Financing and system performance • Infrastructure including clinical service planning and strategic partnerships • Information technology including eHealth • Skilled workforce and capacity including education and professional development • Research and innovation					

3.3 Recommendations

How can we meet the challenge?

Improving the quality of life and health outcomes for people with chronic health conditions, along with their families and carers, requires innovative solutions to deliver more connected and coordinated services.

The 'network approach' to health reform is an approach that works. The network approach is neutral and objective. It provides the opportunity to **connect** all stakeholders across the state to **share** ideas and develop solutions to **improve** service delivery across the continuum of care.

Bringing together stakeholders will help create the right partnerships and better connect different levels and types of care. This approach places consumers and carers first. It facilitates seamless service delivery across all phases of care and fewer complexities in system navigation for consumers.

Through collaborating and sharing an understanding of roles and responsibilities, patient outcomes can be improved more efficiently and sustainably.

To take the Framework forward, the two recommendations are to:

1. engage with health service providers and key stakeholder groups, especially within primary care and rural areas, through a consultation process to develop an implementation plan for the Framework
2. establish a Chronic Health Conditions Network to complement existing condition-specific networks and drive the implementation plan in partnership with key service providers and planners (e.g. metropolitan and country health services, non-government organisations, Medicare Locals).

The functions of the proposed network apply to all chronic health conditions and may include, but are not limited to:

- determining funding and resource requirements for the delivery of services in the community, including rural and remote areas of WA
- developing and managing a purchasing strategy to fund service providers to deliver evidence-based services in a coordinated and integrated manner across the continuum of care. This will include integration with the *WA Chronic Conditions Self-Management Strategic Framework 2011–2015* and BeHIP
- supporting the implementation of related strategies such as those within the *WA Chronic Conditions Self-Management Strategic Framework 2011–2015*, *WA Primary Health Care Strategy* and draft *WA Health Promotion Strategic Framework 2012–2016*
- developing a set of measurable quality and performance indicators for service providers
- providing leadership to maximise integration between the Commonwealth and state health funders, private, for-profit and not-for-profit hospital and community service providers

- building workforce capacity
- supporting research and quality improvement through effective partnerships with research organisations and academics.

More than primary care – the benefits of partnerships in asthma management using a network approach.

University of Western Australia (UWA) pharmacy research into community pharmacist practices dispensing over-the-counter asthma medications, coupled with the Asthma Action Plan developed by the Respiratory Health Network, has resulted in an initiative to improve asthma self-management.

Community pharmacists, as the initial point of contact for many people with asthma, now have a new role in educating people with asthma using the Asthma Action Plan. This self-management tool aims to improve asthma control through education and monitoring by the person with asthma, the pharmacist, and referral to the general practitioner as necessary.

The network approach and establishment of partnerships and collaboration between UWA, Pharmaceutical Society of WA, Asthma Foundation of WA and Department of Health WA (Respiratory Health Network) have implemented an innovative approach to changing clinical practice and improving health outcomes for people with asthma.

Expansion of health education services to regional WA using a network and partnership model.

The WA Spinal Pain Model of Care recommends upskilling health professionals with best practice management information on spinal pain and providing consumers with active pain management strategies.

A partnership between the Musculoskeletal Health Network, Fremantle Hospital Pain Medicine Unit, Arthritis and Osteoporosis WA, Curtin University, and Rural Health West was established to deliver educational forums to health professionals and consumers in regional WA over 2010/11. The forums delivered evidence-based knowledge from the model of care and research projects supported by the State Health Research Advisory Council (SHRAC).

Preliminary analysis of evaluation data highlights the benefit of the group-based education on spinal pain to health professionals and consumers in regional WA.

3.4 System enablers

Addressing the priority areas and implementing service components effectively across the continuum of care requires a number of system enablers. This is to ensure the systems, infrastructure, workforce, and funding can be oriented to meet the demand for service provision.

3.4.1 Quality and safety

Quality and safety are driven by:

i.) leadership: to improve the safety and quality by identifying and supporting leaders who value safety and quality in health care

ii.) governance structures and processes: to enhance accountability for safety and quality by strengthening governance structures and processes.

This is augmented by the participation of health services in external accreditation and peer review programs.

These drivers support the *WA Strategic Plan for Safety and Quality in Health Care 2008–2013*, which defines a series of interdependent concepts that have been developed to foster a shared and unified approach to promoting and assuring the delivery of safe, high-quality health care in WA.[12]

3.4.2 Financing and system performance

In WA Health the delivery of high quality, safe and cost-effective services is assessed and funded according to the WA Activity Based Funding (ABF) framework. This is aligned with the national reform to introduce a nationally consistent ABF model.

Activity is everything that a health system does for, with and to patients, residents, clients and their families and carers, and the community. Activity can include community care grants, chronic disease programs, preventative health programs, shared maternity care, sub-acute care, step down care, living well when older and education, training, research and supervision.
(Health Activity Purchasing Intentions 2010–2011, WA Department of Health).

Activity Based Management (ABM) is the management approach used by WA Health to plan, budget, allocate, and manage activity and financial resources to ensure delivery of safe, high quality health services to the WA community. ABF supports ABM to enhance public accountability and drive technical efficiency in the delivery of health services.

Equity and access to quality health care can be further enabled through providing affordable health services; for example, working with local government to provide affordable services that support consumers in making healthy lifestyle choices.

3.4.3 Infrastructure including clinical service planning and strategic partnerships

The key policy drivers determining where WA Health should provide care and the level of care is set out in the statewide *Clinical Services Framework 2010–2020*. It provides detailed modelling for inpatient services, non-admitted and emergency department services and role delineation of services provided by the metropolitan and country health services.

The modelling is informed by demographic information based on the results of the 2006 Population Census, the development and implementation of models of care, updated demand and capacity projections, developments in infrastructure, workforce, and information and communications technology (ICT). While it is an over-arching medium to long-term planning document, it also provides a foundation for more extensive and detailed planning to be undertaken by metropolitan and country health services.

Partnerships and collaboration are required across jurisdictional and inter-sectoral levels of government (national, state and local), non-government, private sectors and industry/workplaces to meet projected workforce shortages and the increasing demand for health services due to the incidence and prevalence of chronic conditions, and the ageing population. For example, establishing partnerships with Medicare Locals and research organisations will facilitate delivery of evidence-informed services in areas of unmet need.

In particular, partnerships are important between state services (e.g. hospitals), and community-based care providers and consumer health organisations. The *WA Primary Health Care Strategy* contains strategies to further strengthen these partnerships.

Less obvious partnerships with the non-health sector such as local government, housing, disability, and education service providers are also critical to support managing chronic health conditions and health more broadly in the community.

3.4.4 Information technology including eHealth

The Commonwealth and State Governments are investing considerable funds to develop and implement ICT and management solutions to improve the access to health information for consumers across and between health service providers. This investment initiative is supported by federal and state legislation, and regulations to protect individual privacy and to ensure compatibility across all jurisdictions and health care providers in Australia.

The **eHealthWA** program is designed to provide a modern, integrated and user-friendly technology platform to facilitate health service delivery in WA.

In addition, WA Health is developing and implementing a clinical information system to:

- provide an integrated and complete view of patient health information at the point of care
- share information electronically in a timely and secure manner across different locations and all parts of the health sector

- enable access to data to more effectively monitor and evaluate service delivery outcomes
- electronically order tests, prescribe medications and refer individuals to other providers
- provide access to appropriate information sources and decision support tools at the point of care
- collaborate with other professionals to share expertise and evidence
- have easy access to clinical knowledge and evidence sources to assist with skill development http://www.health.wa.gov.au/ehealthwa/home/cis.cfm.

3.4.5 Skilled workforce and capacity including education and professional development

The impact of workforce shortages, the ageing workforce and the increasing incidence and prevalence of chronic conditions create challenges for the delivery of health services now and in the future.

Workforce capacity will be improved by maximising opportunities to engage with and develop the community-based clinical workforce.

This may be achieved by:

- providing opportunities for community-based clinical training for all disciplines
- collaborating with educational institutions to develop opportunities for clinical training in chronic health conditions across the continuum of care, including cultural competency training
- promoting specialist and generalist outreach training programs statewide
- developing employment contracts that include service delivery at metropolitan and rural areas and/or across different settings
- supporting the development of changes to the scope of practice for various health professionals such as nurse practitioners and specialist physiotherapists
- developing and implementing chronic health conditions self-management competencies (e.g. self-management support) and cultural safety competencies for staff working in all health care sectors
- recruiting and training Aboriginal Health Workers to work in their local communities and in the hospital sector
- providing up-skilling opportunities for health care providers working in the primary health care sector to optimally lead coordination of care for individuals with chronic health conditions
- expanding telehealth (telemonitoring and telecare) and telemetry services to facilitate team-based management of people with complex and chronic conditions, especially in rural and remote WA
- emphasising, through education and training, the importance of self-management support, to enable consumers to effectively self-manage their conditions in collaboration with their healthcare providers.

3.4.6 Research and innovation

Supporting and developing capacity in research and innovation in WA is critical to ensuring the best possible care is delivered to Western Australians with chronic health conditions.

In particular, it is important to support:

- high-quality research to inform evidence-based practice and clinical decision making
- opportunities to work in collaboration with research providers within and outside of WA Health. The State Health Research Advisory Council (SHRAC), the WA Health Quality Incentive Program (QuIP) and the National Health and Medical Research Council (NHMRC) scheme present opportunities for the establishment of such partnerships. Establishing research partnerships between academics, health providers, and policy units is critical to delivering best possible care to Western Australians and facilitating the translation of research into practice.[9]

4. Rationale supporting the Framework

4.1 The significance of chronic conditions

Providing health services to a population where the prevalence and burden of chronic health conditions continues to increase presents one of the most significant challenges to Australia's health system, both in terms of economic impact and population health and wellbeing. However, the impact of chronic health conditions can be minimised through coordinated and integrated prevention and optimal management strategies.[8,13]

It is recognised that many chronic conditions detected in childhood will require life-long care and access to services, and that the prevalence and impact of chronic health conditions in Australian children is significant, for example chronic kidney disease.[14] Further, chronic disease risk factors, such as obesity, are increasing among children.[15-17] Children are now surviving into adult life with conditions which previously would have been lethal in childhood. Therefore, effective services to optimise the health of children with chronic health conditions will improve the long-term health outcomes of this population. These services should provide for a smooth transition from paediatric to adult healthcare when patients reach the age of 16 years.

Figure 2 on the next page, adapted from the WA Health Chief Health Officer's report, illustrates that chronic health conditions represent a major disease burden in WA. Furthermore the 2007/08 National Health Survey indicates that 75 per cent of respondents had one or more long-term health condition(s).[18]

Total national health care expenditure related to chronic conditions in 2004/05 is represented in Figure 3, along with the proportion of disability adjusted life years (DALYs) lost, by condition. Compared to the previous report for the period of 2000/01, allocated health expenditure per person, adjusted for inflation, increased by 13 per cent.[19] The National Health Priority Areas (cardiovascular, mental disorders, musculoskeletal, cancer, injuries, diabetes mellitus, and asthma) accounted for $22.5 billion (43 per cent) of the total allocated health expenditure in 2004/05. An increased expenditure is predicted as the population ages and expectations for achieving an improved quality of life increase.[19]

Figure 2. Leading causes of disease burden across all ages in WA in 2003. Adapted from the *Chief Health Officer's Report (2010)*[6]

* lung, colorectal, breast and prostate cancer
\# chronic obstructive pulmonary disease, asthma, other chronic lung conditions
^ osteoarthritis and back pain

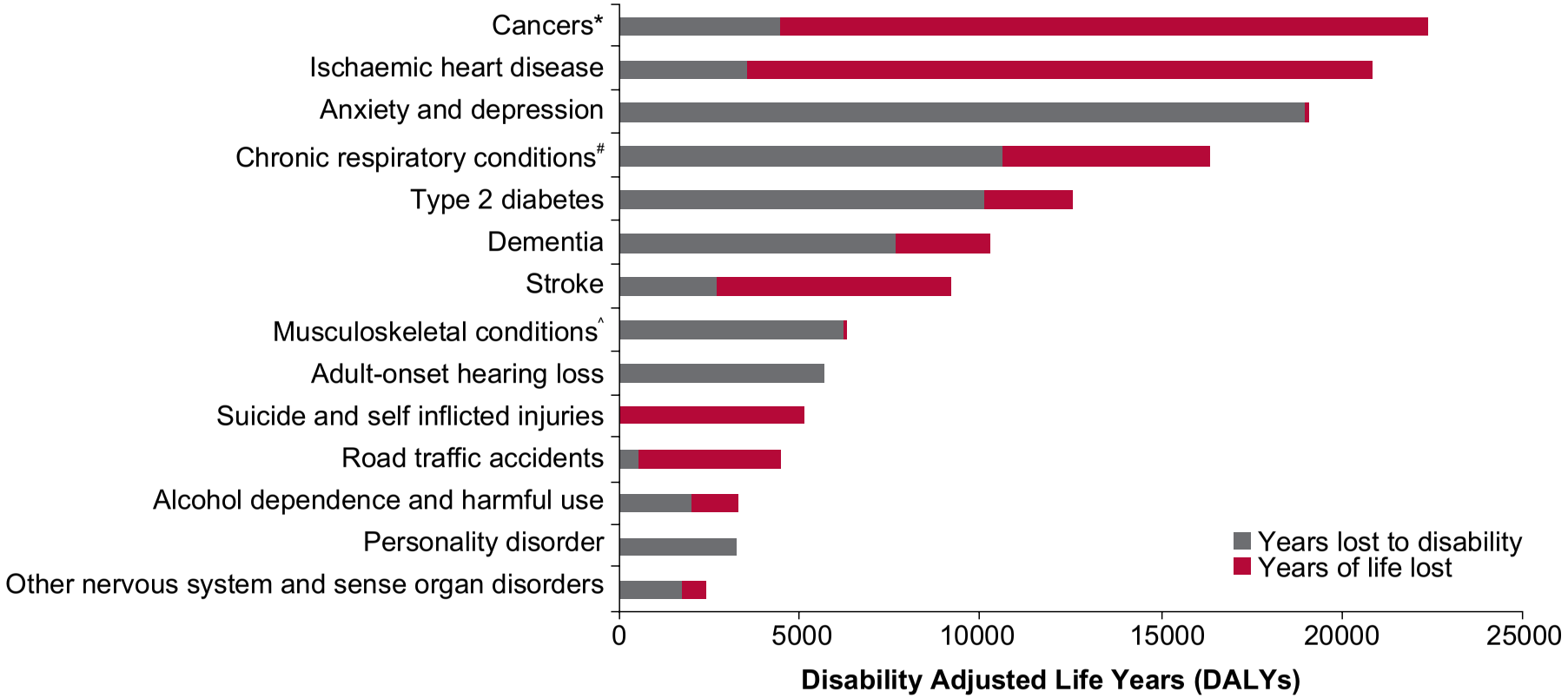
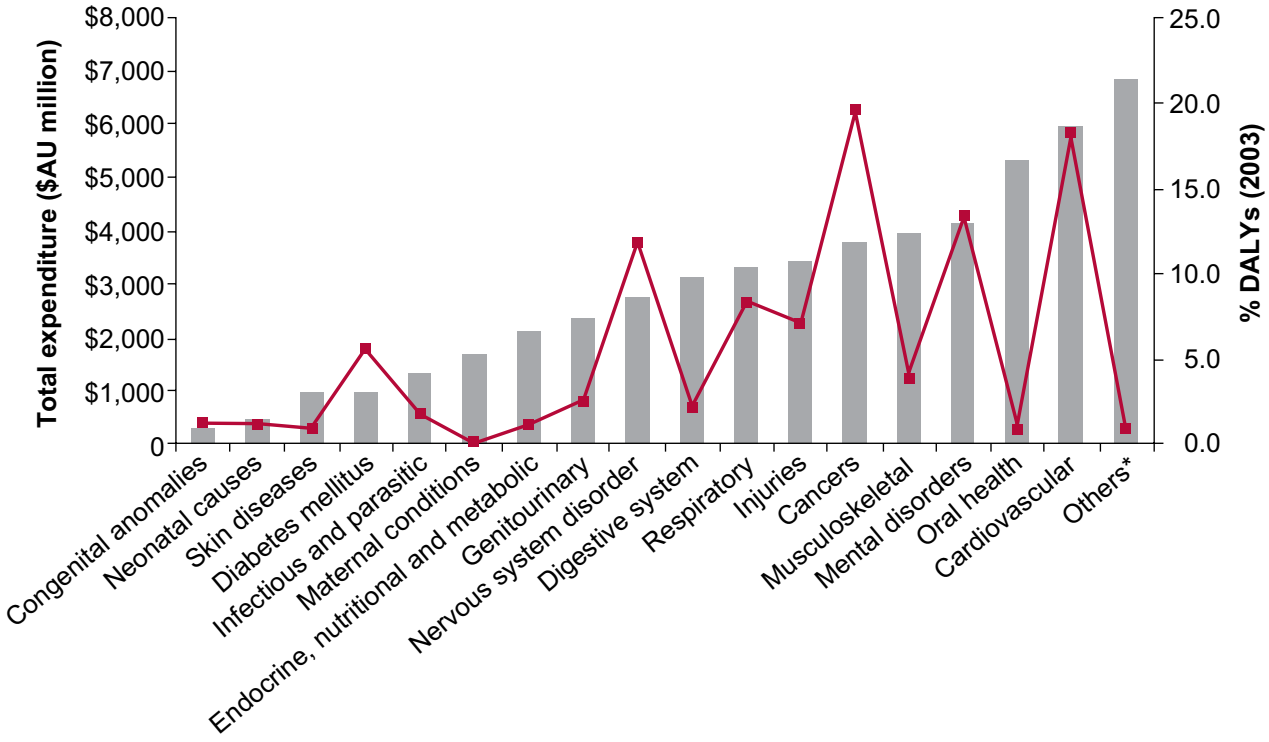


Figure 3. 2004/05 health care expenditure ($Amillion) and proportion (%) of disability adjusted life years (DALYs) in 2003 by disease group.

Total expenditure relates to hospital services, out-of-hospital services, optometric and dental services, pharmaceuticals, community and public health services and research.[19]



* other: includes diagnostic and other services where the cause of the problem is unknown. Also includes other contact with the health system (fertility control, reproduction and development, elective cosmetic surgery), general prevention, screening and health examination, and treatment and aftercare for unspecified disease.

4.1.1 Social determinants of health

Although genetic predisposition is a significant factor in the aetiology of many chronic health conditions, predisposition is also mediated by common, modifiable risk factors, some of which include physical inactivity, poor nutrition, overweight and obesity, smoking, excessive alcohol intake and hypertension.

Many of the underlying causes of poor health develop from the social, environmental, economic, and cultural contexts in which people live, work and play; often referred to as the 'social determinants of health'. These issues impact significantly on the health of Aboriginal people, those from low socioeconomic backgrounds and CaLD communities. The World Health Organization has identified these factors as the basis of much of the inequality in global health.[20]

In 2008 the Council of Australian Governments (COAG) invested considerable funds over a six-year period to the Closing the Gap initiative which aims to increase life expectancy and improve the health, education, and economic outcomes for Aboriginal people. The *WA Health Strategic Intent* and the guiding principles and goal of the Framework to provide appropriate services across the continuum of care for people at risk or living with chronic conditions supports the Closing the Gap initiative. The Office of Multicultural Interests website has electronic resources to support the health and wellbeing of people who enter WA for the first time.

4.1.2 Common risk factors and co-morbidities

The burden of chronic health conditions is compounded by the prevalence of co-morbidity. Co-morbid conditions are usually caused by the complex relationships between specific diseases and shared risk factors. Co-morbidity contributes to increased mortality, a decline in health outcomes, and increased use of health care resources.[21, 22]

The impact of co-morbidities is generally most pronounced among the aged. Humanitarian entrants and refugees arriving in WA may also have specific co-morbidities related to torture and trauma which should be considered in the context of overall health service delivery and services for mental health.

An important relationship between chronic health conditions and mental health is now recognised.[23-25] For example, some studies have shown that after a heart attack, one in three patients exhibits depressive symptoms and nearly one in six is formally diagnosed with depression.[26] The *Duty to Care Report*, School of Population Health, University of Western Australia shows that, relative to those without mental illness, people with mental illness suffer higher rates of chronic health conditions related to behavioural factors such as smoking, alcohol and drug abuse, obesity, poor diet, and other lifestyle factors.[27] Furthermore, people with mental illness had consistently higher mortality and hospitalisation rates for all major diseases compared to individuals without mental illness.[27]

4.1.3 Chronic health conditions and Aboriginal people

Aboriginal people are the oldest continuing culture in human history but unfortunately have the poorest health outcomes and the greatest health and welfare needs of any group, with a life expectancy being 11.5 and 9.7 years lower for males and females, respectively, than for non-Aboriginal Australians.[28] The life expectancy for Aboriginal people who live in Western Australia is even shorter than their national average.[28]

Closing the gap in life expectancy is both a state and national priority which requires a whole-of-government commitment to influence action on social and health determinants of Aboriginal welfare, while being cognisant that ‘one size does not fit all’. Currently, Aboriginal people are under-serviced across the health continuum. Access for Aboriginal people to primary health care services, which are culturally sensitive and wellness-oriented, remains a fundamental area for reform.[29]

Much of the health and lifespan disparity between Aboriginal people and other Australians is related to the higher prevalence of risk factors which contribute to the early onset of chronic conditions such as heart disease, stroke, diabetes, chronic lung conditions, and kidney disease.[1]

The 2008 National Aboriginal and Torres Strait Islander Social Survey self-reported measures of health, found that Aboriginal people with a disability or long-term health condition were more than twice as likely as those without a disability to report high/very high levels of distress (43 per cent compared with 19 per cent).[30]

Hospitalisation rates were higher than for other Australians for many diagnoses; for example, hospital care involving dialysis is 14 times the rate, and for endocrine, nutritional and metabolic diseases, which includes diabetes, is three times the rate for other Australians. Ischaemic heart disease was the leading specific cause of disease burden experienced by Aboriginal males, accounting for 12 per cent of the total burden for Aboriginal males. Type 2 diabetes, anxiety, depression and suicide were the next three leading specific causes, together accounting for another 18 per cent of the burden of disease for Aboriginal males.

For Aboriginal females, the leading specific cause of disease burden was anxiety and depression, accounting for 10 per cent of the burden. Type 2 diabetes, ischaemic heart disease, and asthma were the next three leading specific causes, accounting for a further 23 per cent of the disease burden for Aboriginal females.

The COAG **Closing the Gap**, *National Partnership Agreement 2008–2013* has five key priority areas to close the gap for Aboriginal health outcomes. They are:

1. Tackling smoking
2. Healthy transition to adulthood
3. Making Aboriginal health everyone's business
4. Primary care services that can deliver
5. Fixing the gaps and improving the patient journey

WA Health has invested $117 million over four years for programs to improve health outcomes, identified by seven regional Aboriginal health planning forums.

Investment in collaboration and partnerships, building and expanding the capacity of the Aboriginal workforce and improving access to services identified by Aboriginal people is critical to the success of this strategy.

References

1. Department of Indigenous Affairs. Overcoming Indigenous Disadvantage. Perth: Government of Western Australia; 2005.
2. Department of Health Western Australia. Model of Care Overview and Guidelines. Perth: Health Networks Branch; 2007.
3. Kringos DS, Boerma WGW, Hutchinson A, van der Zee J, Groenewegen PP. The breadth of primary care: A systematic literature review of its core dimensions. BMC Health Services Research 2010;10:65.
4. Australian Institute of Health and Welfare. Chronic diseases and associated risk factors in Australia. AIHW Cat. No. PHE 81. Canberra: AIHW; 2006.
5. World Health Organization. Preventing chronic diseases: A vital investment. WHO Global Report. Geneva: WHO; 2005.
6. Hocking S, Draper G, Somerford P, Xiao J, Weeramanthri T. The Western Australian Chief Health Officer's Report 2010. Perth: Department of Health, Western Auatralia; 2010.
7. National Health Priority Action Council (NHPAC). National Chronic Disease Strategy. Canberra: Australian Government Department of Health and Ageing; 2006.
8. Department of Health Western Australia. A healthy future for Western Australians. Perth: Health Reform Committee; 2004.
9. Brooks PM. The challenge for academic health partnerships. The Medical journal of Australia 2009;191(1):26-7.
10. Lin IB, Beattie N, Spitz S, Ellis A. Developing competencies for remote and rural senior allied health professionals in Western Australia. Rural and remote health 2009;9(2):1115.
11. Department of Health Western Australia. WA Cancer and Palliative Care Network: WA Liverpool Care Pathway for the Dying Patient. Perth: Department of Health Western Australia; 2010.
12. Western Australian Council for Safety and Quality in Health Care. Western Australian Strategic Plan for Safety and Quality in Health Care 2008–2013: Placing patients first. Perth: Office of Safety and Quality in Healthcare, Department of Health WA; 2008.
13. Australian and New Zealand College of Anaesthetists. National Pain Strategy: Pain Management for all Australians. Melbourne: ANZCA; 2010.
14. White A, Wong W, Sureshkumur P, Singh G. The burden of kidney disease in Indigenous children of Australia and New Zealand, epidemiology, antecedent factors and progression to chronic kidney disease. Journal of Paediatrics and Child Health 2010;46(9):504–9.

15. Gill TP, Baur LA, Bauman AE, Steinbeck KS, Storlien LH, Singh MAF, et al. Childhood obesity in Australia remains a widespread health concern that warrants population-wide prevention programs. Medical Journal of Australia 2009;190(3):146–8.
16. Huang R-C, Stanley FJ, Beilin LJ. Childhood obesity in Australia remains a widespread health concern that warrants population-wide prevention programs. Medical Journal of Australia 2009;191(1):45–6.
17. Roberts LM, Letcher TR, Gason AA, Lobstein T. Childhood obesity in Australia remains a widespread health concern that warrants population-wide prevention programs. Medical Journal of Australia 2009;191(1):46–7.
18. Australian Bureau of Statistics. National Health Survey 2007–08: Summary of Results. Canberra: ABS; 2009.
19. Australian Institute of Health and Welfare. Health system expenditure on disease and injury in Australia, 2004–05. Canberra: AIHW; 2010.
20. World Health Organization. Closing the gap in a generation. Health equity through action on the social determinants of health. Geneva: WHO; 2008.
21. Caughey GE, Vitry AI, Gilbert AL, Roughead EE. Prevalence of comorbidity of chronic diseases in Australia. BMC Public Health 2008;8:221.
22. Ritzwoller DP, Crounse L, Shetterly S, Rublee D. The association of comorbidities, utilization and costs for patients identified with low back pain. Bmc Musculoskeletal Disorders 2006;7:72.
23. Himelhoch S, Lehman A, Kreyenbuhl J, Daumit G, Brown C, Dixon L. Prevalence of chronic obstructive pulmonary disease among those with serious mental illness. American Journal of Psychiatry 2004;161(12):2317–9.
24. Perry GS, Presley-Cantrell LR, Dhingra S. Addressing Mental Health Promotion in Chronic Disease Prevention and Health Promotion. American Journal of Public Health 2010;100(12):2337–9.
25. Lando J, Williams SM, Williams B, Sturgis S. A logic model for the integration of mental health into chronic disease prevention and health promotion. Prev Chronic Dis 2006;3(2):A61.
26. Bunker SJ, Colquhoun DM, Esler MD, Hickie IB, Hunt D, Jelinek VM, et al. “Stress” and coronary heart disease: psychosocial risk factors. Med J Aust 2003;178(6):272-6.
27. Lawrence D, Holman CDJ, Jablensky AV. Preventable Physical Illness in People with Mental Illness. Perth: The University of Western Australia; 2001.
28. Australian Bureau of Statistics. Experimental life tables for Aboriginal and Torres Strait Islander Australians (2005–2007). Canberra: ABS; 2009.
29. Department of Health Western Australia. Western Australian Aboriginal Primary Care Resource Kit. Perth: Health Reform Implementation Taskforce; 2007.
30. Australian Bureau of Statistics. The Health and Welfare of Australia’s Aboriginal and Torres Strait Islander Peoples. Canberra: ABS; 2010.

31. Joyce S, Daly A. Health and Wellbeing of Adults in Western Australia 2009, Overview and Trends. Perth: Department of Health, Western Australia; 2010.
32. Department of Health Western Australia. Western Australian Burden of Disease Projections 2001–2016 (unpublished tables). Perth: Epidemiology Branch; 2009.
33. Hocking S, Draper G. Our State of Health 2009: An overview of the health of the population of Western Australia (unpublished). Perth: Department of Health, Western Auatralia; 2009.
34. Australian Institute of Health and Welfare. Australia's Health 2010. Australia's Health Series No. 12. AIHW Cat. No. AUS 122. Canberra: AIHW; 2010.
35. Australian Institute of Health and Welfare. Prevention of cardiovascular disease, diabetes and chronic kidney disease: targeting risk factors. AIHW Cat. No. PHE 118. Canberra: AIHW; 2009.
36. McDonald S, Excell L, Dent H. New patients commencing treatment in 2008. In: ANZDATA Registry Report 2009. Adelaide, South Australia: Australia and New Zealand Dialysis and Transplant Registry; 2009.
37. Australian Institute of Health and Welfare. An overview of chronic kidney disease in Australia, 2009. AIHW Cat. No. PHE 111. Canberra: AIHW; 2009.
38. Australian Institute of Health and Welfare. Australian hospital statistics 2006-07. Health Services Series No. 31. AIHW Cat. No. HSE 55. Canberra: AIHW; 2008.
39. Australian Institute of Health and Welfare. Health care expenditure on chronic kidney disease in Australia 2004–05. AIHW Cat. No. PHE 117. Canberra: AIHW; 2009.
40. Australian Institute of Health and Welfare. Health expenditure for arthritis and musculoskeletal conditions, 2004–05. Arthritis Series No. 10. AIHW Cat. No. PHE 115. Canberra: AIHW; 2009.
41. Australian Institute of Health and Welfare. Arthritis and osteoporosis in Australia 2008. Arthritis Series No. 8. AIHW Cat. No. PHE 106. Canberra: AIHW; 2008.

Appendices

Appendix 1: Relationship with WA Health Strategic Intent 2010–2015 and policy directions

The *WA Chronic Health Conditions Framework* (the Framework) aims to support the vision of the *WA Health Strategic Intent* of a healthier, longer, and better quality of life for all Western Australians through:

- caring for individuals and the community
- caring for those who need it most
- making the best use of funds and resources
- supporting our team.

The Framework builds on the *Chronic Disease Framework for Western Australia 2005–2010*, and aligns with recent evidence and strategic policy directions adopted by WA Health, including:

- The WA Health *Health Activity Purchasing Intentions 2010–2011: Activity Based Funding and Management* describes the WA Health management framework that integrates clinical services planning, funding, resource allocation, resource use, service delivery and quality management. It will deliver the best use of funds and resources ensuring high quality, patient-focused and safe care.
- The *WA Health Clinical Services Framework 2010–2020:* sets out the planned structure of public health service provision in Western Australia over the next 10 years. It is an important tool for strategic statewide planning and will assist metropolitan and country health services in developing localised clinical service plans.
- The *WA Primary Health Care Strategy:* describes the role of WA Health within primary health care in Western Australia. It provides a policy framework for WA Health to undertake statewide reform initiatives, in partnership with all primary health care stakeholders. This strategy complements the Framework by providing the detail around the role of primary health care, strategies to undertake statewide reform and primary health care partnerships.
- The *WA Health Chronic Conditions Self-Management Strategic Framework 2011–2015:* as one of the guiding principles of this framework, it describes in detail a statewide approach to integrating self-management into the core principles of chronic condition management, capacity-building for health professionals to support self-management, and delivering self-management programs and services to consumers.
- The draft *WA Health Promotion Strategic Framework 2012–2016:* developed by the Public Health Division, Chronic Disease Prevention Directorate, it sets out directions and priorities for the prevention of chronic disease and injury by facilitating improvements in health behaviours and environments. The target populations are people who are currently well, and those who are at risk of developing disease or experiencing injury by engaging in risky lifestyle choices. These groups are reached by adopting a 'whole-of-population' approach. By targeting these populations, it complements the Framework in targeting people who have one or more chronic conditions.

The Framework is further informed by the broader context of health policy and reform in the state and nationally including:

- *WA Subacute Care Plan 2009–2013*
- *Putting the Public First: Partnering with the Community and Business to Deliver Outcomes, WA Economic Audit Committee* (2009) final report
- *WA Health Promotion Strategic Framework 2007–2011*, Population Health Division, Department of Health WA
- *Western Australian Aboriginal Primary Health Resource Kit 2007*, Health Reform Implementation Taskforce, Department of Health WA
- *Western Australian Health Cancer Services Framework, October 2005* and the *Palliative Care in Western Australia Final Report December 2005*.
- *WA Mental Health Plan 2011–2016* (to be released)
- *Australia: The Healthiest Country by 2020, National Preventative Health Strategy – the roadmap for action.* 30 June 2009. National Preventative Health Taskforce
- *National Hospital and Health Reform Report 2009*
- *Building a 21st Century Primary Health Care System, National Primary Health Care Strategy 2010*
- *National Partnership Agreement – Closing the Gap in Indigenous Health Outcomes 2009*
- *National Chronic Disease Strategy 2005* – Australian Health Ministers' Conference.
- *National Standards Assessment Program of Palliative Care Australia*.

Appendix 2: Chronic Conditions in WA: Epidemiology and health impact – A snapshot and risk factor relationships

Explanatory note

This snapshot was derived from published information sources with priority given to WA specific, rather than national, information wherever possible.

References that compared a number of chronic conditions using consistent data analysis strategies were used in preference to references addressing individual conditions in order to ensure comparison of like with like. A particular challenge encountered was the lack of readily comparable information regarding chronic kidney disease, as most sources of information regarding chronic conditions focus on 'high prevalence' conditions such as cardiovascular, endocrine, and respiratory disease. Every effort has been made to ensure that the information presented regarding chronic kidney disease is comparable to that for the other conditions.

Prevalence information is based on self-reported responses in the adult *Health and Well-being Surveillance System, 2009*, for diabetes, cardiovascular disease, and respiratory disease; and from the ANZDATA registry report, 2009, for end-stage kidney disease.

Updated Burden of Disease calculations and bulletins are currently in preparation by the WA Health Epidemiology Branch. The burden of disease projections in this snapshot are based on actual calculations for 2006.

The National Health Expenditure data is based on the subset of health expenditure that can be allocated to specific disease categories. This accounts for 65 per cent of total health expenditure in Australia.

Table 2 WA chronic conditions snapshot: epidemiology and health impact of diabetes and cardiovascular disease

Diabetes	Cardiovascular Disease
What is it? A metabolic disease in which high blood glucose levels result from defective insulin secretion or insulin production, or both. The most common form is Type 2, in which there are reduced levels of insulin or the inability of the body cells to properly use insulin.[4]	**What is it?** Group of disease of the heart and blood vessels; in this snapshot limited to coronary heart disease, in which the blood vessels supplying the heart muscle itself become blocked, causing episodes of chest pain (angina) and possibly heart attack.[4]
Prevalence All types: 5.7%[31]	**Prevalence** 5.9%31
Burden of Disease, WA 2009 projections Diabetes Mellitus Years of Life Lost: 3,058[32] Years Lost due to Disability: 14,391[32] Type 2 Diabetes Years of Life Lost: 2,546[32] Years Lost due to Disability: 13,926[32]	**Burden of Disease, WA 2009 projections** Cardiovascular disease Years of Life Lost: 28,577[32] Years Lost due to Disability: 9,332[32] Ischaemic Heart Disease Years of Life Lost: 16,592[32] Years Lost due to Disability: 3,907[32]
Mortality Diabetes is the eighth most common cause of avoidable mortality (1,239 deaths or 4.0% of total), WA 1997-2006.[6]	**Mortality** Ischemic heart disease is the top cause of avoidable mortality (6,317 deaths or 20.6% of total), WA 1997–2006,[6]
Morbidity In WA in 2006/07, Diabetes and its complications (excluding renal dialysis) was the top cause of potentially preventable hospitalisations (14,177 separations or 1.9% of the total).[6] In 2007/08, WA males recorded a separation rate for diabetes of 4.4 per 1,000 persons, while females recorded a hospitalisation rate of 3.6 per 1,000 persons. From 1988/89–2007/08, the hospitalisation rate per 1,000 persons increased significantly for both males (6.6% per year) and females (5.8% per year).[33]	**Morbidity** In WA in 2006/07, Congestive Heart Failure was the sixth most common cause of potentially preventable hospitalisations (3,846 separations or 0.5% of the total).[6] In 2007/08, there were a total of 12, 810 hospital separations (6.1 per 1,000 persons) for ischaemic heart disease, with approximately two-thirds occurring in males.[33]

Diabetes	Cardiovascular Disease
Inequalities Indigenous population: In 2004/05, the prevalence on diabetes was 6.1% in the Indigenous Australian population, while in the non-Indigenous Australian population the prevalence was 3.8%. The prevalence of diabetes increased in the Indigenous Australian population from 35 years of age onwards, with 32% of Indigenous Australians aged 55 years and over having diabetes.[33] Metropolitan/non-metropolitan: The hospitalisation rate for diabetes in non-metropolitan areas of WA in 2007/08 was 4.7 separations per 1,000 persons. This was slightly higher than the rate in the metropolitan areas, at 3.6 separations per 1,000 persons. The mortality rate was also higher in the non-metropolitan areas (26 deaths per 100,000 persons) compared to the metropolitan areas (15 deaths per 100,000 persons).[33]	**Inequalities** Indigenous population: In 2006, the mortality rate for WA Indigenous population was approximately 1.5 times higher than for the WA non-Indigenous population. In 2007/08, the hospitalisation rate for the WA Indigenous population due to ischaemic heart disease was almost three times higher than for their non-Indigenous counterparts.[33] Metropolitan/non-metropolitan: In 2007/08 the hospitalisation rate for ischaemic heart disease was higher in the non-metropolitan areas (15.4 per 1,000 persons) compared to the metropolitan areas (5.4 separations per 1,000 persons). Mortality rates, in 2006, in WA, were similar at 89 deaths per 100,000 persons and 90 deaths per 100,000 persons respectively.[33]
National Health Expenditure Diabetes mellitus: $934 million in 2004–05.[34]	**National Health Expenditure** All cardiovascular diseases: $5,778 million in 2004–05.[34]

Table 3 Risk factor relationships of diabetes and cardiovascular disease

Risk factor relationships			
Risk Factor	**Type 2 diabetes[35]**	**Risk Factor**	**Ischaemic heart disease[35]**
Overweight and obesity	✔	Overweight and obesity	✔
Physical inactivity	✔	Physical inactivity	✔
Poor diet	✔	Poor diet	✔
Tobacco smoking	✔	Tobacco smoking	✔
Excessive alcohol		Excessive alcohol	✔
High blood pressure		High blood pressure	✔
High blood cholesterol	✔	High blood cholesterol	✔
Impaired glucose regulation	✔	Impaired glucose regulation	
Depression		Depression	✔

Table 4 WA chronic conditions snapshot: epidemiology and health impact of chronic obstructive pulmonary disease and chronic kidney disease

Chronic Obstructive Pulmonary Disease	Chronic Kidney Disease
What is it? Progressive disease of the lungs and airways resulting in worsening shortness of breath on exertion. The main underlying disease process is emphysema, in which the lung cells are gradually destroyed and the lungs are less able to move air in and out. In chronic obstructive pulmonary disease (COPD) this is coupled with chronic bronchitis–the overproduction of mucus in the upper airways – resulting in excessive phlegm and persistent coughing.[4]	**What is it?** Chronic Kidney Disease (CKD) involves long-term loss of kidney function. In severe cases, kidney function may deteriorate to the extent that it is no longer sufficient to sustain life (end-stage kidney disease: ESKD), and the person requires dialysis or a kidney transplant.[4]
Prevalence Respiratory problem for six months or more: 3.4% (lifetime/ever); 2.1% (current).[31]	**Prevalence** ESKD with transplant, WA:744 (344/million people).[36] Dialysis dependent ESKD, WA: 978 (452/million people).[36]

Chronic Obstructive Pulmonary Disease	Chronic Kidney Disease
Burden of Disease, WA 2009 projections Chronic Lung Conditions Years of Life Lost: 6,326[32] Years Lost due to Disability: 11,601[32] COPD Years of Life Lost: 3,867[32] Years Lost due to Disability: 3,032[32]	**Burden of Disease, WA 2009 projections** Genitourinary Diseases Years of Life Lost: 2,015[32] Years Lost due to Disability: 4,588[32] Nephritis and nephrosis (excluding diabetic, congenital and poisoning related renal failure) Years of Life Lost: 1,544[32] Years Lost due to Disability: 196[32]
Mortality COPD is the seventh most common cause of avoidable mortality (1,366 deaths or 4.5% of total), WA 1997–2006.[6]	**Mortality** Nephritis and nephrosis is the 20th most common cause of avoidable mortality (345 or 1.1% of total), WA 1997–2006.[6]
Morbidity In WA in 2006/07, COPD was the 4th most common cause of potentially preventable hospitalisations (4,549 separations or 0.6% of the total).[6] In 2007/08, there were 4,783 hospital separations due to Chronic Obstructive Pulmonary Disease (COPD). The hospital separation rate was 2.7 separations per 1,000 persons for males and 2.0 separations per 1,000 persons for females. Between 1988/89 and 2007/08, the separation rate for COPD increased significantly for both males (0.6%) and females (4.9%).[33]	**Morbidity** In Australia in 2006/07 there were 933,772 episodes of regular dialysis where CKD was the principal diagnosis, 29,943 other hospitalisations where CKD was the principal diagnosis and 157,633 where CKD was recorded as an additional diagnosis. Admission for regular dialysis and other hospitalisations where CKD was the principal diagnosis equated to 12.7% of all hospitalisations — occupying over 1 million hospital bed days or 4% of all bed days in that year.[37] In WA in 2006/07, there were 102,786 hospital separations for care involving dialysis (includes private and public hospitals.[38]

Chronic Obstructive Pulmonary Disease	Chronic Kidney Disease
Inequalities Indigenous population: In 2006, the mortality rate due to COPD was 4.5 times higher in the WA Indigenous population compared to the WA non-Indigenous population.[33] Metropolitan/non-metropolitan: Hospitalisation rates for COPD were higher in the non-metropolitan areas compared to the metropolitan areas. In 2007/08, the hospitalisation separation rate was 2.7 separations per 1,000 persons compared to 1.9 separations per 1,000 persons respectively. In 2006, the mortality rates for COPD were similar in the non-metropolitan areas (20 deaths per 100,000 persons) compared to the metropolitan areas (19 deaths per 100,000 persons).[33]	**Inequalities** Indigenous population: As for many other chronic diseases, the rates of CKD are higher among Aboriginal and Torres Strait Islander peoples than for other Australians. In 2004, around 10% of new cases of treated ESKD, and 6.7% of all cases of treated ESKD, were among Indigenous Australians (McDonald et al. 2008). This is despite Indigenous Australians making up only 2.4% of the population. In some Indigenous communities the rates of treated ESKD are up to 30 times the rates among other Australian.s[39]
National Health Expenditure Respiratory: $3,424 million in 2004–05.[34]	**National Health Expenditure** CKD: $898.7 million of total expenditure in 2004–05.[39]

Table 5 Risk factor relationships for chronic obstructive pulmonary disease and chronic kidney disease

Risk factor relationships			
Risk Factor	**COPD[4]**	**Risk Factor**	**Kidney disease[35]**
Overweight and obesity		Overweight and obesity	✔
Physical inactivity		Physical inactivity	✔
Poor diet		Poor diet	✔
Tobacco smoking	✔	Tobacco smoking	✔
Excessive alcohol		Excessive alcohol	
High blood pressure		High blood pressure	✔
High blood cholesterol		High blood cholesterol	
Impaired glucose regulation		Impaired glucose regulation	
Depression		Depression	

Table 6 WA chronic conditions snapshot: epidemiology and health impact of musculoskeletal conditions

Musculoskeletal Conditions	
What is it? Musculoskeletal conditions are problems and disorders of the bones and muscles and their attachments to each other. They include osteoarthritis, rheumatoid arthritis, osteoporosis, back pain, slipped disc, and others.[40]	
Prevalence Arthritis: 19.9%; Osteoporosis: 4.6%[31]	
Burden of Disease, WA 2009 projections	
All Musculoskeletal Conditions	
Years of Life Lost:	841[32]
Years Lost due to Disability:	11,846[32]
Osteoarthritis/Rheumatoid Arthritis	
Years of Life Lost:	227[32]
Years Lost due to Disability:	5,493[32]
Back Pain/Slipped Disc	
Years of Life Lost:	92[32]
Years Lost due to Disability:	4,759[32]
Mortality Minor cause of death; ~540 (0.3%) of all deaths due to arthritis and 180 (0.1%) due to osteoporosis in Australia in 2004.[4]	

Musculoskeletal Conditions
Morbidity In Australia in 2006/07 there were 406,744 hospitalisations due to musculoskeletal conditions, including osteoarthritis (82,292 – 20.2%), chronic back pain (52,894 – 13.0%), slipped disc (23,985 – 5.9%), osteoporosis (8,035 – 2.0%), rheumatoid arthritis (6,920 – 1.7%) and others.[40] In WA in 2006/07, there were 50,088 hospital separations where the principal diagnosis was a disease of the musculoskeletal system or connective tissue.[38]
Inequalities Indigenous population: Based on 2004/05 Australian prevalence, Indigenous adults are more likely than non-Indigenous adults to report being diagnosed with arthritis (20% vs. 17%). Indigenous men aged over 40 years are 2.5 times more likely to report a diagnosis of osteoporosis than their non-Indigenous counterparts. Conversely, Indigenous women are only 59% as likely to report an osteoporosis diagnosis as non-Indigenous women in this same age group.[41] Metropolitan/non-metropolitan: Self-reporting of arthritis and osteoporosis is not significantly different among people living outside major cities compared to metropolitan residents (Australia 2004/05). However, in 2006/07, non-metropolitan Australian residents were more likely to have primary total hip and knee replacements than city dwellers.[41]
National Health Expenditure All musculoskeletal conditions: $3,864 million in 2004-5 including osteoarthritis ($1,193M), chronic back pain ($350M), osteoporosis ($297M), rheumatoid arthritis ($171M), slipped disc ($153M) and others.[40]

Table 7 Risk factor relationships for musculoskeletal conditions

Risk factor relationships	
Risk Factor	**Musculoskeletal[4]**
Overweight and obesity	✔
Physical inactivity	✔
Poor diet	✔
Tobacco smoking	✔
Excessive alcohol	✔
High blood pressure	
High blood cholesterol	
Impaired glucose regulation	
Depression	

WA Chronic Health Conditions Framework 2011–2016

This document can be made available in alternative formats on request for a person with a disability.

Produced by Health Networks Branch

HP012343 MAR'12