MEASURING WHAT MATTERS:

A refined NCD reporting framework for Australia.

The Australia-Indonesia Centre

Key messages

[1]

NCDs extend beyond cardiovascular disease, diabetes, cancer and chronic respiratory disease, the focus of recent policy.

Implications for Policy: Any reporting of NCDs in Australia should include a focus on musculoskeletal disorders, mental disorder, neurological disease, chronic skin conditions, vision and hearing defects and gynaecological conditions as these all contribute to the burden of disease in Australia and are all largely preventable.
The key to prevention is a measure of risk factors and determinants.

[2]

NCDs occur across all ages, not just in adulthood.

Implications for Policy: NCDs that emerge in childhood and adolescence provide a particularly important target for intervention as this can improve the health of young people now, their health as adults, and the health of the next generation.

[3]

Aboriginal and Torres Strait Islander (Indigenous) Australians have a distinct profile of NCDs, which commonly start earlier in life and are more severe.

Implications for Policy: There is a distinct policy context, and unique opportunities for responses in Indigenous populations. A distinct NCD reporting framework is therefore required.

[4]

Current data systems in Australia measure some, but not all relevant NCDs. Data for adolescents is particularly lacking.

Implications for Policy: Extending the scope of NCD measurement is required, as is reducing the age to include children and adolescents. Commitment to regular roll out of the Australian Health Survey is required.

What are NCDs?

NCDs represent a group of conditions which share the common characteristics of chronicity and non-transmissibility; many are associated with significant stigma and are determined, to varying degrees, by living conditions and behaviours.

Key NCDs in Australia include: cancer, cardiovascular disease, mental disorder, diabetes, musculoskeletal disorders, sense organ disorders, dementia and chronic respiratory diseases.

Non-communicable diseases (NCDs) are the leading cause of death and disability in Australia, with up to 90% of deaths caused by these largely preventable diseases [2]. Indigenous Australians are disproportionally affected, with up to 70% of the health gap between Indigenous and non-Indigenous Australians explained by NCDs [3].

Of policy relevance, NCDs are largely preventable through modification of risks that accumulate across all ages: tobacco smoking, hypertension, overweight and obesity, and diets that are low in fibre and high in fats are some key examples. Many preventative interventions are cost effective and represent an important opportunity to avert the economic burden of these diseases [4].

A major barrier to policy has been the inadequacy of NCD measurement and reporting. Current indicators do not measure all the NCDs of importance, do not measure the appreciable burden of these diseases sufficiently early in life, and do not measure differences across population groups. This brief recommends an improved approach to measuring NCDs in Australia with the goal of informing effective policy.

A reporting framework is generally defined as a group of indicators brought together to describe the status of a given population.

Indicators [1] are an essential component to accountable action and should:

- Speak to a topic of priority for public policy, or an important aspect of a program of significance; be a catalyst for action.
- Be valid, reliable, comparable, timely and easily interpreted.
- Be measureable through current data systems, or have a plan for new, feasible, strategy for measurement.
- Link to national or global policy/ programming priorities.

[1] NCDs extend beyond cardiovascular disease, diabetes, cancer and chronic respiratory disease

A strong reporting framework accompanied by well-defined indicators provides the basis of accountability for NCDs globally [5], and in Australia. There are currently three key frameworks in Australia which focus on NCDs: Australia's Health Tracker (AHT), the National Strategic Framework for Chronic Conditions (NSFCC) and the National Health Priority Areas initiative (NHPA).

Figure 1. Summary of key national NCD frameworks in Australia.

	Australian Health Tracker	National Strategic Framework for Chronic Conditions	National Health Priority Areas
Core Focus	Building accountability.	Policy direction, to inform policy until 2025.	Policy direction and national data priorities.
Key Strengths	Interactive sub-national maps available online.	A strength is its 3 key objectives: prevention; access to evidence based health care; recognise priority populations.	Collaboration: Commonwealth, State and Territory governments have coordinated targets.
	'Report cards' give snapshots of selected NCD indicators, and are regularly being developed.		Acknowledges the need to populate key indicators and focuses on building national benchmark data.
What NCDs are included?	✖ Expands slightly on WHO priorities, but with significant omissions.	✖ Only a few disease groups are specifically mentioned. Some that cause significant burden are not covered.	✖ Diseases were selected based on those causing the most burden overall for Australia, with significant omissions. Mix of specific diseases and disease groups.
Are indicators well defined?	✔ Mostly well-defined indicators.	✖ Varies greatly between well-defined & poorly defined.	➜ ✔ Somewhat; varies between disease groups.
Focus on risk factors?	✔ Yes, limited by narrow definition of NCDs	✔ Yes, limited by narrow definition of NCDs.	✔ Yes, limited to disease-specific risk factors.
Focus on determinants?	➜ ✔ Yes, although limited to Socio-economic differences.	➜ ✔ Somewhat; conceptualised as risk factors rather than determinants.	✖ Acknowledged, but not fully defined.
Indigenous Australians differing needs recognised?	➜ ✔ Somewhat; some indicators are reported by indigenous status.	➜ ✔ Somewhat; target priority populations are identified, including Indigenous Australians.	➜ ✔ Somewhat sporadically, dependent on disease outcome.

Table 1. The top ten causes of death or disability in Australia and their representation within an existing reporting frameworks. Burden is measured in Disability Adjusted Life Years (DALYs).

Yellow indicates the NCD outcome is not included or poorly defined;

Green indicates the NCD outcome is included.

Rank	Cause of death or injury	% Total DALYs burden
1	Low back and neck pain	7.83%
2	Ischemic heart disease	6.48%
3	Skin and subcutaneous diseases	3.86%
4	Depressive disorders	3.66%
5	Migraine	3.43%
6	Other musculoskeletal disorders	3.42%
7	Sense organ disorders	3.27%
8	Stroke	3.16%
9	Tracheal, bronchus, and lung cancer	3.01%
10	Alzheimer disease & other dementias	2.74%

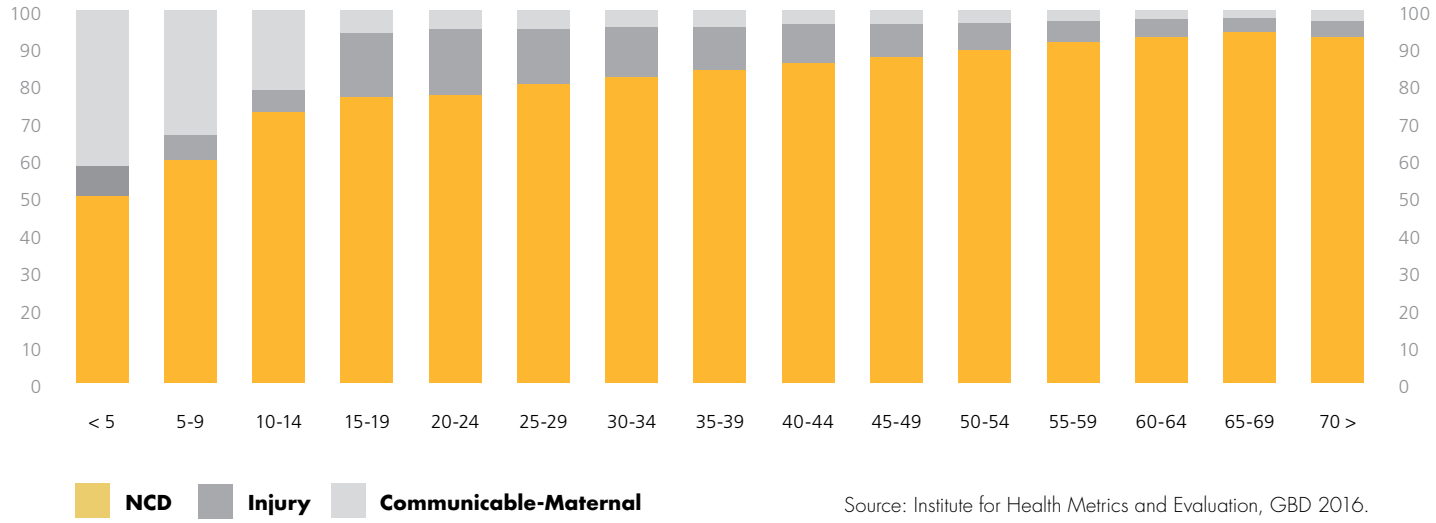
Source for Ranking and Daly %: Institute for Health Metrics and Evaluation, GBD 2016

In summary, there are two key issues. Firstly, current frameworks do not capture many important NCDs. Secondly, many indicators in the current frameworks are poorly defined, with little guidance as to how key NCDs and their risks should be measured. Any reporting of NCDs in Australia should be widened to include a focus on musculoskeletal disorders, mental disorders, neurological disease, chronic skin conditions, vision and hearing defects and gynaecological conditions given that these all contribute to the burden of disease in Australia and are, in part, preventable.

[2] NCDs are significant at all ages, not just in adulthood.

NCDs are often thought of as conditions of adulthood, with adolescence considered only in terms of prevention. However, as shown in Figure 2, NCDs cause a large proportion of the disease burden across all ages in Australia. While childhood and adolescence present a crucial point of intervention for primary prevention, the burden of NCDs experienced by children and adolescents should not be overlooked.

Figure 2. Proportion of DALYs across all ages that are caused by NCDs, Injury and Communicable/ Maternal outcomes.



Source: Institute for Health Metrics and Evaluation, GBD 2016.

The specific NCDs that cause disease in Australia change remarkably with age (Table 2). For example, chronic respiratory disease, chronic skin diseases and congenital disorders are an important contributor for children. For adolescents, mental disorders, migraine and musculoskeletal disorders become an important contributor to disease burden. For adults, back pain and drug use disorders increase in significance, while mental disorders persist. In the 60+ age range we see the impact of heart disease, cancer, COPD and diabetes.

Table 2. Leading causes of death or disability in Australia, 2016.

	1-4	5-9	10-14	15-19	20-24	25-39	40-59	60+
1	Skin Diseases	Skin diseases	Skin diseases	Skin diseases	Drug disorders	Lower back/neck pain	Lower back/neck pain	Ischemic heart disease
2	Congenital defects	Asthma	Asthma	Depressive disorders	Depressive disorders	Drug use disorders	Depressive disorders	Alzheimers/dementia
3	Asthma	Anxiety disorders	Anxiety disorders	Migraine	Skin diseases	Migraine	Oth. musculoskeletal	Lower back/neck pain
4	Drowning	Congenital defects	Migraine	Anxiety disorders	Migraine	Depressive disorders	Migraine	Lung cancer
5	Upper Respiratory	Conduct disorder	Conduct disorder	Road injuries	Lower back/neck pain	Self-harm	Lung cancer	Sense organ diseases
6	Road injuries	Autistic spectrum	Depressive disorders	Drug use disorders	Self-harm	Anxiety disorders	Ischemic heart disease	Oth. musculoskeletal
7	Autistic spectrum	Upper respiratory	Lower back/neck pain	Asthma	Road injuries	Skin diseases	Drug use disorders	Stroke
8	Endo/metab/blood/imm	Road injuries	Autistic spectrum	Self-harm	Anxiety disorders	Oth. musculoskeletal	Self-harm	COPD
9	Sense organ diseases	Sense organ diseases	Congenital defects	Lower back/neck pain	0th. musculoskeletal	Road injuries	Anxiety disorders	Diabetes mellitus
10	Preterm birth	Migraine	Bipolar disorder	Bipolar disorder	Asthma	Asthma	Sense organ diseases	Colorectal cancer

Source: Institute for Health Metrics and Evaluation, GBD 2016.

[3] Indigenous Australians have a distinct profile of NCD.

NCDs can occur earlier in life and at higher rates for Indigenous Australians compared to their non-Indigenous counterparts (Figure 3). For example, type 2 diabetes occurs in the Indigenous population at a rate that is almost 5 times higher than in non-Indigenous Australians [3]. There is also a premature onset of risk, with 20% of Indigenous 15-19 year olds reporting smoking (compared to less than 10% of all Australians). Of note, data on these NCD outcomes and risks is largely absent before age 15 years despite a substantial prevalence (e.g. a prevalence of daily smoking of 20% in 15-19 year olds suggests that many 10-14 year olds also smoke). These findings highlight the need to report NCDs for Indigenous Australians separately to enable an effective monitoring and policy response.

Figure 3. Comparison of key NCD outcomes and risk factors for Indigenous and all-Australians.

SOURCE: Indigenous Australian data from AATSIHS (2012-2013) and Australian data from NHS (2014-2015)
Australian comparator data includes both indigenous and non-indigenous data, therefore disparities may be underrepresented.

[4] Current data systems in Australia measure some, but not all relevant NCDs

Australia has invested in national survey surveillance to measure key health issues and risks for the population. Table 3 explores the adequacy of this data for key NCD outcomes and risks across all ages.

Table 3. Summary of data availability and quality across all ages for NCD in Australia.
In this summary, some disease groups are pooled together (e.g. cancer and cardiovascular disease). Datasets included: the National Health Survey, 2014-2015 (NHS), the National Hospital Morbidity Database, 2015-2016 (NHMD), and the AIHW Australian Cancer Database, 2013 (ACD).

		Infancy/Childhood			Adolescence				Adulthood	
Outcomes	**Source**	<1	1-4	5-9	10-14	15-19	20-24	25-39	40-59	60+
Cancers	ACD									
Cardiovascular diseases	NHMD									
Chronic Respiratory diseases	NHS									
Chronic Liver disease	NHMD									
Neurological disorders	NHMD/NHS									
Mental Disorders[3]	NHS									
Self-harm/ suicide	-									
Substance use Disorders	NHS									
Diabetes mellitus	NHMD/NHS									
Gynaecological diseases	-									
Chronic Kidney disease	NHS									
Anemias	NHMD									
Musculoskeletal[1]	NHS									
Congenital birth defects	NHS									
Oral disorders	NHMD									
Sense organ	NHMD									
Chronic Skin[2]	NHS									
Sudden infant death syndrome	NHS									
Risks	**Source**									
Diet[4]	NHS									
Physical Activity[3]	NHS									
Blood Pressure	NHS									
Fasting blood glucose[4]	NHS									
Body-mass index	NHS									
Cholesterol[4]	NHS									
Kidney function	-									
Occupational risks	-									
Tobacco use/ exposure[3]	NHS									
Alcohol use[3]	NHS									
Drug use	-									
Unsafe sex	-									
Sexual abuse	-									
Intimate partner violence	-									

SOUND QUALITY AND AVAILABLE DATA AVAILABLE BUT QUALITY OF MEASURE IS LACKING DATA GAP

Notes:
1. Data missing: neck pain and juvenile arthritis
2. Data missing: acne
3. Use of parent-proxy in adolescence sub-optimal
4. NHS use of self-report sub-optimal- biomedical markers preferred

[4] Current data systems in Australia measure some, but not all relevant NCDs

Overall Australia has a robust foundation of national public health data however there are important omissions.

Significant data gaps exist for outcomes such as:

- Self-harm
- Gynaecological diseases
- Neck pain
- Chronic liver disease
- Urinary diseases
- Skin diseases (partially covered).

Gaps around risk factors include:

- Mental wellbeing for under 18s
- Impaired kidney function
- Sexual abuse
- Intimate partner violence
- Occupational risks.

Other measures are included, but they are suboptimal in measurement quality. Key blood and urine tests that could provide important markers of chronic diseases and nutritional deficiencies are also missing (e.g. a blood test for fasting plasma glucose is a better measure for diabetes mellitus than a self-report survey item).

The profile of NCDs in Australia extends beyond cardiovascular disease, diabetes, cancer and chronic respiratory disease. A greater focus on NCDs as they occur in children and adolescents, as well as the inclusion of objective measures for key outcomes, risks and deteminants, would help ensure greater visibility of NCDs in Australia that would help shape an appropriate policy response.

About this study: We were supported by the Australia Indonesia Centre to develop a comprehensive reporting framework for NCDs in Australia and Indonesia (the focus of a separate policy brief). We defined a comprehensive framework for NCDs in Australia which considered diseases of public health and policy relevance. We assessed the quality of currently available NCD data, and defined indicators to measure key diseases and their risks. We also reported a NCD profile in Australia, with a sub-analysis of the profile of NCDs amongst Aboriginal and Torres Strait Islander Australians.

Source: This Policy Brief is based on 'Towards a comprehensive NCD reporting framework for Australia' project report available here: https://figshare.com/articles/Towards_a_Comprehensive_NCD_Reporting_Framework_for_Australia/7413761

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