

# MEASURING WHAT MATTERS:

A refined NCD reporting framework  
for Indonesia.



## Key messages

[1]

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

Implications for policy: Reporting of NCDs in Indonesia should include a focus on musculoskeletal disorders, poor mental health, cardiovascular disease, cancer, diabetes, chronic skin conditions, vision and hearing defects and chronic respiratory conditions as these all contribute to the burden of disease in Indonesia and are, in part, preventable.

[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]

**Key NCDs vary sub-nationally in Indonesia.**

Implications for policy: Geographic health inequity across the archipelago requires regular sub-national monitoring to take advantage of unique opportunities for change.

[4]

**Current data systems in Indonesia measure some but not all relevant NCDs. Particular gaps exist around some key NCDs, and data for adolescents is particularly lacking.**

Implications for policy: There is a need to further invest in better objective measures (e.g. improved mental health measures for RISKESDAS, expansion of the cancer registry), and extend data collection to younger age groups (e.g. POSBINDU risk measurement to begin at age 10).

## What are NCDs?

NCD 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 Indonesia include: cancer, cardiovascular disease, chronic liver diseases, kidney diseases, mental disorders, diabetes, musculoskeletal disorders, sense organ disorders, dementia and chronic respiratory diseases.

Non-communicable diseases (NCD) have emerged as the leading causes of death and ill-health in Indonesia. Despite several infectious diseases continuing to be major health challenges for Indonesia, the health loss from NCDs has dramatically increased [2].

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 [3, 4].

A major barrier to policy has been the inadequacy of NCD measurement and reporting to date. Current indicators do not measure all the NCDs of importance, do not measure the 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 Indonesia 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 of accountable action and should be:**

- A topic of priority for public policy, or an important aspect of a program of significance; be a catalyst for action.
- Valid, reliable, comparable, timely and easily interpreted.
- 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.

A strong reporting framework accompanied by well-defined indicators provides the basis of accountability for NCDs globally [5], and in Indonesia. There are currently two key frameworks in Indonesia which focus on NCDs: The National Strategic Action Plan for the Prevention and Control of NCDs 2015- 2019; and the WHO Action Plan for the Prevention and Control of Non Communicable

disease in South-East Asia 2013-2020. These two frameworks, and their related indicators and targets are both based on the WHO Global Action Plan and are quite similar. Even though both frameworks acknowledge the range of NCDs in Indonesia and the region are broader than those outlined by WHO, the targets and indicators they recommend do not reflect this.

**Figure 1.** Summary of key NCD frameworks in Indonesia.

	Indonesian Action Plan for NCD (version 2)	WHO Action Plan for the Prevention and Control of Non Communicable Diseases in South-East Asia 2013-2020
<b>Core Focus</b>	Prevention and control of NCDs from 2015-2019	Prevention, control and inform policy 2013-2020.
<b>Key Strengths</b>	A detailed action plan for NCDs. Includes basic principles detailed in WHO Action Plan (inc. life-course approach, multi-sectoral approach). Also includes details on coordination and accountability around NCDs for Indonesia.	The WHO action plan includes clear targets, well-defined indicators, and suggestions for 'best buy' evidence-based policy reforms.
<b>What NCDs are included?</b>	✗ Does expand on WHO priorities, but with significant omissions. Some relevant NCDs for Indonesia are missing, or, data reported on but not linked to specific targets.	✗ The WHO priorities are: CVD, Cancer, CRD, Diabetes and Cancer; risks include: smoking, risky alcohol use, high BP, diet, physical activity and obesity.
<b>Are indicators well defined?</b>	✓ Somewhat well-defined indicators, however most limited to 18yrs+, a few 15yrs+.	✓ Somewhat well-defined indicators, however largely adult focused.
<b>Focus on risk factors?</b>	✓ Yes, limited by narrow definition of NCD.	✓ Yes, limited by narrow definition of NCD.
<b>Focus on determinants?</b>	→ ✓ Somewhat, not specifically linked to targets or indicators. Disaggregation of data by various indicators if inequality is recommended.	→ ✓ Somewhat, importance is noted. Broadly defined and a few examples given - but not detailed.

**Table 1.** Top ten causes of death or disability in Indonesia and their representation within existing NCD reporting frameworks. Burden is measured in Disability Adjusted Life Years (DALYs).

<div> <div></div> Yellow indicates the NCD outcome is not included or poorly defined;           <div></div> Green indicates the NCD outcome is included.           <div></div> Grey indicates Injury or Communicable, maternal, neonatal, and nutritional disease.         </div>			
Rank	Cause of death or injury		% Total DALYs burden
1	Ischemic heart disease		8.98%
2	Stroke		7.13%
3	Diabetes		4.61%
4	Tuberculosis		4.17%
5	Low back and neck pain		3.91%
6	Neonatal preterm birth		3.1%
7	Sense organ disorders		3.02%
8	Road injuries		3.01%
9	Skin and subcutaneous diseases		2.87%
10	Diarrheal diseases		2.69%

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 some of the key NCDs. Secondly, many indicators in the current frameworks are poorly defined, with little guidance about how key NCDs and their risks should be measured. Any reporting of NCDs in Indonesia should be widened to include a focus on musculoskeletal disorders, poor mental health, cardiovascular disease, cancer, diabetes, chronic skin conditions, vision and hearing defects and chronic respiratory conditions given that these all contribute to the burden of disease in Indonesia and are, in part, preventable.

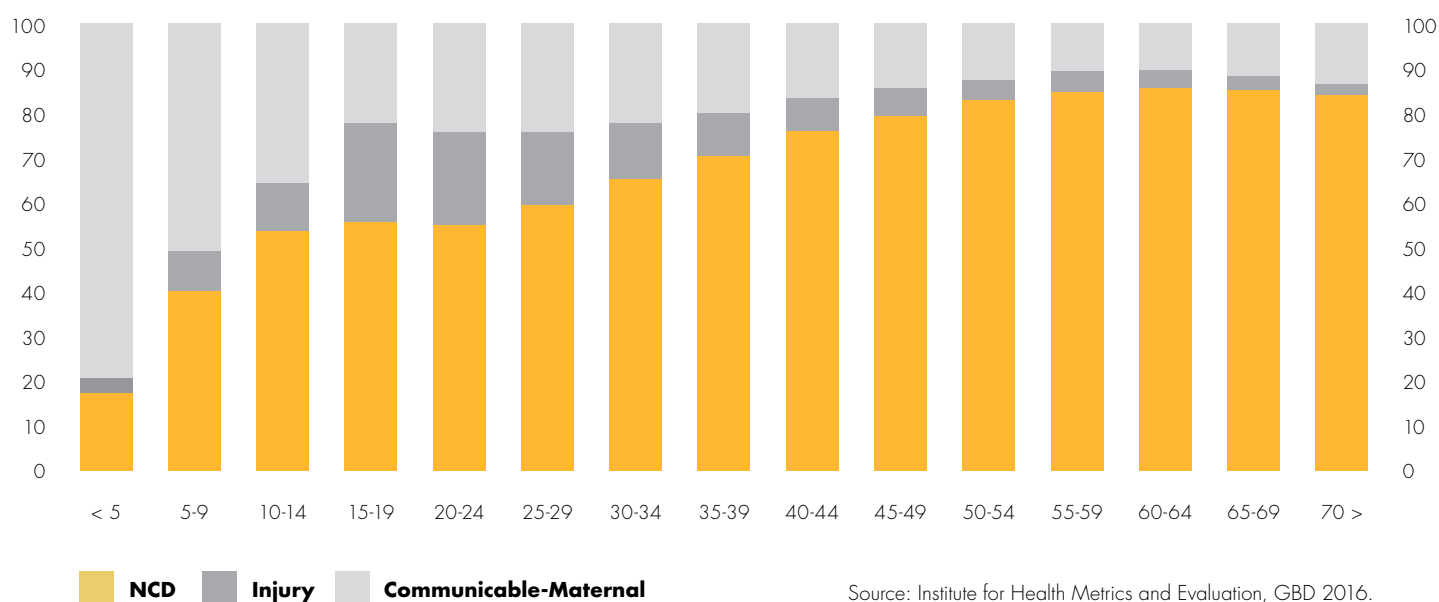
# [2]

## NCDs are significant at all ages, not just in adulthood.

As shown in Figure 2, NCDs cause a large proportion of the disease burden across all ages in Indonesia, not just in adulthood. While childhood and adolescence present a crucial point of intervention for primary prevention of risk factors for adult NCDs, the burden of NCD experienced by children and adolescents should not be overlooked.

**Figure 2.** Proportion of DALYs across all ages.

This figure shows the proportion of DALYs across all ages which are caused by NCDs, Injury and Communicable/ Maternal outcomes.



The specific NCDs that cause disease in Indonesia change remarkably across age groups (table 2). For example, chronic respiratory diseases, chronic skin diseases, sense organ diseases, and congenital disorders are important contributors for children (1-9yrs). For adolescents (10-24yrs), mental disorders, migraine and musculoskeletal disorders become an important contributor to disease burden, while skin diseases and sense

organ diseases persist. For adults (25-59yrs), back pain, stroke, diabetes and ischaemic heart disease increase in significance, while sense organ diseases continue to be a significant disease burden. In the 60+ age range there is an increase in chronic respiratory diseases and the impact of Alzheimer's disease, along with many of the causes that contribute to disease burden in the 25-59yrs group.

# [2]

## NCDs are significant at all ages, not just in adulthood.

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

	1-4	5-9	10-14	15-19	20-24	25-39	40-59	60+
1	Diarrheal Diseases	Intestinal infectious	Skin Diseases	Skin Diseases	Road injuries	Low back / neck pain	Ischemic heart disease	Ischemic heart disease
2	Lower respiratory infect	Skin Diseases	Intestinal infectious	Road injuries	Skin Diseases	Tuberculosis	Stroke	Stroke
3	Measles	Diarrheal diseases	Conduct disorder	Migraine	Tuberculosis	Ischemic heart	Diabetes mellitus	Diabetes mellitus
4	Skin diseases	Asthma	Road injuries	Intestinal infectious	Low back/neck pain	Road injuries	Low back / neck pain	COPD
5	Protein-energy malnutrition	Dietary iron deficiency	Asthma	Tuberculosis	Migraine	Migraine	Tuberculosis	Sense organ disease
6	Congenital defects	Drowning	Diarrheal diseases	Low back/neck pain	Depressive disorder	Stroke	Sense organ disease	Tuberculosis
7	Intestinal infectious	Congenital defects	Migraine	Conduct disorder	Dietary iron deficiency	Skin diseases	Road injuries	Low back / neck pain
8	Dengue	Sense organ diseases	Anxiety disorders	Anxiety disorders	Anxiety disorders	Sense organ disorder	Chronic kidney disease	Asthma
9	Whooping cough	Lower respiratory infection	Dietary iron deficiency	Depressive disorders	Sense organ diseases	Diabetes mellitus	COPD	Alzheimer disease
10	Drowning	Epilepsy	Sense organ disease	Sense organ disease	Oth. musculoskeletal	Oth. musculoskeletal	Asthma	Diarrheal diseases

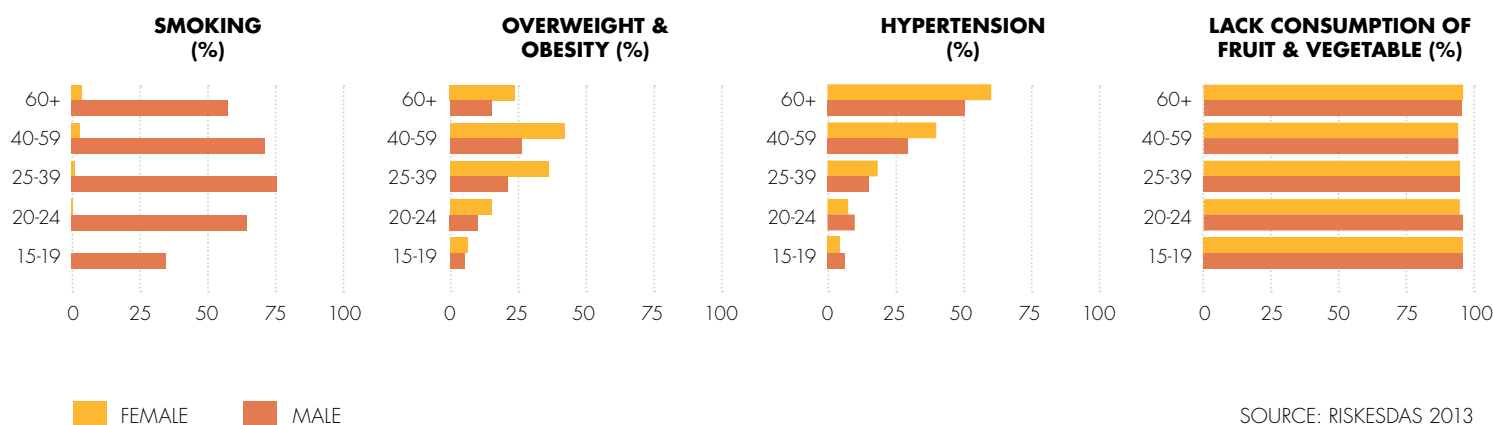
Source: Institute for Health Metrics and Evaluation, GBD 2016.

Key risk factors vary across all ages and by sex (Figure 3). Tobacco use is considerably more prevalent in Indonesian males from 15yrs onward, peaking in the 25-39 year age group; smoking is less prevalent in females, in a pattern that gradually increases with age to peak in the age 60+ group. Overweight/ obesity and hypertension have similar patterns, being more prevalent in

females and significant across all ages. Overweight prevalence peaks at age 40-59 while hypertension peaks in the 60+ age bracket. The prevalence of poor diet (lack of fruit and vegetable consumption) is very high across all ages, with little difference by sex. Of note, RISKESDAS does have data for <15yrs for some risk factors but it was not able to be accessed for this brief.

**Figure 3. Population prevalence of key risk factors in Indonesia, disaggregated by sex.**

Daily smoking, Overweight &/or obesity: BMI≥25, Hypertension: systolic or diastolic ≥140/90 mmHg, and Self-report low fruit and vegetables in diet.



SOURCE: RISKESDAS 2013

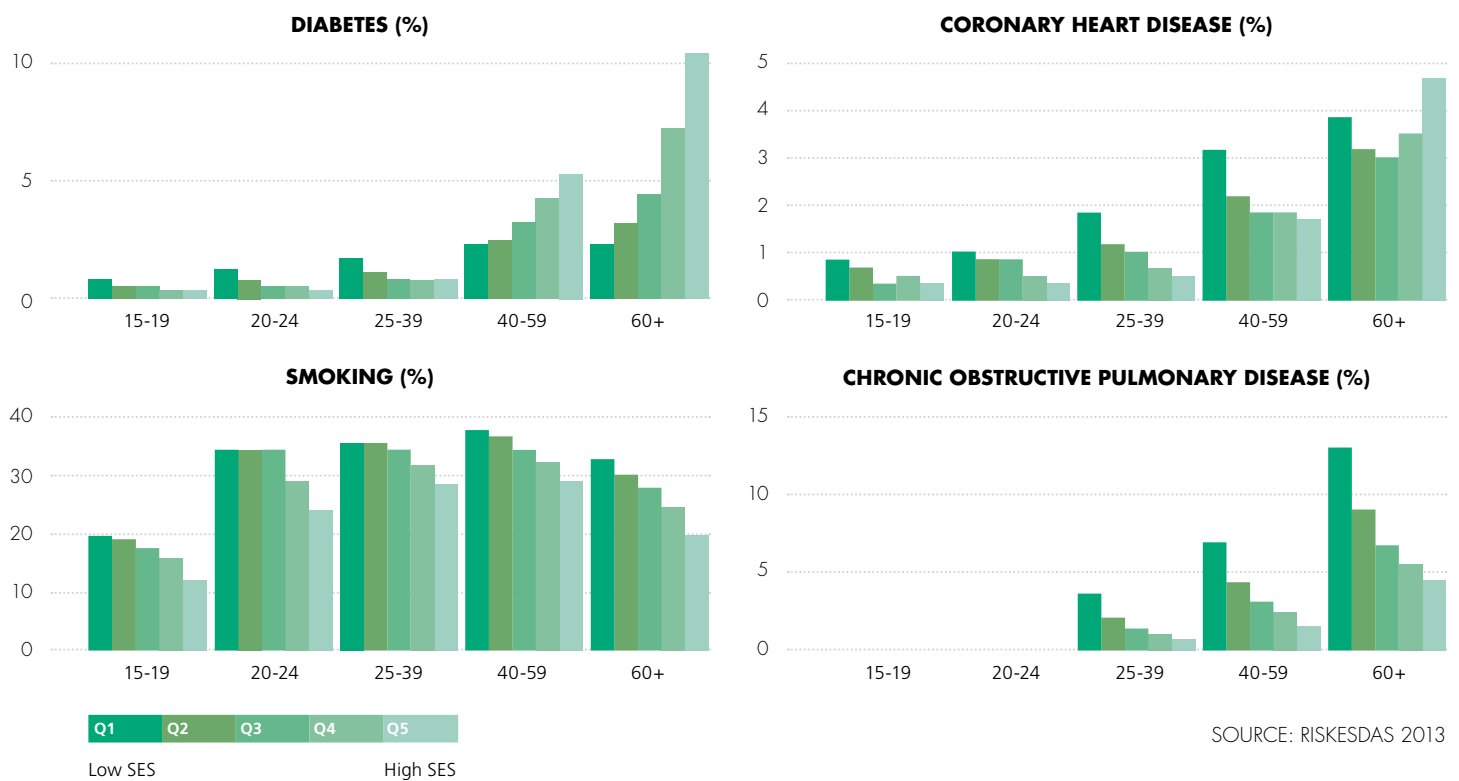
# [3]

## NCDs vary sub-nationally in Indonesia.

Inequalities are evident in Indonesia by socio-economic status (SES) and across geographical regions. Diabetes prevalence (Figure 4) is higher in the wealthier quintile (Q5) in age 40-59 (3% higher than in the poorest quintile, Q1), and age 60+ (8% higher than Q1). Coronary Heart Disease is consistently higher in

lower SES groups across all age groups, until age 60+ where there is an increase in prevalence in the wealthiest quintile. Smoking is consistently higher in lower SES groups across all ages. Similarly, chronic obstructive pulmonary disease is more prevalent in the lower SES quintile across all affected age groups.

**Figure 4. Prevalence of selected outcomes and risks, by age and socio-economic quintile.** Diabetes: diagnosed by physician or symptoms, Coronary Heart Disease: diagnosed by physician or symptoms, Daily smoking, Chronic Obstructive Pulmonary Disease: diagnosed by physician or symptoms.



**Figure 5. Prevalence of Overweight & Obesity across Indonesia's Cities and Regencies.**

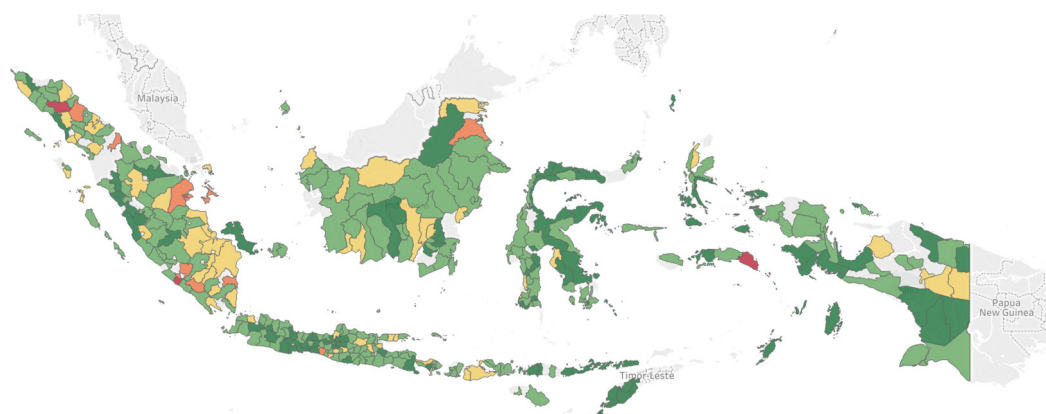


Figure 5 shows how widely the prevalence of overweight and obesity vary across Indonesia; neighbouring regencies report very different prevalence. This highlights the importance of representative data to take advantage of unique opportunities for targeted prevention and health service delivery.



# [4]

## Current data systems in Indonesia measure some, but not all relevant NCDs.

Indonesia has made significant investments in Riset Kesehatan Dasar (Basic Health Research) (RISKESDAS) to measure population health across the archipelago. Measures have been taken to improve surveillance around cancer registration, risk factors for NCDs (the POSBINDU initiative), and mortality (Sample Registration

System- SRS), however these initiatives are not yet fully implemented across the population. While vital registration in Indonesia is incomplete, RISKESDAS provides the most reliable data on population health, representative to the provincial level. 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 Indonesia.**

RISKESDAS 2013 was the dataset examined below. In this summary, some disease groups are pooled together (e.g. cancer and cardiovascular disease)

Outcomes	Source	Infancy/Childhood			Adolescence			Adulthood		
		<1	1-4	5-9	10-14	15-19	20-24	25-39	40-59	60+
Cancers <sup>1</sup>	RISKESDAS									
Cardiovascular diseases <sup>1</sup>	RISKESDAS									
Chronic Respiratory diseases	RISKESDAS									
Chronic Liver disease										
Neurological disorders										
Mental Disorders	RISKESDAS									
Self-harm/ suicide <sup>2</sup>										
Diabetes mellitus	RISKESDAS									
Chronic Kidney & Thyroid disease	RISKESDAS									
Anemias	RISKESDAS									
Musculoskeletal	RISKESDAS									
Congenital birth defects										
Sense organ	RISKESDAS									
Chronic Skin										
Sudden infant death syndrome										

Risks	Source	Infancy/Childhood			Adolescence			Adulthood		
		<1	1-4	5-9	10-14	15-19	20-24	25-39	40-59	60+
Diet <sup>3</sup>	RISKESDAS									
Physical Activity <sup>3</sup>	RISKESDAS									
Blood Pressure	RISKESDAS									
Fasting blood glucose	RISKESDAS									
Body-mass index	RISKESDAS									
Cholesterol	RISKESDAS									
Kidney function	RISKESDAS									
Air pollution & oath environmental										
Occupational risks										
Tobacco use/ exposure <sup>3</sup>	RISKESDAS									
Alcohol use										
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. Use of self-report is sub-optimal: disease registry or alternate methodology is preferred
  2. Self-harm data elicited from questions on self-inflicted injury.
  3. Use of adult measure in adolescence is sub-optimal: age-appropriate self-report questions are preferred.

# [4]

## Current data systems in Indonesia measure some, but not all relevant NCDs

While Indonesia's population surveys provide a good foundation of public health data, there are significant omissions. Data gaps exist for outcomes such as chronic liver disease, neurological disorders, mental disorder and self harm, congenital birth defects, skin diseases, sudden infant death syndrome; and risk factors such as alcohol and drug use, unsafe sex, sexual abuse and intimate partner violence. Other measures are included, but sub-optimal in measurement quality, such as measures for mental disorders, cancer, and cardiovascular disease. A strength of RISKESDAS is the blood and urine tests which provide quality markers for chronic disease and nutritional deficiencies.

The profile of NCDs in Indonesia extends beyond cardiovascular disease, diabetes, cancer and chronic respiratory disease. There are several steps which can improve surveillance and monitoring in Indonesia. These include incorporating mortality data related to NCDs into the SRS, strengthening the population level Cancer Registry, strengthening and expanding POSBINDU screening activities (both geographically and to younger age groups), and expansion of RISKESDAS to include key NCDs in younger ages will improve surveillance for NCDs. Specifically, greater focus on NCDs as they occur in children and adolescents, as well as the inclusion of objective measures for these age groups, would help advance actions on NCDs in Indonesia.

**About this study:** We were commissioned by the Australia Indonesia Centre to develop a comprehensive reporting framework for NCDs in Indonesia and Australia (the focus of a separate policy brief). We defined a comprehensive framework for NCDs in Indonesia 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 Indonesia, with a sub-national analysis of some key NCDs.

**Source:** This Policy Brief is based on 'Towards a comprehensive NCD reporting framework for Indonesia' project report available here: [https://figshare.com/articles/Towards\\_a\\_Comprehensive\\_NCD\\_Reporting\\_Framework\\_for\\_Indonesia/7413986](https://figshare.com/articles/Towards_a_Comprehensive_NCD_Reporting_Framework_for_Indonesia/7413986)

**Authors:** Karly Cini<sup>1</sup>  
Ansariadi<sup>2</sup>  
Susan Sawyer<sup>1</sup>  
Peter Azzopardi<sup>1,3</sup>

1. Centre for Adolescent Health, The Royal Children's Hospital, Murdoch Children's Research Institute, and University of Melbourne Department of Paediatrics.  
2. Department of Epidemiology, School of Public Health, Hasanuddin University  
3. Global Adolescent Health Group, Burnet Institute

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