

# NCD Global Monitoring Framework: Indicator Definitions and Specifications

<b>Name abbreviated</b>	<b>NCD Mortality</b>
<b>Indicator name</b>	Unconditional probability of dying between ages 30 and 70 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases
<b>Rationale</b>	<p>Of the 57 million global deaths in 2008, 36 million (63%) of these were due to NCDs. Nearly 80 per cent of these NCD deaths occurred in low- and middle-income countries (29 million deaths) (1).</p> <p>The lower age limit for the indicator of 30 years represents the point in the life cycle where the mortality risk for the four selected chronic diseases starts to rise in most populations from very low levels at younger ages. The upper limit of 70 years was chosen for two reasons:</p> <p>(a) to identify an age range in which these chronic diseases deaths can be truly considered premature deaths in almost all regions of the world. (In all regions except the African Region, the average expected age at death for 30 year olds already exceeds 70 years);</p> <p>(b) estimation of cause-specific death rates becomes increasingly uncertain at older ages because of increasing proportions of deaths coded to ill-defined causes, increasing levels of co-morbidity, and increasing rates of age misstatement in mortality and population data sources.</p>
<b>Definition</b>	Unconditional probability of dying between the exact ages 30 and 70 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases. Deaths from these four causes will be based on the following ICD codes: I00-I99, C00-C97, E10-E14, and J30-J98.
<b>Unit of measure</b>	No applicable. For a better understanding, the indicator could be expressed in percentage.
<b>Method of measurement</b>	Age-specific death rates are based on data on deaths by age, sex and cause of death.
<b>Method of estimation/calculation</b>	<p>Age-specific death rates for the combined four cause categories (typically in terms of 5-year age groups 30-34,..., 65-69). A life table method allows calculation of the risk of death between exact ages 30 and 70 from any of these causes, in the absence of other causes of death. The ICD codes to be included in the calculation are: cardiovascular disease: I00-I99, Cancer: C00-C97, Diabetes: E10-E14, Chronic respiratory: J30-J98. To calculate age-specific mortality rate for each five-year age group and country, for each 5-year age range between 30 and 70:</p> ${}_5M_x = \frac{\text{Total deaths from four NCD causes between exact age } x \text{ and exact age } x + 5}{\text{Total population between exact age } x \text{ and exact age } x + 5}$ <p>Then translate the 5-year death rate to the probability of death in each 5-year age range:</p> ${}_5q_x = \frac{{}_5M_x * 5}{1 + {}_5M_x * 2.5}$

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	<p>Then calculate unconditional probability of death from age 30 to age 70:</p> ${}_{40}q_{30} = 1 - \prod_{x=30}^{65} (1 - {}_5q_x)$
<b>Preferred data sources</b>	Vital registration systems which record deaths with sufficient completeness to allow estimation of all-cause death rates.
<b>Other possible data sources</b>	Sample registration systems; verbal autopsy.
<b>NCD Framework</b>	Outcome
<b>Disaggregation</b>	Age, Sex, other relevant socio-demographic stratifiers where available
<b>Expected frequency of data collection</b>	Annual
<b>Limitations</b>	Potential limitations include: - incomplete or unusable death registration data
<b>Data type</b>	Numeric
<b>References</b>	(1) Alwan A et al. Monitoring and surveillance of chronic noncommunicable diseases: progress and capacity in high-burden countries. <i>The Lancet</i> , 2010, 376:1861-1868.
<b>Related links</b>	<a href="http://www.who.int/gho/mortality_burden_disease/en/">http://www.who.int/gho/mortality_burden_disease/en/</a> <a href="http://www.who.int/healthinfo/statistics/LT_method.pdf">http://www.who.int/healthinfo/statistics/LT_method.pdf</a>
<b>Interpretation</b>	<p>This indicator should be interpreted as the chance that a 30-year-old individual living in a specific country (or place) in a specific year (or defined period of time) has of dying from any of the four major NCD (cardiovascular disease, cancer, diabetes, or chronic respiratory disease) before reaching the age of 70 years (or his/her 70th birthday).</p> <p>For instance, premature mortality from NCD in the Americas in 2012 has been estimated as 15.4%. This means that a 30-year-old individual living in the region of the Americas in 2012 has a 15.4% chance of dying (prematurely) from any of the major NCDs (cardiovascular disease, cancer, diabetes, or chronic respiratory disease) before reaching his/her the 70<sup>th</sup> birthday.</p>