HealthStats NSW

Understanding diabetes mortality in NSW
HealthStats NSW diabetes death indicators explained

Diabetes is a common chronic metabolic condition in NSW. Quantifying the exact number of deaths attributed to this condition is challenging since diabetes may directly cause a person's death or it may contribute to it. An underlying cause of death is often called a 'principal' cause and any associated causes are called 'contributing'. There are four indicators reported for diabetes deaths in NSW on HealthStats NSW (Box 1). Each indicator summarises different aspects of diabetes mortality, in terms of burden (direct and indirect) and potentially preventable diabetes deaths. The process for selecting deaths for each of these indicators is shown in Figures 1 and 2. These four indicators include deaths from both Type 1 and Type 2 diabetes.

Box 1. HealthStats NSW indicators relating to diabetes mortality in NSW

Indicator	Summary description
Underlying cause (total)	Diabetes was the principal cause of death.
Associated cause (total)	Diabetes was a contributing factor in the death but not the principal cause.
Underlying cause (total) or associated cause (total)	Diabetes was either the principal cause or a contributory factor in the death. This indicator combines the two indicators above.
Diabetes-related deaths (total underlying + selected associated)	Diabetes: i) was the principal cause of death, or ii) was an associated cause and the underlying cause of death was a common complication of diabetes.*

*Common complications of diabetes included in the definition of diabetes-related deaths are: ischaemic heart disease (including heart attacks and angina), stroke or diseases caused by stroke, heart failure, sudden death (cardiac arrest), peripheral vascular disease, kidney disease, hyperglycaemia (high blood sugar) or hypoglycaemia (low blood sugar).[1]

The *Underlying cause (total)* indicator summarises instances where the medical practitioner certifying the death has recognised diabetes as initiating the circumstances leading to the person's death (Figure 1). This indicator is typically used when ranking conditions within a region (e.g. country) by the number of deaths they directly cause. It does not take into account the additional contribution of diabetes on the causal pathway to people dying indirectly as a consequence of their diabetes. The *Associated cause (total)* indicator quantifies those deaths where diabetes contributed (i.e. was an associated cause) to the sequence of events leading to the person's death but was not the principal cause of death. The *Underlying cause (total) or associated cause (total)* indicator is a summation of the two indicators described above. It identifies all deaths where diabetes either directly or indirectly caused the death regardless of whether the diabetes was potentially preventable or amenable to early intervention.

Figure 1. Selection of deaths for some indicators relating to diabetes mortality reported on HealthStats NSW
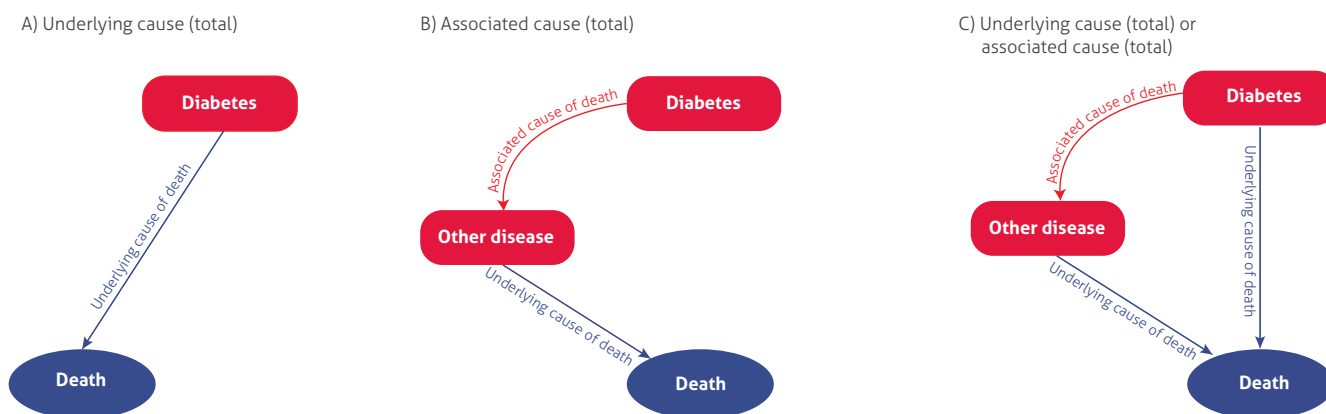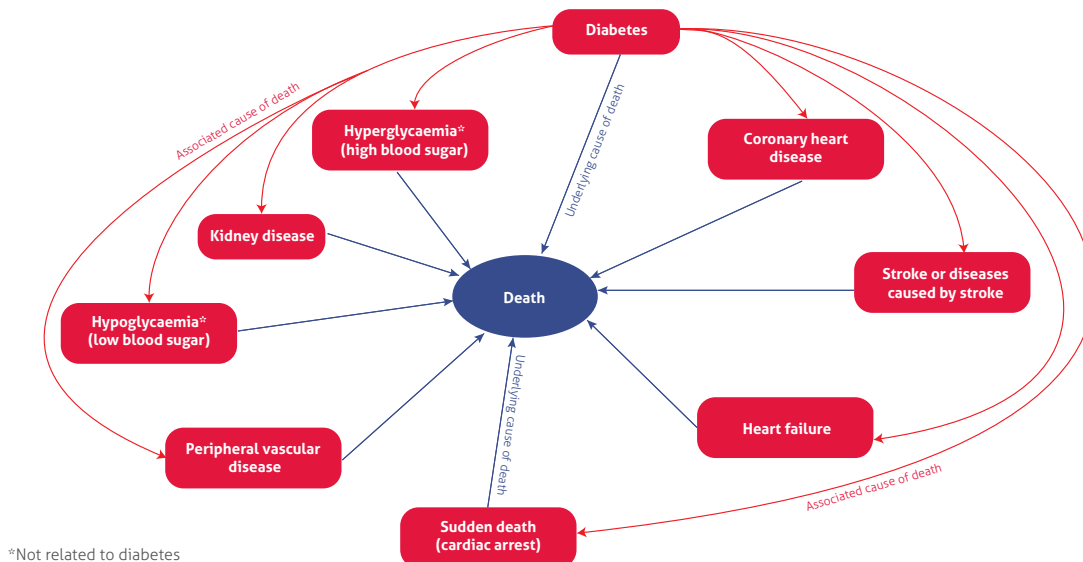

A) Underlying cause (total)

B) Associated cause (total)

C) Underlying cause (total) or associated cause (total)

Figure 2. Selection of deaths for the diabetes-related deaths indicator reported on HealthStats NSW

*Not related to diabetes

The *Diabetes-related deaths* indicator refers to deaths where diabetes was recorded as the underlying cause of death, or where diabetes was recorded as an associated cause of death and the underlying cause of death was one of the commonly recognised diabetes complications (Figure 2). The reason for defining diabetes deaths in this way is that, more than other disorders, diabetes often causes death indirectly as it is an important risk factor for common causes of death such as heart failure, kidney disease and stroke. These diseases are likely to appear as the underlying cause of death and diabetes as an associated cause. The common complications of diabetes included in the definition of diabetes-related deaths are: ischaemic heart disease (including myocardial infarcts or heart attacks), stroke or complications and impacts of stroke, heart failure, sudden death (cardiac arrest), peripheral vascular disease, kidney disease, hyperglycaemia (high blood sugar) and hypoglycaemia (low blood sugar).[1] Therefore, the *Diabetes-related deaths* indicator identifies those deaths that are amenable to prevention and early intervention as it captures cases where either diabetes caused the death or where the death was causally associated with diabetes as a risk factor and diabetes was associated with the death.

The difference between the *Underlying cause (total) or associated cause (total)* indicator and the *Diabetes-related deaths* indicator is that some of the former cases are not preventable. For example, of those surplus deaths selected by the former indicator and not as a *Diabetes-related death*, 65% had cancer or diseases of the circulatory or respiratory system as the underlying cause of death in NSW (1997 to 2015). Examples included stomach cancer, pancreatic cancer and pneumonia. Although diabetes contributed to these deaths, it is possible that diabetes may have been caused by or associated with treatment for these diseases.

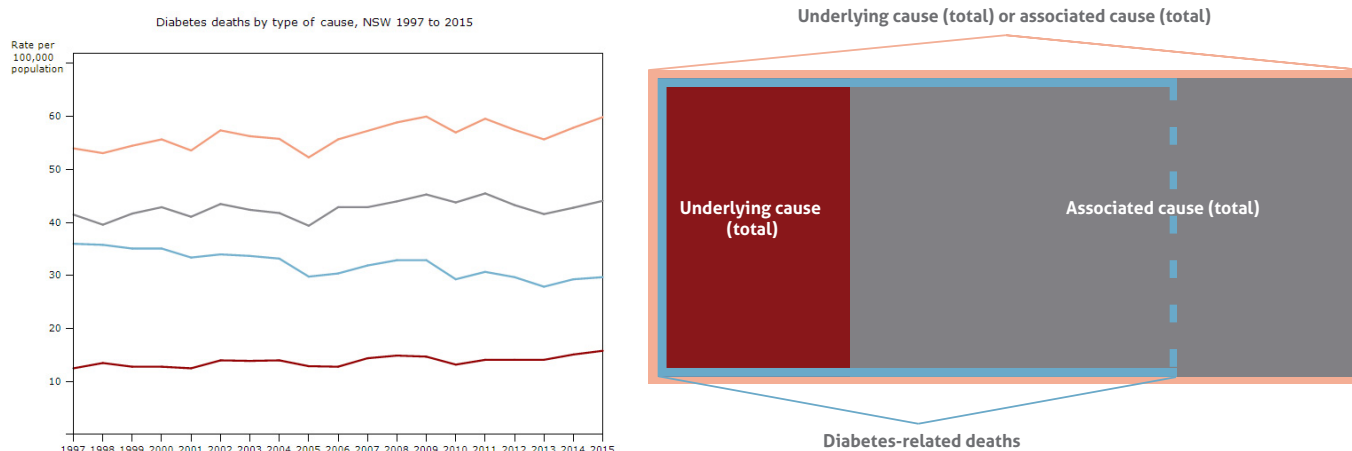## Figure 3. Diabetes deaths in NSW by the four diabetes mortality indicators on HealthStats NSW, 1997-2015

Figure 3 shows how the four indicators in HealthStats NSW measure these different aspects of diabetes deaths. In 2015, the rate of diabetes deaths in NSW was 15.8 for *Underlying cause (total)*, 29.7 for *Diabetes-related deaths*, 44.1 for *Associated cause (total)* and 59.9 for *Underlying cause (total) or associated cause (total)* per 100,000 population.

REFERENCE

1.   Dixon T & Webbie K. 2005. Diabetes-related deaths 2001–2003. Bulletin No. 32. AIHW Cat. No. AUS 69. Canberra: AIHW. Available at: https://www.aihw.gov.au/getmedia/969f351e-ac88-4321-b0bb-ba1488cf013a/bulletin32-x00.pdf.aspx