

## key facts

# Diabetes

Diabetes is a chronic metabolic disease affecting many Queenslanders. Undiagnosed or poorly managed diabetes increases the risk of cardiovascular and renal disease, limb amputation, and eye disease and can lead to lifelong health complications.

Diabetes was recognised as the 12th largest cause of disease burden in Queensland in 2011, accounting for 2.4% of total burden.<sup>1</sup>

Complications of diabetes are a leading cause of potentially preventable hospitalisation and impact significantly on a person's long-term health and wellbeing.

The Queensland Government is committed to reducing chronic diseases such as diabetes and improving wellbeing by empowering and supporting Queenslanders to make healthy lifestyle choices.<sup>4</sup> For example, the *My health for life* investment provides integrated risk assessment and lifestyle modification interventions to targeted high risk populations across the state.

This factsheet is based on data from a range of sources, all of which are cited. Each data source is subject to limitations as described. Unless otherwise specified, diabetes refers to all types combined and the data refers to Queensland.

## Monitoring of diabetes is limited by gaps and complexities in data collection

**Measurement of blood glucose:** Diabetes is a clinically defined disease, with prevalence based on biomedical assessment. Over the past 18 years there have been two blood measurement surveys:

- **The Australian Health Survey (AHS) 2011–12** is the most recent national survey to clinically assess diabetes prevalence using the fasting plasma glucose test (FPG).<sup>3</sup> It also assessed status using HbA1c test.
- **The AusDiab Study** commenced in 1999<sup>5</sup> and was designed as a longitudinal cohort study to monitor diabetes, obesity and risk factors for chronic disease, based on physical and biomedical measurements. Diabetes was diagnosed by blood test using both the glucose tolerance test (GTT) and fasting plasma glucose (FPG). The initial cohort was adults aged 25 years and older. As with all cohort studies, the longer the duration of the study, the less representative of the general population the sample becomes.

**Self-report data** provides a more timely assessment of diabetes prevalence but it is uncertain how accurately it reflects the true prevalence.

**National Diabetes Register** identifies insulin-dependent cases—all type 1 cases and those cases of type 2 that require insulin and cases requiring support for testing. The register is based on information from the **National Diabetes Services Scheme (NDSS)**<sup>7</sup> and **Australasian Pediatric Endocrine Group** databases. It may not fully capture all cases of disease.

The **NDSS** establishes the minimum known number of diagnoses, but there are many people who are not on the NDSS as well as undiagnosed cases.

### Prevalence Biomedical

In 2011–12, 5% of Queensland adults had diabetes based on blood measurement (FPG)—4% were known cases and 1% were diagnosed at survey (that is, for every four diagnosed cases there was one undiagnosed).<sup>2</sup> An additional 5.6% were at risk of developing diabetes.

About 405,000 Queensland adults were likely to have diabetes or be at risk of developing it in 2018, based on 2011–12 prevalence:

- 191,000 with diabetes
  - 153,000 diagnosed
  - 38,000 undiagnosed
- 214,000 at risk.

### Prevalence Self-report

In 2014–15, 4.6% of Queenslanders aged 0–85+ years self-reported diabetes.<sup>6</sup>

Considering only adults, the prevalence of self-reported diabetes in 2014–15 was 6% (about 234,000 adults).

Prevalence increased with age:

- 0.4% in 0–24 years
- 2.2% in 25–44 years
- 7.5% in 45–64 years
- 14.3% in 65+ years.

### Prevalence NDSS

In 2018, there were 242,061 registered cases of diabetes in Queensland (4.8% of population)<sup>7</sup>:

- 9% had type 1
- 87% had type 2
- 3% had gestational
- <1% had other forms.

About one-third (34%) of all registered cases in 2018 required insulin (82,144 persons).

### Incidence NDSS

In 2018, there were 21,737 new cases of diabetes registered in Queensland<sup>7</sup> (in a 12-month period):

- 3% had type 1
- 60% had type 2
- 36% had gestational
- <1% had other forms

*Prevalence refers to the total number of current cases in the population.*

*Incidence refers to the number of new cases diagnosed in any time period, usually a year.*

## Prevalence by type

### All diabetes

- 5% of Queensland adults had diabetes based on blood measurement (FPG) in 2011–12.<sup>2</sup>
- 6% of Queensland adults were registered with NDSS as having diabetes in 2018.<sup>7</sup>
- 7% of Queensland adults aged 25 years and older had diabetes based on blood measurement (GTT) in 1999.<sup>5</sup>

### Type 1 (insulin-dependent diabetes)

There were 22,789 registered cases of type 1 diabetes in Queensland in 2018 (NDSS)<sup>7</sup>:

- 1713 were children (0–15 years) 0.2% of children
- 21,076 were adults (16+ years) 0.5% of adults.

### Type 2 (non-insulin dependent diabetes)

There were 153,499 registered cases of non-insulin dependent type 2 diabetes in Queensland in 2018 (NDSS).<sup>7</sup> This is an underestimate as not all cases of diagnosed diabetes are registered and undiagnosed cases are not included.

### Type 2 (insulin dependent diabetes)

There were 56,599 registered cases of insulin dependent type 2 diabetes in Queensland in 2018 (NDSS).<sup>7</sup>

### Gestational diabetes

- There were 7779 registered cases of gestational diabetes in Queensland in 2018 (NDSS), and 1909 (25%) required insulin.<sup>7</sup>
- In 2016, of 61,876 Queensland women who gave birth<sup>8</sup>:
  - 7363 or 12% had gestational diabetes
  - 469 or 0.8% had pre-existing diabetes.

## Incidence by type and age

### New registrants on NDSS

In a 12-month period up to 2018, in Queensland<sup>7</sup>:

- 21,737 new cases of diabetes: 60% were type 2, 36% were gestational diabetes, 3% type 1 and less than 1% other types.
- 724 new cases of type 1 diabetes registered, and 41% were children (0–15 years).
- 13,051 new cases of type 2 diabetes were registered where 9% were insulin dependent, 75% were adults aged 50 years and older and 0.4% were children and young adults (0–20 years).

### AusDiab Study

- Between 1999 and 2012, 0.7% of adults aged 25 years and older at baseline developed diabetes each year on average<sup>9</sup>—equivalent to an estimated 23,500 new cases in Queensland in 2018. The accuracy of this assessment is unknown given the duration of the cohort study.

## Hospitalisations

- In 2015–16, there were 10,380 hospitalisations for diabetes based on principal diagnosis (excluding gestational diabetes) (0.4% of all hospitalisations):
  - 58% were males (5988) and 42% females, (4392)
  - 9% were Indigenous Queenslanders (939)
  - 7% were children aged 0–14 years
  - 13% were aged 15–29 years
  - 12% were adults aged 30–44 years
  - 28% were adults aged 45–64 years
  - 40% were older adults aged 65+ years
- There were an additional 202,068 hospitalisations where diabetes was associated with the admission but not the primary cause (other diagnosis).
- Of the 184,000 potentially preventable hospitalisations (PPHs) in 2015–16, about 46,000 or 25% were for diabetes complications (Queensland Health definition of PPHs<sup>10</sup>).

## Deaths

- In 2016 there were 842 deaths due to diabetes (474 males, 368 females) which included<sup>11</sup>:
  - 56 insulin dependent cases
  - 428 non-insulin dependent cases
  - 358 unspecified cases.
- Diabetes was the seventh largest cause of death in Queensland accounting for 2.8% of all deaths in 2016.
- 40% of diabetes deaths occurred in people aged 0–74 years in 2016.<sup>11</sup>
- The lifetime risk of dying from diabetes before age 75 years (2007–2011) was less than 1% or 1 in 157 (0.8% for males, 0.5% for females).<sup>10</sup>

## Sociodemographic characteristics

- Prevalence and incidence were higher in males than females—prevalence of 5.6% and 3.6% in 2014–15 and annual incidence rates of 0.8% per year and 0.6% per year in 2018.<sup>6,7</sup>
- Diabetes hospitalisation rates (2015–16) were:
  - 42% higher for males than females
  - 2.4 times greater in socioeconomically disadvantaged areas than advantaged areas
  - higher outside major cities: about 20% higher in inner and outer regional areas, and 2.2 times higher in remote and very remote areas.
- Diabetes death rates (2013–2015) were:
  - 37% higher for males than females
  - 77% higher in socioeconomically disadvantaged areas than advantaged areas.
  - higher outside major cities: 32% higher in outer regional areas and 2.3 times greater in remote and very remote areas.

## Hospital and Health Services (HHSs)

There is substantial variation in the diabetes burden among the HHSs based on incidence, prevalence, hospitalisations and deaths. Average cases per year are reported in the table below with statistical difference to Queensland noted (based on age standardised rates). More information is available in the statistical tables on the CHO report website.

**Table: Average cases per year by HHS**

	Registrations NDSS 2018		Hospitalisations 2015-16 to 2016-17		Deaths 2013-2015
	New cases	Total cases	Principal diagnosis (PD)	PD & other diagnoses	
Cairns and Hinterland	209	12,851	577	9,910	45
Central Queensland	325	12,775	583	11,241	43
Central West	9	1,964	53	619	np
Darling Downs	540	18,262	707	20,717	72
Gold Coast	870	24,361	1,193	23,193	81
Mackay	251	8,900	312	7,482	19
Metro North	1,603	41,238	1,831	40,408	147
Metro South	1,828	48,937	1,923	45,713	159
North West	36	951	122	1,947	np
South West	4	1,473	100	1,551	np
Sunshine Coast	434	16,437	992	19,078	57
Torres and Cape	-25	1,752	121	2,534	12
Townsville	465	11,906	619	11,734	45
West Moreton	758	13,497	647	16,928	45
Wide Bay	461	14,713	650	16,702	56
<b>Queensland</b>	<b>7,768</b>	<b>230,017</b>	<b>10,425</b>	<b>229,754</b>	<b>801</b>
	HHS rate compared to Queensland rates		worse	similar	better

np not publishable

## Trends

- Biomedical prevalence: there is insufficient data to assess trends because there is currently no measured data for monitoring diabetes prevalence.
- Self-report prevalence: there has been no change in prevalence since 2001.<sup>6</sup>
- The number of new cases of diabetes registered over the five years up to 2018 has not changed overall—there was no change in type 1 or type 2 registrations, however, for gestational diabetes, the number of new cases increased by 28% or about 400 registered cases per year on average.<sup>7</sup> This increase may be associated with changes in the test criteria, with a lowering in the diagnostic thresholds occurring in recent years.<sup>12</sup> The same upward trend is evident in perinatal records which show an 80% increase in gestational diabetes prevalence over the past five years. The reliability of these trends is unknown.
- Over the past five years, there has been no change in the age adjusted diabetes hospitalisation rate. Reporting of longer term trends in hospitalisations for diabetes is limited due to changes in coding.
- Deaths: there has been no change in diabetes death rates over the past decade.<sup>13</sup> About half the deaths due to diabetes are not specified to type and as a consequence monitoring trends in types of diabetes is limited.

## Indigenous Queenslanders

### Prevalence: 2012–13<sup>14</sup>

- 1 in 12 (8.2%) or 6600 Indigenous Queenslanders adults had diabetes based on biomedical assessment (FPG test).
- The Queensland rate did not differ from the national rate.
- Queensland had the lowest prevalence of diabetes among five jurisdictions with available data.
- Compared with non-Indigenous Australians and after adjustment for age differences, Indigenous Australians were 3.3 times as likely to have diabetes.
- Greater awareness of diabetes is resulting in more complete diagnosis—there were fewer undiagnosed cases in Indigenous Australians than non-Indigenous (1:7 compared to 1:4).

### Hospitalisations

There were 16,132 hospitalisations for diabetes for Indigenous Queenslanders in 2015–16 (939 principal diagnosis and 15,193 other diagnosis). The crude rate was 2.2 times the non-Indigenous rate (3.8 times after adjusting for age).

### Deaths

- There were 55 deaths per year of Indigenous Queenslanders due to diabetes in 2013–2015.
- The death rate was 4.8 times the non-Indigenous rate in 2013–2015, with greater difference for females than males (5.5 times compared with 4.2 times).
- Indigenous Queenslanders were more likely to die at an earlier age due to diabetes than non-Indigenous Queenslanders: median age at death of 64 years compared with 80 years in 2013–2015.

### Trends

The pattern of change for Indigenous Queenslanders shows some improvement, with diabetes death rates decreasing by 4.8% per year between 2005 and 2015 (39% decrease over a decade). The hospitalisation rate has not changed over the past decade.

## National comparisons

Compared to national rates, Queensland did not differ for adult prevalence of diabetes based on blood measurement in 2011–12<sup>2</sup> or by self report in 2014–15.<sup>6</sup>

The Queensland death rate was 6% lower than the national rate in 2016.<sup>11</sup>

## Burden of disease

The latest burden of disease and injury study for Australia was released in 2016 (2011 data) with Queensland specific data also available. Gestational diabetes was not included in the data below.

- Diabetes was ranked the 12th largest cause of disease burden, accounting for 2.4% of total DALYs in Queensland in 2011.<sup>1</sup>
- The leading risk factors for type 2 diabetes in Queensland in 2011 were high body mass, physical inactivity and dietary factors.<sup>1</sup>

## Diabetes and obesity

Obesity is a major risk factor for developing type 2 diabetes. The prevalence of diabetes among obese Queensland adults was 4 times that of non-obese in 2011–12 (11% compared with 2.6%).<sup>15</sup> In 2014–15, adults who were severely obese were 8 times more likely to report diabetes than healthy weight adults.

About 90% of adults who had been measured as obese in 2011–12 did not have diabetes.<sup>15</sup> Of those with diabetes based on blood measurement (most had type 2 diabetes), two-thirds were obese.

## Diabetes management

In 2011–12, of Australians with diabetes<sup>16</sup>:

- 41% checked their blood glucose daily and 21% weekly
- 75% had an HBA1c test in the previous 12 months
- 23% were taking insulin daily
- 54% had a family history of diabetes
- 66% were following dietary advice to manage diabetes
- 17% had lost weight in the previous two weeks to manage diabetes
- 30% had exercised on most days in the previous two weeks to manage the condition.

### For further information:

**The health of Queenslanders 2018  
Report of the Chief Health Officer Queensland.**

Available from:

[www.health.qld.gov.au/CHO\\_report](http://www.health.qld.gov.au/CHO_report)

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