

Appendix

Appendix A: NDR registration

You are eligible to join the National Diabetes Register (NDR) if you started to use insulin to manage your diabetes on or after 1 January 1999. We welcome enquiries if you would like to learn more about the NDR, or if you would like to register on the NDR.

There are three ways to join the National Diabetes Register:

- Register with the National Diabetes Services Scheme, administered by Diabetes Australia Ltd. The scheme is an Australian Government initiative that provides blood and urine testing strips, insulin pump consumables, and syringes and needles for special injection systems at subsidised prices to people who register for its benefits.
- If you are under the age of 15 years, you can be registered with the Australasian Paediatric Endocrine Group, and give agreement on their registration form to share your information with the National Diabetes Register.
- Contact the National Diabetes Register staff by email at diabetes@aihw.gov.au or write to:

The Project Officer, National Diabetes Register
National Centre for Monitoring Diabetes
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601

Please note that there is no obligation to participate in research projects, and NDR registrants can withdraw from any research project or from the NDR at any time, by giving written notice.

Appendix B: Statistical notes and methods

B.1 Calculation of age at diagnosis

The method used to derive age at diagnosis depends on whether the data are sourced from NDSS only, APEG only, or both.

NDSS only records

Age at diagnosis = NDSS date of diagnosis - date of birth

If diagnosis date is missing and diabetes type is gestational diabetes, then registration date is used as a substitute for diagnosis date but only if the resulting age at diagnosis is greater than or equal to 18 years.

APEG only, or both NDSS and APEG records*

Age at diagnosis = APEG date of first injection - date of birth, or else

Age at diagnosis = APEG registration date - date of birth, or else

Age at diagnosis = NDSS date of diagnosis - date of birth, or else

Age at diagnosis = NDSS date of first injection - date of birth

Note that diagnosis date is not available for most APEG records, so first injection date is used as a substitute. Among international studies of Type 1 diabetes incidence, the date of first injection is the accepted definition for date of diagnosis (LaPorte et al. 1985).

B.2 Calculation of year of first insulin use

The method used to derive the year of first insulin use depends on whether the data are sourced from NDSS only, APEG only, or both.

APEG only

Year of first insulin use = APEG year of first injection date, or

Year of first insulin use = APEG year of registration date

Both NDSS and APEG

Year of first insulin use = APEG year of first injection date, or

Year of first insulin use = NDSS year of first injection date, or

Year of first insulin use = NDSS year of first syringe purchase date, or

Year of first insulin use = APEG year of registration date

NDSS only

Year of first insulin use = NDSS year of injection date, or

Year of first insulin use = NDSS year of first syringe purchase date

B.3 Derivation of diabetes type

Diabetes is a complex and chronic disease. The term 'diabetes' is used to describe a group of different disorders with common elements, including high blood glucose (sugar) levels and glucose intolerance. This is due to insulin deficiency, impaired effectiveness of insulin action, or both (IDF 2006). Diabetes is classified into four types:

- Type 1 diabetes
- Type 2 diabetes
- gestational diabetes mellitus
- other specific types.

All these types of diabetes may be treated with insulin; once diagnosed, Type 1 diabetes is always treated with insulin (although individuals may have a brief and temporary remission phase after diagnosis during which insulin is not needed).

Over the years, the classifications and terminology used for the different types of diabetes have changed as understanding of the disease has grown. For example, it is now known that a large proportion of people with Type 1 diabetes are diagnosed in their adult years (37% of people with Type 1 on the NDR were aged 25 or older at diagnosis; see Table 1.1), that many people diagnosed with Type 2 diabetes actually have Type 1 diabetes (but a slow onset form known as latent autoimmune diabetes in adults (LADA), and that Type 2 diabetes is appearing in younger ages than previously seen (McMahon et al. 2004; Pinhas-Hamiel & Zeitler 2005; Craig et al. 2007). Terms such as juvenile-onset diabetes, insulin-dependent diabetes (IDDM) and non-insulin-dependent diabetes (NIDDM) are no longer favoured (Gale 2001; Daneman 2006). This has contributed to some confusion in the community about the terminology used for different types of diabetes, with many people reporting Type 1 when they may have Type 2, or simply not being able to report a type at all.

The most important misconception for the NDR is that only people with Type 1 diabetes use insulin when, in fact, insulin is used to treat many people with Type 2, gestational diabetes, and other types of diabetes. This means that many cases are reported as having Type 1 diabetes because they use insulin, when, in fact, they have another form of insulin-treated diabetes. A small survey done with registrants' certifying doctors in 2000 confirmed this misclassification (AIHW 2001). In 44% of replies, the doctor indicated that the reported Type 1 diabetes should have been Type 2.

To overcome this misclassification, many data collections (including the 1995 and 2004–05 ABS National Health Surveys, the 1983 National Heart Foundation Risk Factor Prevalence Study, and the 1999–00 Australian Diabetes, Obesity and Lifestyle Study) have used algorithms to classify people with diabetes to Type 1 or Type 2, creating a derived diabetes type. For example, in the 1995 National Health Survey, almost half of those who reported having Type 1 diabetes were later reclassified as having Type 2 diabetes on the basis of other information they reported that did not reconcile with a diagnosis of Type 1 diabetes.

In light of this, the then NDR Management Committee recommended the use of an algorithm to derive diabetes type (for NDSS-only records) to more accurately describe the distribution of registrants' diabetes type – this has been in place since before the first statistical profile report on the NDR. Because of the correlation between type of diabetes and age of diagnosis, the algorithm was originally based on age at diagnosis and the period between diagnosis and the start of insulin treatment. It was originally aimed at registrants believed to be incorrectly reported as Type 1 rather than Type 2.

The algorithm has been updated several times over the years, in consultation and with, agreement from, the National Diabetes Data Working Group, and the current algorithm is shown in Box B.1. The algorithm was revised in March 2007 to reduce the time between diagnosis and insulin use to 1 year (previously 2 years), and to reduce the age for which the algorithm is applied to those aged over 15 years at diagnosis (previously 35 and 40 years). The change was required because of the increasing incidence of Type 2 diabetes in adolescents and young adults, and changing management guidelines, which recommend considering insulin as an early treatment option for people with Type 2 diabetes (Nathan et al. 2006). Note that with or without the algorithm, there will always be some level of misclassification. The algorithm cannot reclassify all records that have been misreported.

Records of registrants reporting Type 2 diabetes or other types of diabetes are excluded from this derivation, so the reclassification does not include cases of Type 1 diabetes that have been misclassified as Type 2 and that, in fact, have a slow onset form of Type 1 diabetes known as latent autoimmune diabetes in adults (LADA) (Turner et al. 1997).

Data collection issues

NDSS

The NDSS form did not have an option for insulin-treated Type 2 diabetes until 2002.

Type of diabetes is reported on the NDSS registration form by either a medical practitioner or an accredited diabetes educator.

APEG

In the APEG collection, diabetes type is nearly always certified by a medical specialist, and in most paediatric centres nationwide tests are done to determine whether diabetes-associated autoantibodies are present, which serves to confirm the diagnosis of Type 1 diabetes. When a difference in diabetes type is found on NDR records sourced from both NDSS and APEG, the APEG-reported type is used.

Box B.1 NDR algorithm to derive diabetes type

APEG only or APEG and NDSS records

- *If the record is sourced from APEG only, or from both APEG and NDSS, then the derived diabetes type is equal to the reported diabetes type.*

NDSS only records

If the record is sourced from NDSS only, if:

- *the reported diabetes type is Type 2 or other, then the derived diabetes type equals the reported diabetes type*
- *the reported diabetes type is Type 1 and the age at diagnosis is missing, then the derived diabetes type is unable to be derived*
- *the reported diabetes type is Type 1 and the age at diagnosis is less than 15 years:*
 - *if the time between diagnosis and first insulin use is missing, then the derived diabetes type is unable to be derived*
 - *if the time between diagnosis and first insulin use is more than 1 year, then the derived diabetes type is unable to be derived*
 - *if the time between diagnosis and first insulin use is less than or equal to 1 year, then the derived diabetes type equals Type 1, that is, the reported diabetes type*
- *the reported diabetes type is Type 1 and the age at diagnosis is greater than or equal to 15 years:*
 - *if the time between diagnosis and first insulin use is missing, then the derived diabetes type is unable to be derived*
 - *if the time between diagnosis and first insulin use is more than 1 year, then the derived diabetes type equals Type 2*
 - *if the time between diagnosis and first insulin use is less than or equal to 1 year, then the derived diabetes type equals Type 1, that is, the reported diabetes type*
- *the reported diabetes type is gestational diabetes:*
 - *if the age at diagnosis is less than 50 years, then the derived diabetes type equals the reported diabetes type, that is, gestational diabetes*
 - *if the age at diagnosis is greater than or equal to 50 years, then the derived diabetes type equals Type 2*
 - *if the age at diagnosis is missing, then the derived diabetes type is unable to be derived.*

B.4 Age-standardised rates

Age-standardisation is a technique used to eliminate the effect of differences in population age structures when comparing rates for different periods, and/or different geographic areas and/or different population groups. Definitions are included in the *National health data dictionary* (HDSC 2006).

There are two methods of age-standardisation, direct and indirect. The direct method was used for the incidence rates reported in chapters 3, 4 and 5, and the indirect method was used as the basis for calculating the standardised mortality ratios in Chapter 6.

Direct age-standardisation

To control for any effects of varying age structures of population, direct age-standardisation is used to calculate rates. The 2001 Australian population was used as the standard population in calculating age-standardised rates, using the following formula (HDSC 2006):

$$SR = \frac{\sum (r_i p_i)}{\sum p_i}$$

where SR = the age-standardised rate for the population being studied, r_i = the age-group specific rate for age group i in the population being studied, and p_i = the population of age group i in the Australian standard population (persons) as at 30 June 2001.

Indirect age-standardisation

The indirect method is recommended for use when calculating rates for small populations where fluctuations in age-specific rates can affect the reliability of rates calculated using the direct method (HDSC 2006). The formula is as follows:

$$SR = \frac{c}{\sum (r_i p_i)} \times r$$

where SR = the age-standardised rate for the population being studied, c = the actual number of cases in the population being studied, r_i = the age-group specific rate for age group i in the population being studied, p_i = the population for age group i for the population being studied, and r = crude rate in the standard population.

B.5 Standardised mortality ratios

Comparisons between mortality rates for the NDR population and those for the whole Australian population were made using standardised mortality ratios (SMRs), which use indirect standardisation to account for any differences in the age structure between the two populations.

The SMRs were calculated using the following steps for each cause of death group:

1. The 'observed' number (that is, the actual number) of deaths for the NDR population was calculated for males and females.
2. There were 162 deaths (92 in males and 70 in females) for which the cause of death was unknown. These deaths were 'allocated' to a cause of death, based on the distribution of the known causes of death among NDR registrants for males and females separately, and added to the actual number (from Step 1) to calculate the total 'observed' number of deaths for each cause.
3. The number of people on the NDR at risk of dying as at June of each year (2000 to 2006) was estimated for each sex and 5-year age group.
4. The death rates for the comparison group, which is the whole Australian population, were calculated for each sex, year and 5-year age group.
5. The 'expected' number of deaths in the NDR population were calculated for each year, sex and 5-year age group by applying the sex- and age-specific rates for the comparison group (from Step 4) to the NDR population at risk (from Step 2).
6. The total number of expected deaths was calculated by summing the expected number of deaths (from Step 5) across all age, sex and year groups.
7. The SMR was then calculated as the total observed deaths divided by the total expected deaths (from Step 6). An SMR of 1.0 means that there is no difference in the death rate between NDR registrants and the Australian population.
8. The confidence interval was calculated using the method outlined in Appendix B.7.

B.6 Estimated average annual rate of change

Poisson regression was used to estimate the average annual rate of change in incidence rates over time. The Poisson model used was:

$$\log_e(E_t) = \log_e(N_t) + \beta_0 + \beta_1 t$$

where

t is the period; that is, 2000 to 2007

E_t is the number of new cases in year t

N_t is the mid-year population in year t

β_0 and β_1 are estimated in the model

β_1 represents the estimated annual rate of increase or decrease

Thus, the average annual percentage change can then be calculated as:

$$\text{Average annual percentage change} = (e^{\beta_1} - 1) \times 100$$

In previous reports of the NDR, the geometric formula was used to estimate the average annual rate of change in the age-standardised incidence rate of Type 1 diabetes among children aged 0-14 years (AIHW 2008c). However, the geometric formula only takes into account the first and last time points in the time series under investigation, whereas the Poisson regression model uses all the time points in the time series, so accounts for both the fluctuation across time and the variability at each time point. Further, use of Poisson regression also allows for calculation of a confidence interval for the annual average rate of change.

B.7 Confidence intervals

The 95% confidence intervals in this report indicate the variation that might be expected in incidence numbers purely by chance. The confidence intervals for the age-standardised incidence rates were calculated assuming a Poisson distribution of cases and using a method developed by Dobson et al. (1991). This method calculates approximate confidence intervals for a weighted sum of Poisson parameters. The confidence intervals are used to provide an approximate indication of the differences between rates. Where the confidence intervals of two direct age-standardised rates do not overlap, this indicates that the corresponding rates can be considered statistically significantly different from each other. As with all statistical comparisons, care should be exercised in interpreting the results of the comparison. If two rates are statistically significantly different from each other, this means that the difference is unlikely to have arisen by chance. Judgment should, however, be exercised in deciding whether the difference is of any practical significance.

The confidence intervals for the standardised mortality ratios (SMR) were estimated using the square root transform method (Breslow & Day 1987). The 95% confidence interval around an SMR gives an indication of the precision of that estimate. A 95% confidence interval that does not include the value 1.0 indicates that the calculated SMR is significantly different from 1.0 and therefore unlikely to be due to chance. In other words, there may be a real difference between NDR registrants and the Australian population.

B.8 Assessing coverage of the NDR using the capture-recapture method

The capture-recapture method as described by LaPorte et al. (1993) can be applied to the calculation of incidence rates of insulin-treated diabetes when multiple sources are being used to identify new cases. In capture-recapture, the cases provided by both sources (that is, the duplicates) provide important information about the degree to which cases may have been missed. The duplicates represent 'recaptured' people who have diabetes, and the degree of under-count can be estimated. The formula used to calculate ascertainment is below (see LaPorte et al. 1993 for more information).

$$N = \frac{(M + 1)(n + 1)}{m + 1} - 1$$

where

N = estimate of Number

M = number in first sample (those marked)

n = number in second sample

m = number of 'marked' items in second sample

B.9 Remoteness areas

Since the early 1990s three geographical classifications have been developed and used to report on remoteness. They are: Rural, Remote and Metropolitan Areas (RRMA);

Accessibility/Remoteness Index of Australia (ARIA) based on ARIA index values; and Australian Standard Geographical Classification (ASGC) Remoteness Areas (based on ARIA+ index values – an enhanced version of the ARIA index values).

A detailed review of these three classifications is presented in *Rural, regional and remote health: a guide to remoteness classifications* (AIHW 2004). The ASGC Remoteness Areas was used to report on remoteness in this publication. The ASGC is an ABS classification which provides a hierarchy of geographic area codes used to classify a wide range of social and economic data (ABS 2001). In this report, tables presenting information by remoteness areas contain data for 2005–2007 only. This is because the concordance of postcode of current residence to remoteness areas are based on the classification as at the 2006 Census of Population and Housing, and the concordance becomes less accurate for years further away from the census year.

ASGC Remoteness Areas categorises areas as *Major cities, Inner regional, Outer regional, Remote* and *Very remote*. For this report, *Remote* and *Very remote* areas were combined.

Postcodes are classified into these four regions based on their score on the ARIA (DoHA 2001). This index is based on how distant a place is by road from urban centres of different sizes, providing a relative indication of how difficult it might be for residents to access certain services such as health care and education.

B.10 Socioeconomic status

The measure of socioeconomic disadvantage – the ABS Socioeconomic Index of Areas (SEIFA) – used in this section is a measure constructed at the level of geographic area of residence. The Index of Relative Socio-Economic Disadvantage (IRSD) is one of four SEIFAs compiled by the ABS after each Census of Population and Housing. The SEIFAs aim at representing the socioeconomic status of Australian communities and identifying areas of advantage and disadvantage. The IRSD scores each area by summarising attributes of the population, such as low educational attainment, high unemployment, and jobs in relatively unskilled occupations.

B.11 Indigenous data limitations

On the NDSS form before 2005, if the response to the Indigenous status question was not completed on the registration form, the person was recorded as non-Indigenous. This may have overestimated the number of non-Indigenous registrants and underestimated the number of Aboriginal and Torres Strait Islander registrants. In early 2005, the NDSS database was amended to add an extra value to the Indigenous status variable – *Inadequate/Not stated* – and this was made the default, in accordance with the *National health data dictionary* (HDSC 2006). As such, data for Indigenous status in this report are presented from 2005–2007 only.

It should also be noted that the NDR may underestimate the number of Indigenous registrants with insulin-treated diabetes. This may be the result of factors including low registration rates for the NDSS and subsequently the NDR among Aboriginal and Torres Strait Islander peoples, or possible under-reporting of Indigenous status. For example, Indigenous communities in remote areas may use services and products provided by Aboriginal Health Services and Aboriginal Community Councils, rather than the NDSS. The provisions of section 100 of the *National Health Act 1953*, might also result in an

under-coverage of Aboriginal and Torres Strait Islander peoples on the NDSS. Under the provisions of section 100, Indigenous Australians living in remote areas who are clients of approved remote area Aboriginal Health Services are able to access Pharmaceutical Benefits Scheme medicines free of charge without a prescription from the Aboriginal Health Services at the time of medical consultation. As supplies for diabetes are available for free through the PBS under section 100, it is likely that most Aboriginal and Torres Strait Islander peoples in remote areas will use these arrangements rather than the NDSS, which requires a co-payment. In addition, NDSS sub-agents are not always available in remote areas. Therefore, as the NDR uses the NDSS to ascertain eligible registrants, the number of Indigenous Australians with insulin-treated diabetes will be under-counted.

Appendix C: Additional tables

Chapter 3 appendix tables

Table C3.1: Incidence (number) of Type 1 diabetes among children aged 0–14 years: sex and age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007
Males									
0–4	85	106	106	126	106	107	97	103	836
5–9	138	143	154	157	175	156	160	178	1,261
10–14	171	202	203	215	231	209	243	242	1,716
<i>Total males 0–14</i>	<i>394</i>	<i>451</i>	<i>463</i>	<i>498</i>	<i>512</i>	<i>472</i>	<i>500</i>	<i>523</i>	<i>3,813</i>
Females									
0–4	71	76	87	91	85	91	80	99	680
5–9	139	156	162	185	176	156	152	168	1,294
10–14	154	165	196	202	202	186	189	197	1,491
<i>Total females 0–14</i>	<i>364</i>	<i>397</i>	<i>445</i>	<i>478</i>	<i>463</i>	<i>433</i>	<i>421</i>	<i>464</i>	<i>3,465</i>
Persons									
0–4	156	182	193	217	191	198	177	202	1,516
5–9	277	299	316	342	351	312	312	346	2,555
10–14	325	367	399	417	433	395	432	439	3,207
Total persons 0–14	758	848	908	976	975	905	921	987	7,278

Source: National Diabetes Register (data extracted December 2008).

Table C3.2: Incidence (number) of Type 1 diabetes among children aged 0–14 years: year of first insulin use, by state/territory of current residence, 2000–2007

Year of first insulin use	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2000	249	184	152	72	72	15	11	3	758
2001	269	212	175	85	62	25	15	5	848
2002	286	231	167	102	77	25	16	3	908
2003	274	257	207	104	87	30	12	5	976
2004	311	227	204	93	82	30	20	8	975
2005	266	239	194	83	62	40	18	3	905
2006	266	243	194	90	78	32	12	6	921
2007	282	265	221	109	56	20	28	6	987
2000–2007	2,203	1,858	1,514	738	576	217	132	39	7,278

Note: Columns may not add to the Australian total, as 1 record has an unknown state of current residence.

Source: National Diabetes Register (data extracted December 2008).

Table C3.3: Incidence (number) of Type 1 diabetes among children aged 0–14 years: sex and age, by states and territories of current residence, 2000–2007

Sex and age at first insulin use (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males									
0–4	236	207	188	87	72	29	14	3	836
5–9	375	308	271	140	100	35	26	6	1,261
10–14	537	439	335	163	142	61	28	11	1,716
<i>Total males 0–14</i>	<i>1,148</i>	<i>954</i>	<i>794</i>	<i>390</i>	<i>314</i>	<i>125</i>	<i>68</i>	<i>20</i>	<i>3,813</i>
Females									
0–4	231	172	137	61	50	17	10	2	680
5–9	367	340	260	144	112	40	26	5	1,294
10–14	457	392	323	143	100	35	28	12	1,491
<i>Total females 0–14</i>	<i>1,055</i>	<i>904</i>	<i>720</i>	<i>348</i>	<i>262</i>	<i>92</i>	<i>64</i>	<i>19</i>	<i>3,465</i>
Persons									
0–4	467	379	325	148	122	46	24	5	1,516
5–9	742	648	531	284	212	75	52	11	2,555
10–14	994	831	658	306	242	96	56	23	3,207
Total persons 0–14	2,203	1,858	1,514	738	576	217	132	39	7,278

Note: Columns may not add to the Australian total, as 1 record has an unknown state of current residence.

Source: National Diabetes Register (data extracted December 2008).

Table C3.4: Incidence (number) of Type 1 diabetes among children aged 0–14 years at their first insulin use: geographical locations based on postcode of current residence^(a), 2005–2007

Age at first insulin use (years)	Major cities	Inner regional	Outer regional	Remote/ Very remote	Australia
0–4	376	135	52	15	577
5–9	624	239	90	17	970
10–14	810	314	128	13	1,266
Total 0–14 ASR^(b)	1,810	688	270	45	2,813

(a) Registrants are classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas based on postcode of current residence (AIHW population database)—see Appendix B.9.

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Table C3.5: Incidence (number) of Type 1 diabetes among children aged 0–14 years: socioeconomic status (SES) based on postcode of current residence^(a), 2005–2007

Age at first insulin use (years)	Group 1 (lowest SES)	Group 4	Group 3	Group 2	Group 5 (highest SES)	Australia
0–4	120	119	116	102	120	577
5–9	194	199	200	186	191	970
10–14	296	218	278	225	249	1,266
Total persons 0–14	610	536	594	513	560	2,813

(a) Registrants are classified according to the Index of Relative Socio-Economic Disadvantage (IRSD) based on postcode of current residence (AIHW population database)—see Appendix B.10.

Source: National Diabetes Register (data extracted December 2008).

Chapter 4 appendix tables

Table C4.1: Incidence (number) of Type 1 diabetes among people aged 15 years and over: sex and age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007
Males									
15–19	119	124	132	142	140	145	145	148	1,095
20–24	100	119	104	114	109	111	104	132	893
15–24	219	243	236	256	249	256	249	280	1,988
25–29	119	117	96	129	107	98	93	142	901
30–34	117	110	104	90	95	102	106	108	832
35–39	94	91	57	82	90	55	62	97	628
25–39	330	318	257	301	292	255	261	347	2,361
40–49	134	95	104	95	90	80	93	101	792
50–59	94	81	57	69	52	41	71	83	548
60–69	75	92	45	32	30	29	37	43	383
70–79	52	63	33	21	14	9	21	21	234
80+	25	25	15	19	11	7	4	20	126
40+	380	356	254	236	197	166	226	268	2,083
<i>Total males 15+ (number)</i>	929	917	747	793	738	677	736	895	6,432
<i>Total males 15+ (per cent)</i>	61.1	60.0	63.6	63.4	64.6	62.6	63.9	65.4	62.9
Females									
15–19	100	105	87	98	82	95	90	104	761
20–24	67	67	69	76	62	71	60	59	531
15–24	167	172	156	174	144	166	150	163	1,292
25–29	76	64	51	55	47	48	51	61	453
30–34	69	56	43	55	62	43	46	44	418
35–39	42	46	27	44	36	30	49	37	311
25–39	187	166	121	154	145	121	146	142	1,182
40–49	59	60	45	34	41	51	46	64	400
50–59	48	59	34	35	35	26	32	54	323
60–69	65	53	20	24	19	19	19	27	246
70–79	37	64	26	18	12	12	11	15	195
80+	29	37	26	19	9	9	11	9	149
40+	238	273	151	130	116	117	119	169	1,313
<i>Total females 15+ (number)</i>	592	611	428	458	405	404	415	474	3,787
<i>Total females 15+ (per cent)</i>	38.9	40.0	36.4	36.6	35.4	37.4	36.1	34.6	37.1

(continued)

Table C4.1 (continued): Incidence (number) of Type 1 diabetes among people aged 15 years and over: sex and age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007
Persons									
15–19	219	229	219	240	222	240	235	252	1,856
20–24	167	186	173	190	171	182	164	191	1,424
15–24	386	415	392	430	393	422	399	443	3,280
25–29	195	181	147	184	154	146	144	203	1,354
30–34	186	166	147	145	157	145	152	152	1,250
35–39	136	137	84	126	126	85	111	134	939
25–39	517	484	378	455	437	376	407	489	3,543
40–49	193	155	149	129	131	131	139	165	1,192
50–59	142	140	91	104	87	67	103	137	871
60–69	140	145	65	56	49	48	56	70	629
70–79	89	127	59	39	26	21	32	36	429
80+	54	62	41	38	20	16	15	29	275
40+	618	629	405	366	313	283	345	437	3,396
Total persons 15+ (number)	1,521	1,528	1,175	1,251	1,143	1,081	1,151	1,369	10,219

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Table C4.2: Incidence (rate) of Type 1 diabetes among people aged 15 years and over: sex and age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007^(a)
Number per 100,000 population									
Males									
15–19	17.6	18.0	18.9	20.2	19.8	20.2	20.0	19.9	19.3
20–24	15.3	18.0	15.4	16.4	15.3	15.2	13.9	17.1	15.8
15–24 ASR ^(b) (95% CI)	16.4 (14.3–18.8)	18.0 (15.8–20.4)	17.2 (15.1–19.5)	18.4 (16.2–20.8)	17.6 (15.5–19.9)	17.8 (15.7–20.1)	17.0 (14.9–19.2)	18.5 (16.4–20.8)	17.6 (16.9–18.4)
25–29	16.5	16.7	13.9	18.9	15.7	14.2	13.1	19.3	16.1
30–34	16.5	15.1	14.0	11.9	12.6	13.6	14.3	14.7	14.1
35–39	12.6	12.3	7.8	11.3	12.4	7.5	8.2	12.4	10.6
25–39 ASR ^(b) (95% CI)	15.2 (13.6–16.9)	14.7 (13.1–16.4)	11.8 (10.4–13.4)	13.9 (12.4–15.6)	13.5 (12.0–15.1)	11.7 (10.3–13.2)	11.8 (10.4–13.3)	15.4 (13.8–17.1)	13.5 (12.9–14.0)
40–49	9.7	6.7	7.2	6.5	6.1	5.4	6.2	6.7	6.8
50–59	8.4	7.0	4.8	5.6	4.1	3.2	5.4	6.3	5.5
60–69	10.2	12.3	5.8	4.0	3.7	3.4	4.2	4.6	5.9
70–79	10.0	11.9	6.1	3.9	2.6	1.6	3.8	3.7	5.4
80+	12.7	11.9	6.8	8.2	4.5	2.7	1.5	7.0	6.6
40+ ASR ^(b) (95% CI)	9.7 (8.7–10.7)	8.9 (8.0–9.8)	6.1 (5.4–6.9)	5.6 (4.9–6.3)	4.5 (3.9–5.2)	3.7 (3.2–4.3)	5.0 (4.4–5.7)	5.8 (5.2–6.6)	6.1 (5.8–6.3)
15+ ASR ^(b) (95% CI)	12.4 (11.6–13.2)	12.1 (11.3–12.9)	9.6 (9.0–10.4)	10.1 (9.4–10.9)	9.3 (8.6–10.0)	8.4 (7.8–9.0)	9.0 (8.4–9.7)	10.7 (10.0–11.5)	10.2 (9.9–10.4)
Females									
15–19	15.4	15.9	13.0	14.5	12.1	13.9	13.1	14.8	14.1
20–24	10.5	10.4	10.6	11.3	9.0	10.1	8.3	8.0	9.7
15–24 ASR ^(a) (95% CI)	13.0 (11.1–15.1)	13.2 (11.3–15.3)	11.8 (10.0–13.8)	13.0 (11.1–15.1)	10.6 (9.0–12.5)	12.0 (10.3–14.0)	10.7 (9.1–12.6)	11.5 (9.8–13.4)	11.9 (11.3–12.6)
25–29	10.5	9.1	7.4	8.1	6.9	7.0	7.3	8.5	8.1
30–34	9.6	7.6	5.7	7.2	8.1	5.6	6.1	5.9	7.0
35–39	5.6	6.1	3.6	6.0	4.9	4.0	6.4	4.7	5.2
25–39 ASR ^(b) (95% CI)	8.5 (7.3–9.8)	7.6 (6.5–8.8)	5.5 (4.6–6.6)	7.1 (6.0–8.3)	6.6 (5.6–7.8)	5.5 (4.6–6.6)	6.6 (5.6–7.8)	6.3 (5.3–7.5)	6.7 (6.3–7.1)
40–49	4.2	4.2	3.1	2.3	2.7	3.4	3.0	4.2	3.4
50–59	4.4	5.2	2.9	2.9	2.8	2.0	2.4	4.0	3.3
60–69	8.8	7.0	2.6	3.0	2.3	2.2	2.1	2.9	3.7
70–79	6.0	10.2	4.2	2.9	1.9	1.9	1.8	2.4	3.9
80+	7.9	9.6	6.5	4.6	2.1	2.0	2.4	1.9	4.4
40+ ASR ^(b) (95% CI)	5.6 (4.9–6.3)	6.2 (5.5–7.0)	3.3 (2.8–3.9)	2.8 (2.4–3.3)	2.5 (2.1–3.0)	2.5 (2.1–3.0)	2.5 (2.1–3.0)	3.5 (3.0–4.1)	3.6 (3.4–3.8)
15+ ASR ^(b) (95% CI)	7.7 (7.1–8.3)	7.8 (5.4–10.3)	5.4 (3.3–7.7)	5.8 (3.5–8.2)	5.1 (3.0–7.3)	5.0 (2.9–7.3)	5.1 (3.0–7.2)	5.7 (3.6–7.9)	5.9 (5.1–6.7)

(continued)

Table C4.2 (continued): Incidence (rate) of Type 1 diabetes among people aged 15 years and over: sex and age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007^(a)
Number per 100,000 population									
Persons									
15–19	16.5	16.9	16.0	17.4	16.0	17.1	16.6	17.4	16.8
20–24	12.9	14.3	13.0	13.9	12.2	12.7	11.1	12.7	12.8
15–24 ASR^(b) (95% CI)	14.8 (13.3–16.3)	15.6 (14.2–17.2)	14.5 (13.1–16.1)	15.7 (14.3–17.3)	14.2 (12.8–15.7)	15.0 (13.6–16.5)	13.9 (12.6–15.4)	15.1 (13.7–16.6)	14.8 (14.3–15.3)
25–29	13.5	12.9	10.7	13.5	11.3	10.6	10.3	13.9	12.1
30–34	13.0	11.3	9.8	9.5	10.3	9.6	10.2	10.3	10.5
35–39	9.0	9.2	5.7	8.6	8.6	5.7	7.3	8.5	7.8
25–39 ASR^(b) (95% CI)	11.8 (10.8–12.9)	11.1 (10.1–12.1)	8.7 (7.8–9.6)	10.5 (9.5–11.5)	10.1 (9.1–11.0)	8.6 (7.7–9.5)	9.2 (8.3–10.1)	10.9 (9.9–11.9)	10.1 (9.8–10.4)
40–49	6.9	5.5	5.2	4.4	4.4	4.4	4.6	5.4	5.1
50–59	6.4	6.1	3.8	4.2	3.5	2.6	3.9	5.2	4.4
60–69	9.5	9.6	4.2	3.5	3.0	2.8	3.2	3.7	4.8
70–79	7.8	11.0	5.1	3.3	2.2	1.8	2.7	3.0	4.6
80+	9.6	10.4	6.6	5.9	3.0	2.3	2.1	3.8	5.2
40+ ASR^(b) (95% CI)	7.6 (7.0–8.2)	7.5 (6.9–8.1)	4.7 (4.3–5.2)	4.1 (3.7–4.6)	3.5 (3.1–3.9)	3.1 (2.7–3.5)	3.7 (3.3–4.1)	4.6 (4.2–5.1)	4.8 (4.6–4.9)
15+ ASR^(b) (95% CI)	10.0 (9.5–10.5)	9.9 (9.4–10.4)	7.5 (7.1–8.0)	7.9 (7.5–8.4)	7.2 (6.8–7.6)	6.7 (6.3–7.1)	7.0 (6.6–7.5)	8.2 (7.8–8.6)	8.0 (7.9–8.2)

(a) Average annual rate for 2000–2007.

(b) Age-standardised to the 2001 Australian population—see Appendix B.4.

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Table C4.3: Incidence (number) of Type 1 diabetes among people aged 15 years and over: year of first insulin use, by state/territory of current residence, 2000–2007

Year of first insulin use	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2000	544	297	278	165	137	63	23	10	1,521
2001	509	391	238	185	122	37	28	12	1,528
2002	385	288	200	144	100	36	14	3	1,175
2003	370	312	259	142	101	30	19	14	1,251
2004	318	314	229	138	90	29	10	15	1,143
2005	304	273	237	124	82	26	22	13	1,081
2006	329	290	219	163	92	28	18	11	1,151
2007	501	316	277	125	90	36	14	10	1,369
Total 2000–2007	3,260	2,481	1,937	1,186	814	285	148	88	10,219

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Table C4.4: Incidence (number) of Type 1 diabetes among people aged 15 years and over: sex and age, by states and territories of current residence, 2000–2007

Sex and age at first insulin use (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males									
15–19	364	272	199	131	74	27	22	6	1,095
20–24	249	211	214	103	65	18	21	11	893
15–24	613	483	413	234	139	45	43	17	1,988
25–29	277	209	212	98	54	30	10	11	901
30–34	247	207	183	101	52	20	8	13	832
35–39	179	147	136	84	59	10	8	3	628
25–39	703	563	531	283	165	60	26	27	2,361
40–49	246	173	158	112	60	26	9	7	792
50–59	192	132	66	75	55	18	4	6	548
60–69	149	91	45	44	39	10	2	3	383
70–79	104	64	11	19	25	8	1	0	234
80+	41	43	10	12	15	2	0	0	126
40+	732	503	290	262	194	64	16	16	2,083
<i>Total males</i>									
15+	2,048	1,549	1,234	779	498	169	85	60	6,432
Females									
15–19	214	178	177	90	60	25	13	4	761
20–24	171	113	127	49	35	13	17	5	531
15–24	385	291	304	139	95	38	30	9	1,292
25–29	142	108	95	57	27	7	11	6	453
30–34	121	105	87	37	42	15	7	4	418
35–39	96	76	58	36	29	8	5	2	311
25–39	359	289	240	130	98	30	23	12	1,182
40–49	128	88	72	54	33	15	6	2	400
50–59	112	91	46	35	28	8	0	2	323
60–69	95	64	27	22	23	11	1	2	246
70–79	81	55	9	18	20	8	1	1	195
80+	52	54	5	9	19	6	2	0	149
40+	468	352	159	138	123	48	10	7	1,313
<i>Total females</i>									
15+	1,212	932	703	407	316	116	63	28	3,787

(continued)

Table C4.4 (continued): Incidence (number) of Type 1 diabetes among people aged 15 years and over: sex and age, by states and territories of current residence, 2000–2007

Sex and age at first insulin use (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Persons									
15–19	578	450	376	221	134	52	35	10	1,856
20–24	420	324	341	152	100	31	38	16	1,424
15–24	998	774	717	373	234	83	73	26	3,280
25–29	419	317	307	155	81	37	21	17	1,354
30–34	368	312	270	138	94	35	15	17	1,250
35–39	275	223	194	120	88	18	13	5	939
25–39	1,062	852	771	413	263	90	49	39	3,543
40–49	374	261	230	166	93	41	15	9	1,192
50–59	304	223	112	110	83	26	4	8	871
60–69	244	155	72	66	62	21	3	5	629
70–79	185	119	20	37	45	16	2	1	429
80+	93	97	15	21	34	8	2	0	275
40+	1,200	855	449	400	317	112	26	23	3,396
Total persons 15+	3,260	2,481	1,937	1,186	814	285	148	88	10,219

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Table C4.5: Incidence (rate) of Type 1 diabetes among people aged 15 years and over: sex and age, by states and territories of current residence, 2000–2007

Sex and age at first insulin use (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Average annual rate (number per 100,000 population)									
Males									
15–19	19.6	19.8	17.9	22.2	17.3	19.5	21.8	9.6	19.3
20–24	13.5	15.0	19.4	17.9	15.6	15.0	18.3	16.1	15.8
15–24 ASR ^(a) (95% CI)	16.6 (15.3–18.0)	17.4 (15.9–19.0)	18.6 (16.9–20.5)	20.1 (17.6–22.8)	16.5 (13.9–19.5)	17.3 (12.6–23.2)	20.1 (14.5–27.1)	12.8 (7.4–20.5)	17.6 (16.8–18.4)
25–29	14.7	14.8	19.8	17.6	13.5	27.2	9.4	15.0	16.1
30–34	12.5	13.8	16.3	17.1	12.2	16.5	7.7	17.5	14.1
35–39	9.0	9.9	12.1	13.9	13.2	7.7	8.1	4.2	10.6
25–39 ASR ^(a) (95% CI)	12.0 (11.1–12.9)	12.8 (11.8–13.9)	16.0 (14.6–17.4)	16.2 (14.3–18.2)	12.9 (11.0–15.1)	16.9 (12.9–21.8)	8.4 (5.5–12.3)	12.1 (8.0–17.7)	13.5 (13.0–14.1)
40–49	6.3	6.0	7.1	9.4	6.6	9.2	4.8	5.5	6.8
50–59	5.9	5.5	3.4	7.5	7.0	7.1	2.5	6.2	5.5
60–69	6.8	5.7	3.6	7.1	7.4	5.7	2.3	6.8	5.9
70–79	6.9	5.8	1.4	4.9	6.5	6.9	2.0	0.0	5.4
80+	6.1	8.8	2.9	7.4	8.4	4.0	0.0	0.0	6.6
40+ ASR ^(a) (95% CI)	6.3 (5.9–6.8)	6.0 (5.5–6.5)	4.4 (3.9–4.9)	7.7 (6.8–8.7)	7.0 (6.0–8.0)	7.3 (5.6–9.4)	3.0 (1.7–4.9)	4.8 (2.7–7.8)	6.1 (5.8–6.3)
15+ ASR ^(a) (95% CI)	9.7 (9.3–10.2)	9.9 (9.4–10.4)	10.1 (9.5–10.7)	12.2 (11.4–13.1)	10.3 (9.4–11.3)	11.8 (10.0–13.7)	7.5 (5.9–9.2)	8.3 (6.3–10.7)	10.2 (9.9–10.4)
Females									
15–19	12.1	13.5	16.6	16.2	14.7	18.8	13.6	6.9	14.1
20–24	9.6	8.3	11.8	9.0	8.8	11.1	15.3	7.9	9.7
15–24 ASR ^(a) (95% CI)	10.9 (9.8–12.0)	10.9 (9.7–12.2)	14.3 (12.7–15.9)	12.7 (10.6–15.0)	11.8 (9.6–14.5)	15.0 (10.6–20.6)	14.4 (9.7–20.6)	7.4 (3.4–14.0)	11.9 (11.3–12.6)
25–29	7.5	7.6	8.9	10.6	7.0	6.2	10.4	8.5	8.1
30–34	6.0	6.8	7.6	6.4	10.0	11.7	6.7	5.5	7.0
35–39	4.8	5.0	5.0	6.0	6.5	5.8	4.9	3.0	5.2
25–39 ASR ^(a) (95% CI)	6.1 (5.5–6.8)	6.5 (5.7–7.3)	7.1 (6.3–8.1)	7.6 (6.4–9.0)	7.8 (6.4–9.6)	7.9 (5.3–11.3)	7.3 (4.6–10.9)	5.6 (2.9–9.8)	6.7 (6.3–7.1)
40–49	3.3	3.0	3.2	4.5	3.6	5.2	3.0	1.7	3.4
50–59	3.4	3.7	2.4	3.6	3.5	3.2	0.0	2.5	3.3
60–69	4.3	3.9	2.2	3.6	4.2	6.2	1.1	6.0	3.7
70–79	4.6	4.2	1.0	4.2	4.4	6.0	1.7	7.5	3.9
80+	4.4	6.2	0.9	3.2	5.9	6.6	5.6	0.0	4.4
40+ ASR ^(a) (95% CI)	3.8 (3.4–4.1)	3.8 (3.4–4.2)	2.3 (2.0–2.7)	4.0 (3.3–4.7)	3.9 (3.3–4.7)	5.0 (3.7–6.7)	1.8 (0.9–3.4)	3.4 (1.1–7.4)	3.6 (3.4–3.8)
15+ ASR ^(a) (95% CI)	5.6 (5.3–6.0)	5.8 (5.4–6.1)	5.7 (5.3–6.2)	6.5 (5.9–7.2)	6.4 (5.7–7.2)	7.6 (6.2–9.1)	5.5 (4.3–7.1)	4.7 (2.9–7.0)	5.9 (5.7–6.1)

(continued)

Table C4.5 (continued): Incidence (rate) of Type 1 diabetes among people aged 15 years and over: sex and age, by states and territories of current residence, 2000–2007

Sex and age at first insulin use (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Average annual rate (number per 100,000 population)									
Persons									
15–19	16.0	16.7	17.2	19.3	16.1	19.2	17.8	8.3	16.8
20–24	11.6	11.7	15.7	13.6	12.3	13.0	16.8	12.1	12.8
15–24 ASR ^(a) (95% CI)	13.8 (13.0–14.7)	14.2 (13.2–15.3)	16.5 (15.3–17.7)	16.5 (14.9–18.2)	14.2 (12.5–16.2)	16.2 (12.9–20.0)	17.3 (13.6–21.8)	10.2 (6.6–14.9)	14.8 (14.3–15.3)
25–29	11.1	11.2	14.4	14.2	10.3	16.6	9.9	11.8	12.1
30–34	9.2	10.3	11.9	11.8	11.1	14.0	7.2	11.6	10.5
35–39	6.9	7.4	8.5	10.0	9.8	6.7	6.5	3.6	7.8
25–39 ASR ^(a) (95% CI)	9.0 (8.5–9.6)	9.6 (9.0–10.3)	11.5 (10.7–12.4)	11.9 (10.8–13.1)	10.4 (9.2–11.8)	12.4 (12.9–20.0)	7.8 (5.8–10.4)	8.9 (6.4–12.2)	10.1 (9.8–10.4)
40–49	4.8	4.5	5.1	6.9	5.1	7.2	3.8	3.7	5.1
50–59	4.7	4.6	2.9	5.6	5.2	5.1	1.2	4.5	4.4
60–69	5.5	4.8	2.9	5.3	5.6	6.0	1.7	6.4	4.8
70–79	5.7	5.0	1.2	4.5	5.4	6.5	1.9	3.5	4.6
80+	5.0	7.1	1.6	4.7	6.8	5.7	3.6	0.0	5.2
40+ ASR ^(a) (95% CI)	5.0 (4.7–5.3)	4.8 (4.5–5.2)	3.3 (3.0–3.6)	5.8 (5.2–6.4)	5.4 (4.8–6.0)	6.2 (5.1–7.5)	2.4 (1.6–3.6)	4.1 (2.5–6.4)	4.8 (4.6–4.9)
15+ ASR^(a) (95% CI)	7.7 (7.4–7.9)	7.8 (7.5–8.1)	7.9 (7.6–8.3)	9.4 (8.8–9.9)	8.3 (7.8–8.9)	9.7 (8.6–10.9)	6.5 (5.5–7.7)	6.5 (5.2–8.1)	8.0 (7.9–8.2)

(a) Age-standardised to the 2001 Australian population—see Appendix B.4.

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Table C4.6: Incidence (number and rate) of Type 1 diabetes among people aged 15 years and over at their first insulin use: geographical locations based on postcode of current residence^(a), 2005–2007

Age at first insulin use (years)	Major cities	Inner regional	Outer regional	Remote/ Very remote	Australia ^(b)
	Number				
15–19	496	159	58	14	727
20–24	381	93	46	16	537
15–24	877	253	105	30	1,264
25–29	353	80	47	14	493
30–34	327	71	43	8	449
35–39	233	62	31	5	330
25–39	913	212	120	27	1,272
40–49	293	92	44	6	435
50–59	219	60	20	8	307
60–69	111	38	21	4	174
70–79	56	21	10	2	89
80+	38	11	9	1	60
40+	717	221	104	22	1,065
Total 15+	2,506	685	330	79	3,601
	Average annual rate (number per 100,000 population)				
15–19	18.8	15.2	13.3	10.2	17.1
20–24	12.5	10.8	12.9	11.8	12.2
15–24 ASR^(c) <i>(95% CI)</i>	15.7 <i>(14.7–16.8)</i>	13.1 <i>(11.7–14.9)</i>	13.1 <i>(10.7–15.8)</i>	11.0 <i>(7.4–15.7)</i>	14.7 <i>(13.8–15.4)</i>
25–29	12.0	10.2	12.9	9.7	11.7
30–34	10.9	7.8	10.4	5.4	10.0
35–39	7.9	6.2	6.8	2.9	7.2
25–39 ASR^(c) <i>(95% CI)</i>	10.2 <i>(9.6–10.9)</i>	8.0 <i>(6.9–9.1)</i>	10.0 <i>(8.1–11.7)</i>	5.9 <i>(3.8–8.5)</i>	9.6 <i>(9.1–10.1)</i>
40–49	5.2	4.3	4.4	2.1	4.8
50–59	4.6	3.1	2.3	3.2	3.9
60–69	3.5	2.7	3.3	2.7	3.3
70–79	2.6	2.3	2.5	2.3	2.5
80+	2.7	2.1	3.9	2.7	2.7
40+ ASR^(c) <i>(95% CI)</i>	4.2 <i>(3.9–4.5)</i>	3.3 <i>(2.8–3.7)</i>	3.3 <i>(2.7–4.0)</i>	2.6 <i>(1.6–3.9)</i>	3.8 <i>(3.6–4.0)</i>
15+ ASR^(c) (95% CI)	7.9 (7.6–8.2)	6.3 (5.8–6.8)	6.9 (6.2–7.7)	5.0 (3.9–6.2)	7.3 (7.1–7.6)

(a) Registrants are classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas based on postcode of current residence (AIHW population database)—see Appendix B.9.

(b) Includes 1 record where postcode of current residence is unknown.

(c) Age-standardised to the 2001 Australian population—see Appendix B.4.

Note: Columns and rows may not add to totals due to rounding.

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Table C4.7: Incidence (number and rate) of Type 1 diabetes among people aged 15 years and over at their first insulin use: socioeconomic status (SES) based on postcode of current residence^(a), 2005–2007

Age at first insulin use (years)	Group 1 (lowest SES)	Group 4	Group 3	Group 2	Group 5 (highest SES)	Australia
	Number					
15–19	166	161	140	109	151	727
20–24	108	109	130	114	76	537
15–24	274	270	270	223	227	1,264
25–29	100	96	113	87	97	493
30–34	112	84	96	73	84	449
35–39	76	60	63	62	69	330
25–39	288	240	272	222	250	1,272
40–49	83	87	98	80	87	435
50–59	60	52	62	63	70	307
60–69	26	30	33	28	57	174
70–79	15	12	19	16	27	89
80+	17	5	12	14	11	60
40+	201	186	224	201	252	1,065
Total 15+	763	696	766	646	729	3,601
	Average annual rate (number per 100,000 population)					
15–19	19.3	18.8	16.8	13.0	17.9	17.2
20–24	11.6	11.7	14.6	14.2	9.2	12.3
15–24 ASR ^(b) (95% CI)	15.5 (13.7–17.4)	15.3 (13.6–17.3)	15.7 (13.9–17.7)	13.5 (11.8–15.4)	13.7 (11.9–15.6)	14.8 (14.0–15.6)
25–29	11.5	10.6	12.9	11.3	12.3	11.7
30–34	12.1	8.6	10.4	8.9	10.2	10.0
35–39	8.0	6.1	6.8	7.3	8.1	7.2
25–39 ASR ^(b) (95% CI)	10.5 (9.2–11.7)	8.4 (7.4–9.5)	10.0 (8.8–11.2)	9.1 (8.0–10.4)	10.1 (8.9–11.5)	9.6 (9.1–10.2)
40–49	4.4	4.6	5.4	4.6	5.0	4.8
50–59	3.6	3.3	4.1	4.0	4.5	3.9
60–69	2.5	3.0	3.2	2.4	5.0	3.2
70–79	2.3	1.9	2.7	2.0	3.4	2.5
80+	3.7	1.2	2.9	3.0	2.5	2.7
40+ ASR ^(b) (95% CI)	3.5 (3.0–4.0)	3.4 (2.9–3.9)	4.1 (3.6–4.7)	3.5 (3.1–4.1)	4.5 (4.0–5.1)	3.8 (3.6–4.0)
15+ ASR^(b) (95% CI)	7.5 (7.0–8.1)	6.9 (6.4–7.4)	7.8 (7.2–8.3)	6.8 (6.3–7.4)	7.7 (7.1–8.3)	7.3 (7.1–7.6)

(a) Registrants are classified according to the Index of Relative Socio-Economic Disadvantage (IRSD) based on postcode of current residence (AIHW population database)—see Appendix B.10.

(b) Age-standardised to the 2001 Australian population—see Appendix B.4.

Sources: National Diabetes Register; AIHW analysis of de-identified NDSS data (data extracted December 2008).

Chapter 5 appendix tables

Table C5.1: New cases of insulin-treated Type 2 diabetes: sex and age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007
	Number								
Males									
0–14	6	12	5	7	12	12	6	9	69
15–24	33	27	28	33	32	47	66	45	311
25–34	155	158	167	183	211	205	219	242	1,540
35–44	523	579	581	620	700	650	670	849	5,172
45–54	1,411	1,359	1,450	1,624	1,772	1,651	1,618	2,159	13,044
55–64	1,932	1,944	2,202	2,376	2,923	2,620	2,671	3,623	20,291
65–74	1,917	1,805	1,942	2,245	2,553	2,268	2,258	2,937	17,925
75–84	883	997	1,007	1,224	1,401	1,436	1,402	1,812	10,162
85+	123	152	174	169	219	243	280	312	1,672
<i>Total males</i>	<i>6,983</i>	<i>7,033</i>	<i>7,556</i>	<i>8,481</i>	<i>9,823</i>	<i>9,132</i>	<i>9,190</i>	<i>11,988</i>	<i>70,186</i>
<i>Total males (per cent)</i>	<i>53.1</i>	<i>52.9</i>	<i>54.2</i>	<i>54.0</i>	<i>55.4</i>	<i>54.9</i>	<i>55.2</i>	<i>56.1</i>	<i>54.6</i>
Females									
0–14	6	6	9	12	13	9	15	17	87
15–24	75	62	55	57	81	87	88	80	585
25–34	400	393	376	394	436	421	463	418	3,301
35–44	575	603	582	674	698	731	682	826	5,371
45–54	1,042	1,069	1,117	1,215	1,316	1,213	1,204	1,527	9,703
55–64	1,435	1,428	1,513	1,687	1,956	1,715	1,707	2,303	13,744
65–74	1,533	1,566	1,472	1,702	1,723	1,702	1,664	2,147	13,509
75–84	886	914	1,018	1,213	1,355	1,265	1,235	1,603	9,489
85+	209	212	238	273	315	360	397	464	2,468
<i>Total females</i>	<i>6,161</i>	<i>6,253</i>	<i>6,380</i>	<i>7,227</i>	<i>7,893</i>	<i>7,503</i>	<i>7,455</i>	<i>9,385</i>	<i>58,257</i>
<i>Total females (per cent)</i>	<i>46.9</i>	<i>47.1</i>	<i>45.8</i>	<i>46.0</i>	<i>44.6</i>	<i>45.1</i>	<i>44.8</i>	<i>43.9</i>	<i>45.4</i>
Persons									
0–14	12	18	14	19	25	21	21	26	156
15–24	108	89	83	90	113	134	154	125	896
25–34	555	551	543	577	647	626	682	660	4,841
35–44	1,098	1,182	1,163	1,294	1,398	1,381	1,352	1,675	10,543
45–54	2,453	2,428	2,567	2,839	3,088	2,864	2,822	3,686	22,747
55–64	3,367	3,372	3,715	4,063	4,879	4,335	4,378	5,926	34,035
65–74	3,450	3,371	3,414	3,947	4,276	3,970	3,922	5,084	31,434
75–84	1,769	1,911	2,025	2,437	2,756	2,701	2,637	3,415	19,651
85+	332	364	412	442	534	603	677	776	4,140
Total persons	13,144	13,286	13,936	15,708	17,716	16,635	16,645	21,373	128,443
Total persons (per cent)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Diabetes Register (data extracted December 2008)

Table C5.2: New cases of insulin-treated gestational diabetes among women aged 15–49 years: age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007
	Number								
15–19	8	11	11	12	11	21	30	28	132
20–24	56	67	85	76	112	173	203	308	1,080
25–29	202	286	338	263	370	572	720	1,012	3,763
30–34	322	390	513	419	702	1,048	1,287	1,751	6,432
35–39	195	261	348	364	506	857	1,024	1,469	5,024
40–44	57	66	104	102	151	206	292	404	1,382
45–49	4	4	12	4	10	20	18	37	109
Total	844	1,085	1,411	1,240	1,862	2,897	3,574	5,009	17,922

Source: National Diabetes Register (data extracted December 2008).

Table C5.3: New cases of insulin-treated other diabetes: sex and age, 2000–2007

Age at first insulin use (years)	Males	Females	Persons
	Number per 100,000 population		
0–14	0.4	0.5	0.4
15–24	0.6	0.7	0.6
25–34	0.7	0.7	0.7
35–44	0.8	0.6	0.7
45–54	1.5	0.8	1.1
55–64	2.0	1.1	1.5
65–74	1.9	1.4	1.7
75–84	1.7	0.8	1.2
85+	0.9	1.0	1.0
ASR^(a) (95% CI)	1.0 (0.9–1.0)	0.7 (0.7–0.8)	0.9 (0.8–0.9)

(a) Age-standardised to the 2001 Australian population—see Appendix B.4.

Source: National Diabetes Register (data extracted December 2008).

Table C5.4: New cases of insulin-treated other diabetes: age, by year of first insulin use, 2000–2007

Sex and age at first insulin use (years)	2000	2001	2002	2003	2004	2005	2006	2007	2000–2007^(a)
Number per 100,000 population									
Persons									
0–14	0.3	0.4	0.4	0.3	0.4	0.6	0.4	0.5	0.4
15–24	0.3	0.7	0.8	0.6	0.6	0.5	0.9	0.6	0.6
25–34	0.6	1.2	0.7	0.6	0.5	0.5	0.7	0.7	0.7
35–44	0.7	0.8	0.4	0.4	0.5	0.8	0.8	0.9	0.7
45–54	0.9	1.4	1.1	0.9	1.0	0.9	1.2	1.8	1.1
55–64	1.8	2.1	1.3	1.1	1.0	1.7	1.5	1.7	1.5
65–74	1.5	1.9	1.4	1.3	1.7	1.3	2.5	1.8	1.7
75–84	1.0	1.2	1.0	0.9	1.4	1.2	1.5	1.4	1.2
85+	1.2	0.4	0.7	1.1	0.7	1.3	0.9	1.5	1.0
ASR^(b)	0.8	1.1	0.8	0.7	0.7	0.8	1.0	1.0	0.9
(95% CI)	(0.6–0.9)	(0.9–1.2)	(0.7–0.9)	(0.6–0.8)	(0.6–0.9)	(0.7–1.0)	(0.9–1.1)	(0.9–1.2)	(0.8–0.9)

(a) The rate for 2000–2007 is the average annual rate for the 8 years.

(b) Age-standardised to the 2001 Australian population—see Appendix B.4.

Source: National Diabetes Register (data extracted December 2008).

Chapter 7 appendix tables

Table C7.1: NDR registrants: current age and sex, 2000–2007

Age (years)	Males		Females		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
0–4	204	0.4	193	0.3	397	0.4
5–9	959	1.8	830	1.4	1,789	1.6
10–14	1,477	2.8	1,482	2.5	2,959	2.7
15–19	1,657	3.2	1,406	2.4	3,063	2.8
20–24	1,159	2.2	1,377	2.4	2,536	2.3
25–29	1,086	2.1	3,089	5.3	4,175	3.8
30–34	1,369	2.6	6,071	10.4	7,440	6.7
35–39	1,800	3.4	7,623	13.1	9,423	8.5
40–44	2,304	4.4	4,661	8.0	6,965	6.3
45–54	7,414	14.1	5,899	10.1	13,313	12.0
55–64	11,960	22.8	8,258	14.2	20,218	18.3
65–74	11,125	21.2	7,810	13.4	18,935	17.1
75+	9,985	19.0	9,464	16.3	19,449	17.6
Total	52,499	100.0	58,163	100.0	110,662	100.0

Source: National Diabetes Register (data extracted December 2008).

Table C7.2: NDR registrants: state or territory of current residence, by remoteness areas, 2005–2007

State/territory of current residence	Major cities	Inner regional	Outer regional	Remote/ Very remote	Total ^(a)
Number					
NSW	15,859	3,969	1,262	136	21,229
Vic	10,587	2,589	623	13	13,815
Qld	6,614	2,676	1,730	557	11,581
WA	2,814	611	384	255	4,064
SA	2,748	466	526	140	3,880
Tas	..	777	476	23	1,276
ACT	740	2	..	..	742
NT	..	..	169	150	319
Total	39,363	11,089	5,172	1,273	56,918
Per cent					
NSW	74.7	18.7	5.9	0.6	100.0
Vic	76.6	18.7	4.5	0.1	100.0
Qld	57.1	23.1	14.9	4.8	100.0
WA	69.2	15.0	9.5	6.3	100.0
SA	70.8	12.0	13.6	3.6	100.0
Tas	..	60.9	37.3	1.8	100.0
ACT	99.8	0.2	..	..	100.0
NT	..	..	53.1	46.9	100.0
Total	69.2	19.5	9.1	2.2	100.0

(a) Total includes records where state or territory of current residence was unknown.

Source: National Diabetes Register (data extracted December 2008).

Table C7.3: NDR registrants: country of birth and sex, 2000–2007

Country of birth	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
Australia	21,105	40.2	22,165	38.1	43,270	39.1
New Zealand	895	1.7	1,101	1.9	1,996	1.8
Other Oceania and Antarctica	517	1.0	1,011	1.7	1,528	1.4
North-West Europe	5,166	9.8	4,201	7.2	9,367	8.5
Southern and Eastern Europe	5,087	9.7	4,139	7.1	9,226	8.3
North Africa and the Middle East	1,516	2.9	1,833	3.2	3,349	3.0
South-East Asia	1,076	2.0	2,232	3.8	3,308	3.0
North-East Asia	571	1.1	1,287	2.2	1,858	1.7
Southern and Central Asia	1,048	2.0	1,914	3.3	2,962	2.7
Americas	549	1.0	769	1.3	1,318	1.2
Sub-Saharan Africa	500	1.0	624	1.1	1,124	1.0
Not stated/unknown	14,469	27.6	16,887	29.0	31,356	28.3
Total persons	52,499	100.0	58,163	100.0	110,662	100.0

Source: National Diabetes Register (data extracted December 2008).

Appendix D: Data held on the NDR

As described in Chapter 1, the NDR has two main data sources: the National Diabetes Services Scheme database (NDSS), and the Australasian Paediatric Endocrine Group's (APEG) state and territory databases. For details about NDSS and APEG, see the Data Sources section below.

Table D.1 lists the data items held on the NDR, the source of each data item, and a description of output categories available for each item. Identifiable information is used only for AIHW's management of the NDR and is not available as output. These items are marked accordingly.

Table D.1: Data collected by the NDR: field by source and output categories

Field	Collected by NDSS	Collected by APEG	Derived item	Output categories	Comments
Registrant information					
Source			X	N—NDSS A—APEG B—Both O—Other	
Registration number	X	X		Not available	Unique registration for NDSS or APEG
State/territory of registration	X	X	X	1—NSW 2—Vic 3—Qld 4—SA 5—WA 6—Tas 7—NT 8—ACT	
NDR consent	X	X	X		Must consent to be included on NDR
Research consent	X	X		Yes No	
Title (Mr, Mrs, Dr etc.)	X			Not available	
Family name	X	X		Not available	
Given names	X	X		Not available	
Other name(s)	X			Not available	
Sex	X	X		Male Female	
Address 1	X	X		Not available	
Address 2	X	X		Not available	
Address 3	X	X		Not available	
State/territory of current residence			X	1—NSW 2—Vic 3—Qld 4—SA 5—WA 6—Tas 7—NT 8—ACT	Derived from postcode of current residence

(continued)

Table D.1 (continued): Data collected by the NDR: field, by source and output categories

Field	Collected by NDSS	Collected by APEG	Derived item	Output categories	Comments
Postcode of current residence	X	X			
Phone	X			Not available	
Date of birth	X	X		Not available	
Age			X	5-year age groups	Expressed as age at a particular point in time
Indigenous status	X	X		Indigenous Non-Indigenous Not stated	
Country of birth	X	X		Australian Standard Classification of Countries for Social Statistics ABS cat. no. 1269.0 (ABS 1998)	
Main language spoken at home	X			Diabetes Australia language code	
Postcode at diagnosis	X	X			
Diagnosis date	X			Year of diagnosis	For APEG diagnosis date is assumed to be the same date as date of first insulin use
Age at diagnosis			X	5-year age groups	Derived from date of birth and date of diagnosis
Time since diagnosis	X			Not recorded Last year 1–2 years ago 3–5 years ago More than 5 years	
Registration date	X	X		Year of registration	Year of registration with NDSS or APEG
Diabetes type—reported	X	X		1—Type 1 2—Type 2 3—Gestational 4—Other types of diabetes	
Diabetes type—derived			X	1—Type 1 2—Type 2 3—Gestational 4—Other types of diabetes 9—Not derived	See Appendix B.3 for more information
Date of first insulin injection	X	X		Year of first insulin use	
Time since first insulin injection	X			Not recorded Last year 1–2 years ago 3–5 years ago More than 5 years	
Age at first insulin use			X	5-year age groups	Derived from date of birth and date of first insulin injection
Insulin type—injection	X			No Yes	

(continued)

Table D.1 (continued): Data collected by the NDR: field, by source and output categories

Field	Collected by NDSS	Collected by APEG	Derived item	Output categories	Comments
Insulin type—pump	X			No Yes	
Insulin type—other therapy	X			No Yes	
Date of first syringe purchase	X			Year of first syringe purchase	
Vital status			X	1—Alive 2—Deceased	
Year of death			X	Year of death	
Underlying cause of death			X	ICD-10 coding	
Associated cause(s) of death			X	ICD-10 coding	
Form ID	X			Old—pre-2003 form change New—post-2003 form change	
Date last modified	X			Not available	No information on what was modified
Doctor's details					
Certifying doctor's name		X		Not available	
Doctor's address 1		X		Not available	
Doctor's address 2		X		Not available	
Doctor's address 3		X		Not available	
Doctor type		X		G—General practitioner E—Endocrinologist S—Specialist O—Other medical practitioner D—Diabetes educator	
Doctor's provider number		X		Not available	
Doctor's research involvement		X		Not available	
Certified by a doctor	X			No Yes (GP, specialist, endocrinologist)	
Certified by a Credentialed Diabetes Educator-Registered Nurse	X			No Yes	
Carer details					
Carer family name		X		Not available	
Carer given name		X		Not available	
Carer phone number		X		Not available	
Carer flag (carer details are present)	X			No Yes	
Flag—use carer's mailing address)	X			No Yes	

Appendix E: Concordance between NDSS and APEG

The overlap between the APEG and NDSS records on the NDR is summarised in tables E.1 and E.2, by year of first insulin use and state, respectively. The tables show that APEG records as a proportion of NDSS records ranged between 77% and 83% for the first 5 years. One possible reason for the drop off in the proportion in 2004 could be the introduction of the new NDSS registration form in late 2003, which changed the consent arrangement to an opt-out system, meaning the NDR now receives a higher proportion of total NDSS records than in the past. The lower coverage for the final year is likely to improve as more APEG records for that period are received.

The concordance varies greatly by state, from 47% in the Northern Territory to 104% in Western Australia (Table E.2).

Table E.1: Concordance between NDSS and APEG records for registrants first diagnosed in 1999–2007 and aged 0–14 years at time of diagnosis, by year

Year	Both APEG and NDSS	NDSS only	APEG only	Total	APEG as proportion of NDSS (per cent)
1999	392	221	118	731	83.2
2000	510	209	55	774	78.6
2001	577	213	80	870	83.2
2002	611	255	65	931	78.1
2003	657	281	64	1,002	76.9
2004	616	367	42	1,025	66.9
2005	531	369	55	955	65.1
2006	545	403	26	974	60.2
2007	537	480	28	1,045	55.6

Source: National Diabetes Register (data extracted December 2008).

Table E.2: Concordance between NDSS and APEG records for registrants first diagnosed in 1999–2007 and aged 0–14 years at time of diagnosis, by state/territory of residence

State/territory of residence	Both APEG and NDSS	NDSS only	APEG only	Total	APEG as proportion of NDSS (per cent)
NSW	1,457	899	178	2,534	69.4
Vic	1,187	828	106	2,121	64.2
Qld	866	756	76	1,698	58.1
WA	764	36	67	867	103.9
SA	447	146	59	652	85.3
Tas	160	47	34	241	93.7
ACT ^(a)	78	59	9	146	63.5
NT ^(b)	17	26	3	46	46.5
Australia^(c)	4,976	2,798	533	8,307	70.9

(a) APEG records for the Australian Capital Territory are collected by the New South Wales APEG register.

(b) APEG records for the Northern Territory are collected by the Queensland and South Australian APEG registers.

(c) Columns may not add to the Australian totals as these include records where state/territory of residence was unknown.

Source: National Diabetes Register (data extracted December 2008).

Appendix F: Data sources

AIHW population database

Population data held by the AIHW are sourced from the ABS Demography section and are updated as revised/new estimates become available. All population estimates currently produced by ABS are based on a current residence concept; that is, where people usually reside, and are referred to as Estimated Resident Populations.

De-identified NDSS data set

The de-identified NDSS data set is a file provided by Diabetes Australia Ltd that contains de-identified information on all NDSS registrations since 1987. This report analyses data on registrants in the scope of the NDR; that is, they use insulin to treat their diabetes, and their insulin use started on or after 1 January 1999.

National Death Index

The National Death Index is a database housed at the Australian Institute of Health and Welfare that contains records of all deaths occurring in Australia since 1980. The data are obtained from the Registrars of Births, Deaths and Marriages in each state and territory. The index is designed to help epidemiological studies, and its use is strictly confined to medical research.

National Diabetes Register

The NDR has two sources of ascertainment: the National Diabetes Services Scheme database, and the Australasian Paediatric Endocrine Group's state and territory databases for children aged 0–14 years.

National Diabetes Services Scheme

The NDSS is an Australian Government initiative that subsidises the supply of insulin syringes, insulin infusion pump consumables and diagnostic reagents (blood and urine testing strips) to registered people with diabetes. The scheme was established in 1987, and is administered by Diabetes Australia Ltd, which coordinates the supply of products in all states and territories. The NDSS aims to enhance the capacity of people with diabetes to understand and manage their life with diabetes, and to ensure they have timely, reliable and affordable access to the supplies and services they need to effectively self-manage their condition (see Table D.1 for a list of the data items that the NDSS contributes to the NDR).

Australasian Paediatric Endocrine Group

APEG is the professional body in Australia and New Zealand that represents those involved in management and research of children with disorders of the endocrine system including diabetes mellitus.

APEG is actively involved in setting standards of care for children and adolescents with diabetes. One aspect of this care is APEG's state-based databases, which collect diagnosis information on children and adolescents with Type 1 diabetes. Each state has established its database independently, and at varying times since 1985, but all collect the same minimum data set (see Table D.1 for a list of the data items that APEG contributes to the NDR).

Glossary

Associated cause of death

Any condition, disease and injury – other than the underlying cause – considered to contribute to a death. Compare with *Underlying cause of death*. See also *Cause of death*.

Cause of death

From information reported on the medical certificate of cause of death, each death is classified by the underlying cause of death according to rules and conventions of the 10th revision of the International classification of diseases (ICD-10). See also *Underlying cause of death* and *Associated cause of death*.

Derived diabetes type

Refers to how a classification of individuals on the NDR as Type 1, Type 2 and so on is derived from data in the NDR. The method of calculation (algorithm) is based on age of diagnosis and the period between the date of diagnosis and start of insulin use. For more information, see Appendix B.3.

Diabetes (diabetes mellitus)

A chronic condition in which the body cannot properly use its main energy source, the sugar glucose. This is due to either the pancreas not producing enough of the hormone insulin, or the body being unable to effectively use the insulin produced. Insulin helps glucose enter the body's cells from the bloodstream and then be processed by them. Diabetes is marked by an abnormal build-up of glucose in the blood, and can have serious short- and long-term effects on many of the body's systems, especially the blood vessels and nerves.

For the different types of diabetes, see *Type 1 diabetes*, *Type 2 diabetes*, *Gestational diabetes mellitus* and *Other types of diabetes*.

Gestational diabetes mellitus

Develops during pregnancy in some women but usually disappears when the pregnancy is over. However, women who have had gestational diabetes are at greater risk of developing *Type 2 diabetes* later in life. Gestational diabetes increases the risk of perinatal morbidity and mortality. See Box 1.1.

Women who had their diabetes diagnosed before a pregnancy do not fall into this category.

Glucose

A simple sugar that is the major source of energy for the body and the sole source of energy for the brain. It is supplied through food and is also produced and released by the liver. Its proper use requires the hormone insulin.

Incidence

The number of new cases (of an illness or event) occurring during a given period. Compare with *Prevalence*.

Insulin

A hormone produced by the pancreas. Its main action is to enable body cells to absorb glucose from the blood and use it for energy.

Insulin-treated diabetes

All types of diabetes treated with insulin, includes Type 1, Type 2, gestational and other types of diabetes. It is a term used to describe those on the NDR, and is not a standard classification used in clinical practice.

Latent autoimmune diabetes in adults (LADA)

Adult patients with a slowly progressive form of autoimmune or Type 1 diabetes who could be treated initially without insulin injections.

Other types of diabetes

Other types of diabetes include certain conditions or syndromes, such as:

- genetic defects of beta-cell function (formerly referred to as maturity-onset diabetes of the young (MODY))
- genetic defects in insulin action
- diseases of the exocrine pancreas (for example, cystic fibrosis and cancer of the pancreas)
- endocrinopathies (for example, acromegaly and Cushing's Syndrome)
- drug- or chemical-induced diabetes (for example, steroid-induced diabetes)
- infections (for example, congenital rubella)
- uncommon but specific forms of immune-mediated diabetes mellitus
- other genetic syndromes sometimes associated with diabetes (WHO 1999).

These types of diabetes are relatively uncommon. Only those being treated with insulin for these types of diabetes are included on the National Diabetes Register. See Box 2.1 for more information.

Pancreas

The organ that lies behind the lower part of the stomach and produces insulin.

Prevalence

The number or proportion (of cases or instances) present in a population at a given time. Compare with *Incidence*.

Reported diabetes type

The type of diabetes recorded on the NDSS or APEG registration forms. Diabetes type is known to be misreported in many instances; for more information see Appendix B.3.

Type 1 diabetes

Mostly arises in childhood or young adults, though can occur at any age. It is marked by the inability to produce insulin. People with Type 1 diabetes need insulin replacement for survival. Most cases are caused by an autoimmune condition that destroys the pancreatic cells that produce insulin. See Box 1.1.

Type 2 diabetes

The most common form of diabetes, which occurs mostly in people aged 40 years and over. People with Type 2 diabetes produce insulin but may not produce enough or cannot use it effectively. Some cases may be managed with changes to diet, along with increased exercise and weight loss. Many require drugs as well, namely oral glucose-lowering drugs that work on the pancreas. Many others require insulin in addition to other treatments. See Box 1.1.

Underlying cause of death

The condition, disease or injury initiating the sequence of events leading directly to death; that is, the main cause. Compare with *Associated cause(s) of death*.

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