

# Common myths and misunderstandings in type 1 diabetes

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## Key points

- Shared care of people by a GP and specialist diabetes professionals is the best model for the management of type 1 diabetes.
- Both children and adults can have either type 1 or type 2 diabetes.
- Most women who have had gestational diabetes develop type 2 diabetes. However, women who are developing type 1 diabetes can present during gestation.
- Both type 1 and type 2 diabetes are associated with comorbidities.
- People with type 1 diabetes tend to have microvascular complications and those with type 2 tend to have macro - vascular complications.
- The cardiovascular risk factors of hypertension, dyslipidaemia and smoking should be targeted in people with type 1 diabetes as well as in those with type 2 diabetes.
- Glycaemia should be tightly controlled in people with type 1 diabetes, if this can be achieved safely.

Although some of the many myths about type 1 diabetes that are in circulation may have been useful in the past, many are misleading now and may lead to inappropriate management. This article discusses some of the more prevalent myths that may mislead doctors.

**T**here are many myths about diabetes in general practice. These easy to remember adages have been passed from generation to generation of doctors and are vigorously defended by their proponents. Some may have been applicable and useful in the past, but many are misleading now and may lead to inappropriate management.

This article discusses some of the more prevalent myths about type 1 diabetes that may mislead doctors. A future article will review several more applying specifically to glycaemic management.

### MYTH 1

#### **GPs should not get involved with the management of type 1 diabetes**

The Diabetes Australia/Royal Australian

College of General Practitioners guidelines for type 2 diabetes state:<sup>1</sup>

*'The advice of a specialist physician may be valuable for people with complicated problems related to diabetes – especially children, adolescents and adults with type 1 diabetes .... A shared care approach by a general practitioner and specialist will provide the best combination of specialised expertise and continuity of care.'*<sup>1</sup>

A specialist may be able to help with some of the special issues related to type 1 diabetes but many of these can also be dealt with by a GP who knows the person. Most of the health problems experienced are not related to diabetes or its complications but are the same as the problems experienced by a similar person without diabetes. Moreover, the GP usually

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### HIGH RISK GROUPS FOR TYPE 2 DIABETES IN CHILDHOOD OR ADOLESCENCE<sup>3</sup>

- Overweight: (BMI more than 85th percentile for age and gender; weight for height more than 85th percentile, or weight more than 120% of ideal for height)

Plus

- Any two of the following:
  - family history of type 2 diabetes in a first- or second-degree relative
  - high risk ethnic group (indigenous, Asian, Pacific Islander)
  - signs or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidaemia, PCOS)
  - maternal history of diabetes or gestational diabetes

ABBREVIATIONS: BMI = body mass index; PCOS = polycystic ovarian syndrome.

### INDICATORS OF LATE ONSET AUTOIMMUNE DIABETES IN ADULTS (LADA)

- Skinniness
- Family or past history of autoimmune disease
- Rapid progression of hyperglycaemia
- Unstable/poor control on oral agents early in the course of the disease

has a better idea of all the other factors affecting the person and is the first port of call if problems arise – related or unrelated to diabetes. Shared care is the ideal, with prompt communication between the GP and the specialist diabetes professionals.

### MYTH 2

#### Kids get type 1 diabetes, adults get type 2

This adage is superficially true: the median age for developing type 1 diabetes is 11 years and for type 2 is 62 years. However, it is also true

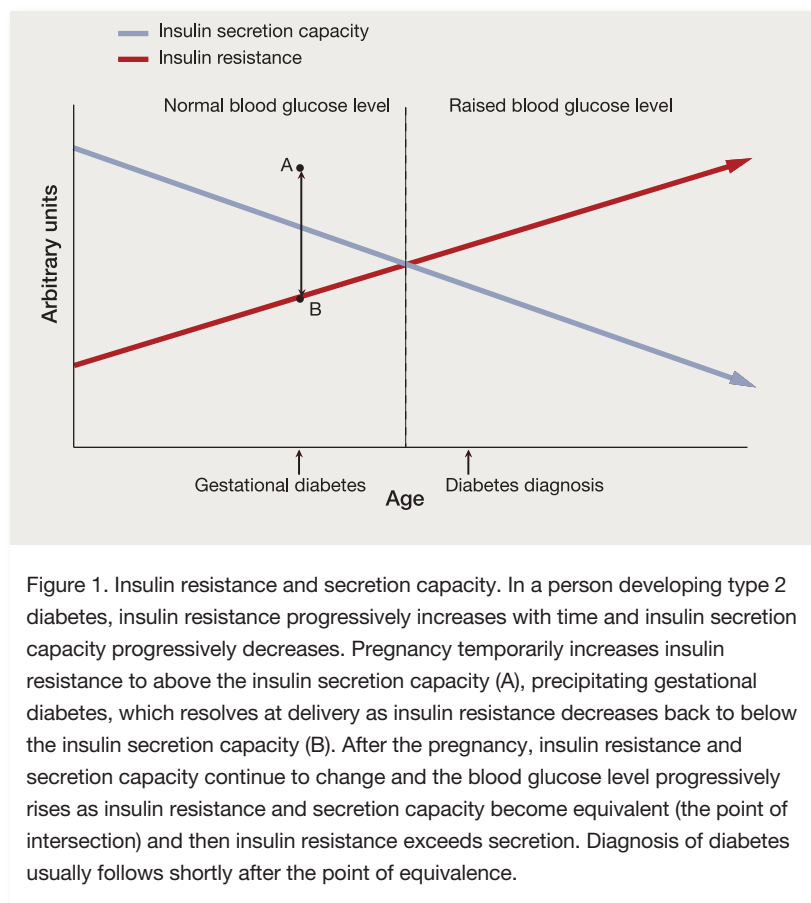


Figure 1. Insulin resistance and secretion capacity. In a person developing type 2 diabetes, insulin resistance progressively increases with time and insulin secretion capacity progressively decreases. Pregnancy temporarily increases insulin resistance to above the insulin secretion capacity (A), precipitating gestational diabetes, which resolves at delivery as insulin resistance decreases back to below the insulin secretion capacity (B). After the pregnancy, insulin resistance and secretion capacity continue to change and the blood glucose level progressively rises as insulin resistance and secretion capacity become equivalent (the point of intersection) and then insulin resistance exceeds secretion. Diagnosis of diabetes usually follows shortly after the point of equivalence.

that children who developed type 1 diabetes 30 to 40 years ago are now in their 40s and 50s and still have type 1 diabetes, and so not all people aged in their 40s and older have type 2 diabetes.

The most important F word for predisposition to type 2 diabetes is Forty. However, more and more children and adolescents are developing type 2 diabetes, particularly those with the other F words for type 2 diabetes: Family history and Fatness. These children are usually from high risk groups and also very overweight, and the peak age group for diagnosis of type 2 diabetes in young people is adolescence (see the top box on this page).<sup>2,3</sup>

Also, 5 to 10% of people with type 1 diabetes and autoimmune destruction of pancreatic beta cells are adults when first diagnosed. They may be misdiagnosed as having type 2 diabetes and initially treated with oral hypoglycaemic agents. These people have late onset

### AUTOIMMUNE DISEASES ASSOCIATED WITH TYPE 1 DIABETES

#### Thyroid

- Graves' disease
- Hashimoto's disease
- Autoimmune thyroiditis

#### Gastrointestinal

- Coeliac disease

#### Adrenal

- Addison's hypoadrenalism

#### Other

- Vitiligo
- Autoimmune hepatitis
- Myasthenia gravis
- Pernicious anaemia

autoimmune diabetes in adults (LADA) and do not have the typical features of type 2 diabetes, instead being skinny and having rapid progression of hyperglycaemia, as well as being unstable or poorly controlled on oral glycaemic agents early in the course of the disease and having a family or personal history of autoimmune disease (see the box on page 39). It is important to recognise that people with LADA have a form of type 1 diabetes and that they will require insulin early in the course of their diabetes.

### MYTH 3

#### Women who have had gestational diabetes and who develop diabetes later have type 2 diabetes

It is true that most women who have had gestational diabetes do develop type 2 diabetes, and that the gestational diabetes was an early sign of their rising insulin resistance and falling insulin secretion capacity. The hormonal environment of the pregnancy temporarily increases insulin resistance and precipitates gestational diabetes (Figure 1). Postpartum, the progressive increase in insulin resistance

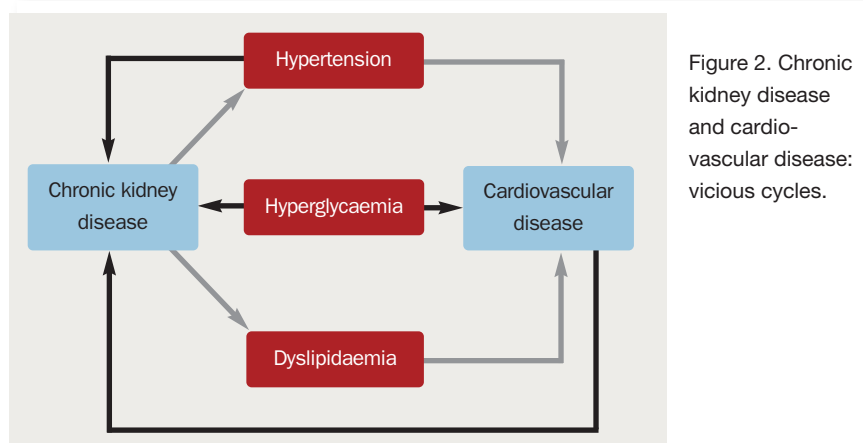


Figure 2. Chronic kidney disease and cardiovascular disease: vicious cycles.

and decrease in insulin secretion capacity continues and the woman develops pre-diabetes (impaired fasting glucose and/or impaired glucose tolerance) and then type 2 diabetes.

However, it is also true that if a woman is in the process of developing type 1 diabetes, with progressive autoimmune destruction of beta cells, the remaining beta cell mass may be enough to control glycaemia before and in the early stages of pregnancy but may be insufficient in the last trimester when gestational diabetes is usually diagnosed. Postpartum, the progressive immune beta cell destruction continues and the woman develops pre-diabetes and then diabetes – but in this case type 1 diabetes. As for people with LADA, it is important to identify these women with type 1 diabetes as they will need insulin therapy much earlier than if they had type 2 diabetes.

### MYTH 4

#### Type 1 diabetes is not associated with comorbidities whereas type 2 diabetes is

It is true that type 1 diabetes, including LADA, is not associated with the hypertension, dyslipidaemia, prothrombosis and excess cardiovascular risk (the type 2 syndrome, also known as the metabolic syndrome) associated with type 2 diabetes. However, type 1 diabetes, being an autoimmune disorder, is often associated with other autoimmune disorders, most

commonly thyroid disease, vitiligo and coeliac disease (see the box on this page). Thyroid disease is particularly common, and the American Diabetes Association recommends screening for thyroid disease with thyroid antibodies (e.g. thyroid peroxidase) and coeliac disease with anti-transglutaminase antibodies.<sup>4</sup>

One in 10 pregnant women with type 1 diabetes will develop postpartum autoimmune thyroiditis with temporary hyperthyroidism, followed by hypothyroidism and recovery over a period of several months. Many of these women, particularly those with positive thyroid autoantibodies, will become permanently hypothyroid in the medium to long term and should be monitored with thyroid function tests (e.g. annually). Family members may be affected with one or more of these autoimmune disorders but not necessarily the same one(s) as the index case.

### MYTH 5

#### Diabetes complications are microvascular in type 1 diabetes and macrovascular in type 2

There is some truth in this adage because people who develop type 1 diabetes are usually young and have a cardiovascular risk profile similar to their age-matched population peers whereas those with type 2 are older and have the associated metabolic syndrome with its high cardiovascular risk profile.

With type 1 diabetes, there will be plenty of time after diagnosis to develop microvascular complications (these take five to 15 years to occur), and with type 2 diabetes there has been plenty of time for cardiovascular disease to develop before diagnosis. However, cardiovascular risk increases dramatically once nephropathy occurs in type 1 diabetes.<sup>5</sup> A series of vicious cycles is initiated, as shown in Figure 2 and listed below.

- Glycaemic vicious cycle. Hyperglycaemia (with or without hypertension) causes renal microvascular damage and renal impairment makes glycaemic control more difficult, partly because reduced renal gluconeogenesis, neuropathy and poor nutrition increase the risk of severe hypoglycaemia.

- Hypertensive vicious cycle. Renal impairment increases blood pressure, hypertension causes renal impairment, hypertension causes cardiovascular disease and renovascular disease increases blood pressure.
- Dyslipidaemic vicious cycle. Micro- and macro-proteinuria are associated with dyslipidaemia, which accelerates cardiovascular disease, which increases renal impairment.

The net result of these vicious cycles is accelerating renal impairment and cardiovascular disease. In fact, most people with type 1 diabetes who develop nephropathy will die of cardiovascular disease before they progress to end-stage renal failure.<sup>5</sup>

Also, people with type 1 diabetes have the same problems of overweight/overweight as the rest of the Australian

population, and may have the associated metabolic problems that increase the risk of cardiovascular disease.

## MYTH 6

**In type 1 diabetes, treatment focuses on glycaemic control, whereas in type 2 diabetes, the ABCs are targeted**

As noted above, cardiovascular risk in people with type 1 diabetes is similar to that of the general population – until renal impairment initiates the vicious cycles and renal impairment and cardiovascular disease are accelerated. However, some of those with type 1 diabetes, like some of those from the general population, will have or develop hypertension and/or dyslipidaemia or develop a lifestyle behaviour (especially smoking)

**TABLE. THE ABCss OF DIABETES CARE AND TREATMENT TARGETS**

ABCss	Target
A <sub>1c</sub> (glycosylated haemoglobin)	≤7%
Blood pressure	≤130/80 mmHg (<125/75 mmHg if proteinuria >1 g/day)
Cholesterol	<4 mmol/L
smoking	0
salicylates	Aspirin 75 to 150 mg/day

**HYPOGLYCAEMIA RED FLAGS, IN ORDER OF IMPORTANCE**

- Past history of hypoglycaemic episode
- Hypoglycaemic unawareness (autonomic neuropathy)
- Erratic lifestyle
- Tight glycaemic targets
- Sleeping alone

that increases cardiovascular risk.

In all people with diabetes, the five major goals of diabetes care – the ABCss – should be targeted. The ABCss are listed below, and the treatment targets are shown in the Table.

A = controlling A<sub>1c</sub> (glycosylated haemoglobin)

B = controlling blood pressure

C = controlling cholesterol

s = quitting smoking

s = taking salicylates.

The risk factors associated with cardiovascular disease, especially hypertension, are also associated with renal impairment. The ‘double whammy’ of hyperglycaemia and hypertension more than doubles the risk of renal damage and it is important to maintain blood pressure below 130/80 mmHg or as close as possible to values at diagnosis. A ‘healthy’ blood pressure of 125/75 mmHg is not ideal for someone who previously had a blood pressure of 95/60 mmHg, and represents a considerable increase of 30/15 mmHg. Blood pressure control is particularly important once renal impairment occurs, and a lower target (below 125/75 mmHg) is recommended if there is proteinuria.

The dyslipidaemia associated with chronic kidney disease should also be treated. It should be remembered that renal impairment decreases the excretion of statins, so lower doses of statins should be used if the glomerular filtration rate (GFR) is below 30 mL/min (e.g. up to half the usual maximum dose).

**MYTH 7**
**In people with type 1 diabetes, glycaemia should be tightly controlled**

With the caveat, ‘.....if this can be achieved safely’, this is generally true. There are two reasons why glycaemic targets cannot be met: patient capacity and willingness and medical caution mainly related to hypoglycaemic risk.

The everyday burden of glycaemic control is considerable. Some people may not have the mental capacity to juggle the current blood glucose reading, the meal-time glycaemic load and the corrective and prandial bolus insulin doses, or the physical capacity to perform multiple blood glucose measurements and insulin injections. For others, it is just too hard. They may understand that they are risking future complications but they do not want the ‘hassle’ of the complex diabetes routines. As one patient put it:

*‘I often get sick of it. All the fingerpricks, the injections, the eating, the thinking about what I should do next. I just want to forget it and get on with my life without all that hassle. I hate it.’*

Tim, aged 32 years, with type 1 diabetes since age 14 years.

Hypoglycaemia is the main reason for medical caution. Minor hypoglycaemia disrupts life with its unpleasant symptoms and the need to interrupt whatever is happening, eat carbohydrate and check that the blood glucose value increases to a safe level. Severe hypoglycaemia can be life-threatening if it is very profound or if

it causes loss of control in a dangerous situation (such as when driving a car). On average, a person with type 1 diabetes has a minor hypoglycaemic episode weekly and a severe hypoglycaemic episode (requiring help from a third party to recover) once a year. Within that average, however, there is a wide range. A few unlucky people have most of the hypoglycaemia (minor and severe), while the lucky few rarely have it.

There are several ‘red flags’ to identify those who are more likely to develop severe hypoglycaemia (see the box on this page).<sup>6</sup>

The glycaemic targets for people lacking the capacity or will to handle the hassle of the necessary diabetes routines will be determined by the amount of hassle they are able and/or willing to put up with. For those at high risk of severe hypoglycaemia, targets will be determined by how low they can go without an unacceptable risk of severe hypoglycaemia. This may be an A<sub>1c</sub> of 8 to 9%, or even higher. Circumstances do, however, change with time and people may become more able and/or willing to try to control their glycaemia or less prone to hypoglycaemia and then will be able to achieve tighter targets.

**SUMMARY**
**Myths and misunderstandings demystified**

- **Myth 1:** GPs should not get involved with the management of type 1 diabetes.



**Reality:** A specialist may be able to help with some of the special issues related to type 1 diabetes but most of the issues related to type 1 diabetes can be dealt with by a GP who knows the person and most of their other health problems.

- **Myth 2:** Kids get type 1 diabetes, adults get type 2.

**Reality:** Many children who are overweight and also have a family history of type 2 diabetes, a maternal history of diabetes or gestational diabetes, or signs and conditions associated with insulin resistance develop type 2 diabetes that is diagnosed mostly in adolescence. About 5 to 10% of those with type 1 diabetes are adults who have late onset autoimmune diabetes in adults (LADA).

- **Myth 3:** Women who have had gestational diabetes and who develop diabetes later have type 2 diabetes.

**Reality:** Some women who are developing type 1 diabetes first present during gestation.

- **Myth 4:** Type 1 diabetes is not associated with comorbidities whereas type 2 diabetes is.

**Reality:** Type 1 diabetes, including LADA, is an autoimmune disorder and is often associated with other autoimmune disorders (most commonly thyroid disease). One in 10 pregnant women with type 1 diabetes will develop postpartum autoimmune thyroiditis.

- **Myth 5:** Diabetes complications are microvascular in type 1 and macrovascular in type 2.

**Reality:** This is largely true but once nephropathy develops in type 1 diabetes several vicious cycles are initiated (glycaemic, hypertensive, dyslipidaemic) that accelerate renal impairment and cardiovascular disease.

- **Myth 6:** In type 1 diabetes, the treatment focuses on glycaemic control, whereas in type 2 diabetes the ABCss are targeted.

**Reality:** People with type 1 diabetes have similar cardiovascular risks to the general population, and some will have or will develop cardiovascular risk factors or renal impairment. Cardiovascular risk factors, the ABCss, should be actively sought and actively treated in all people with diabetes.

- **Myth 7:** In people with type 1 diabetes, glycaemia should be tightly controlled. **Reality:** This is true if it can be achieved safely. Patient capacity and willingness and medical caution related to hypoglycaemic risk may mean that tight glycaemic control cannot be achieved. 'Red flags' to identify people most likely to develop severe hypoglycaemia include a past history of hypoglycaemic episode, hypoglycaemic unawareness, an erratic lifestyle and sleeping alone. In these situations, glycaemic targets depend on the level of glycaemia

achievable without an unacceptable risk of severe hypoglycaemia. **MT**

## REFERENCES

1. Harris P, Mann L, Phillips P, Bolger-Harris H, Webster C. Diabetes management in general practice. Guidelines for type 2 diabetes. 17th ed. 2011/12. Canberra: Diabetes Australia; 2011. Available online at: [www.racgp.org.au/guidelines](http://www.racgp.org.au/guidelines) (accessed April 2012).
2. Phillips J, Phillips P. Children get type 2 diabetes too. *Aust Fam Physician* 2009; 38: 699-703.
3. American Diabetes Association. Type 2 diabetes in children and adolescents. *Diabetes Care* 2000; 23: 381-389.
4. American Diabetes Association. Clinical practice recommendations 2011. *Diabetes Care* 2011; 34 Supplement 1.
5. Tuck Y, Phillips PJ, Coates PTH. Neglected nephropathy. *Aust Fam Physician* 2006; 35: 398-402.
6. Phillips P. Hypoglycaemia. *Australian Diabetes Educator* 2010; 13.

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Dr J. Phillips: None.

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