World Diabetes Day: 14 November 2018

World Diabetes Day falls each year on 14 November, and is part of a global campaign led by the International Diabetes Federation (IDF) to raise awareness of the issue.[1]

Diabetes occurs when the body does not respond correctly to the hormone insulin. Produced by the pancreas, insulin affects the way glucose and fat are metabolised; some people do not produce enough insulin, and some people produce insulin that does not work properly.[2] Insulin helps to regulate blood glucose levels, and if this fails it can lead to serious complications, including blindness, kidney failure, nerve damage, cardiovascular disease, and the need for limb amputation.[3;4] Diabetes can also affect mental health owing to the effect of varied blood sugar levels on mood, the pressure of trying to avoid hypoglycaemia,[5] and, Diabetes UK argues, a "relentless need to manage the condition".[6]

There are two main types of diabetes, type 1 and type 2:

Table 1: Types of Diabetes

Type of Diabetes	Type 1 (T1D)	Type 2 (T2D)
Approximate percentage of diagnosed patients	10 percent	90 percent
Description	T1D is an autoimmune condition that is often inherited. T1D occurs when the body is unable to produce enough insulin to regulate their blood sugar level. People usually develop T1D before the age of 40, often during their teenage years.	T2D is heavily influenced by lifestyle factors. T2D occurs when the body cannot produce enough insulin to function properly, or when the body's cells do not react to insulin. It may remain undetected for years.
Action needed to manage the condition	People with T1D need daily injections of insulin to manage the condition.	People with T2D need to adjust their diet and their lifestyle. The condition is progressive and over time most people with T2D will also need to take tables or insulin to control their blood glucose level.
Main risk factors	Family history Genetics	Being overweight or obese Deprivation[7] Ethnicity Age Family history

(Source: National Audit Office, *The Management of Adult Diabetes Services in the NHS: Progress Review*, HC489 of session 2015–16, 21 October 2015, p 6; Parliamentary Office of Science and Technology, *Preventing Diabetes*, 16 July 2012, p 2; and NHS, 'About Type 1 Diabetes', accessed 2 November 2018)

Diabetes UK state there are 15 essential checks and services that every person with diabetes should receive. These checks include getting blood glucose levels measured at least once per year, having feet and legs checked by a GP or practice nurse at least once per year, and getting a free flu vaccination every year from a GP. [8]

Prevalence of Diabetes Globally

In 2015, diabetes was estimated to have caused more deaths (5.0 million) than the combined number of annual deaths from HIV/AIDS (1.2 million), tuberculosis (1.5 million), and malaria (0.4 million).[9] Diabetes prevalence has risen globally since 1980 and this rise has been related to both population growth and ageing populations, with the number of adults with diabetes increasing from 108 million in 1980 to 422 million in 2014.[10] Of this increase, 28.5% is specifically due to the rise in prevalence, whilst 39.7% is due to population growth and ageing, and 31.8% is due to interaction between a rise in prevalence and population growth and ageing. The analysis for these figures drew on data pooled from 751 population-based studies (including 4.4 million adults from 146 countries).

The prevalence and raw numbers of people with diabetes has increased at the greatest rate in low- and middle-income countries. There is a varied geography to the global increase in prevalence of diabetes, illustrated in Figure 2 in terms of World Health Organization (WHO) regions.

Figure 2: Prevalence of Diabetes by WHO Region, 1980–2014
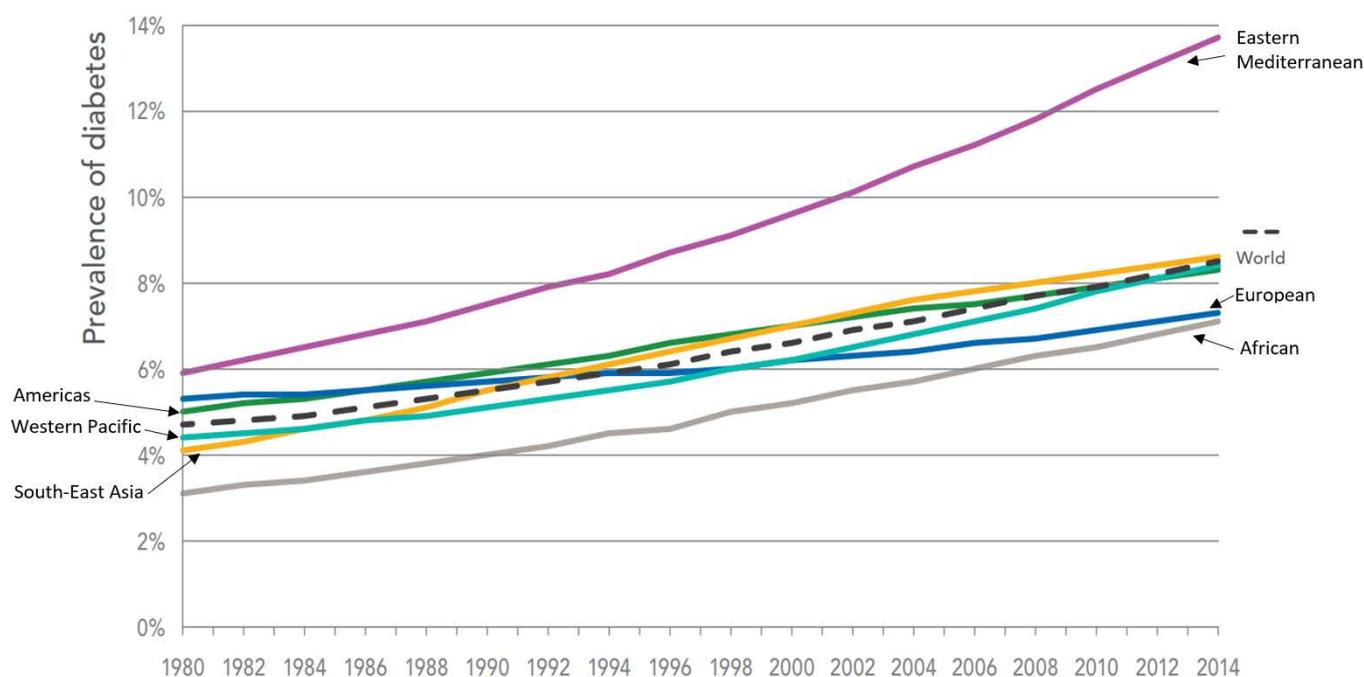
(Source: World Health Organization, 'Global Report on Diabetes', 2016, p 27, figure 4B, adapted for print)

The IDF diabetes atlas provides projections of global diabetes prevalence from 2017 to 2045, suggesting that the number of people with diabetes globally will increase from 424.9 million in 2017 to 628.6 million in 2045.[11] Over the same period (2017 to 2045), global prevalence among 20- to 79-year old people is projected to increase by 1.1% from 8.8% to 9.9%, whilst total healthcare expenditure for diabetes (in 2017 US Dollars) is projected to increase by $49 billion from $727 billion to $776 billion.

The Scottish Diabetes Survey 2016 notes that increases in reported prevalence depend on a number of factors in addition to actual increased prevalence, including demographic changes arising from ageing populations (diabetes is more prevalent among older people), better survival, and possibly better detection of type 2 diabetes (which can present no symptoms).[12] Type 2 diabetes is responsible for the increases in the number of cases of diabetes in the UK, and globally.[13]

Prevalence of Diabetes in the UK

Using figures from the Quality and Outcomes Framework (QOF) and the Scottish Diabetes Survey,[14] Diabetes UK has reported that, as of November 2017, there were almost 3.7 million people diagnosed with diabetes in the UK.[15]

The prevalence figures according to Diabetes UK for each part of the UK in 2017 are presented in Table 2.

Table 2: Numbers of People with Diagnosed Diabetes in the UK

Prevalence	2016–17
England	3,116,399
Scotland	289,040
Wales	191,590
Northern Ireland	92,480
UK	3,689,509

(Source: Diabetes UK, 'Diabetes Prevalence 2017', accessed 2 November 2018)

Health Policy in the UK

Several government policies and strategies aim to control the prevalence of diabetes and improve detection and treatment.

As part of its progress review on adult diabetes services in 2015, the National Audit Office highlighted that the Department of Health's national service framework for diabetes included nine "care processes" that people with diabetes should receive every year, such as blood pressure checks, eye screening, foot examinations, and smoking advice.[16] The National Institute for Health and Care Excellence (NICE) has also indicated three "treatment standards" relating to blood glucose, blood pressure, and cholesterol to help reduce the "risk" of complications.[17]

The NHS's *Next Steps on the NHS Five Year Forward View* (March 2017) highlights progress made since the *Five Year Forward View* (October 2014) was initially set out.[18] The progress report notes that action has been taken on prevention and public health, including the launch of the country's first national diabetes prevention programme and an industry levy on soft drinks with high sugar content.

The NHS Diabetes Prevention Programme, which began in 2016, provides tailored, personalised help to reduce the risk of type 2 diabetes—including education on healthy eating and lifestyle, assistance with weight loss, and bespoke physical exercise programmes—and has exceeded initial targets set for referrals, equity of access, and weight loss among overweight patients.[19]

The Government has announced policy objectives to address childhood obesity, releasing a *Plan for Action* in August 2016.[20] This plan included a soft drinks levy, alongside other approaches such as the development of a new nutrient profile model, making healthy food options available in the public sector, and a recommitment to the healthy start scheme which provides vouchers to low income families for the purchase of fruit, vegetables, and milk. In response to a written question on 8 May 2018, the Government described the plan as "the most ambitious childhood obesity plan in the world".[21] However, Tahseen Chowdury, a consultant in diabetes at the Barts Health NHS Trust,[22] commented in the April 2018 editorial of the journal *Clinical Medicine* that the "glaring omission" in diabetes prevention policy in the UK "remains a substantive policy towards tackling childhood obesity".[23] The editorial went on to argue that:

> The published UK Government guidance on tacking childhood obesity has been widely regarded as not going far enough to curb obesity in children. One can only hope that more substantial steps will be taken in the future once the Brexit dust has settled.[24]

The soft drinks industry levy came into effect on 6 April 2018.[25] HM Treasury states that since it was announced in March 2016, over half of manufacturers have reduced the sugar content of drinks. Companies will pay 24p per litre of drink if it contains 8 grams of sugar per 100 millilitres, or 18p per litre of drink if it contains between 5 to 8 grams of sugar per 100 millilitres. Revenue from the levy will go towards sports-related schemes and healthy breakfast clubs in schools. In response to a written question on 18 April 2018, the Government said that there had been no central assessment of this effect, elaborating that:

> Whilst we recognise soft drinks with high levels of added sugar may have a role to play in raising blood glucose levels for people living with type 1 diabetes, this must be balanced against the need to protect the nation's children from other serious conditions and diseases linked to high consumption of sugar including obesity and tooth decay.[26]

In *The Future of Diabetes* (2017), Diabetes UK presented research that revealed 64 percent of its 8,500 survey respondents "sometimes or often feel down because of their diabetes", especially parents of children with type 1 diabetes.[27] Diabetes UK reported that there is a lack of emotional support at diagnosis, especially for type 2 diabetes, and that over three quarters of people with diabetes who needed emotional support from a specialist had not been offered it. During a national diabetes audit and mental health debate, Jackie Doyle-Price, Parliamentary Under Secretary of State for Health and Social Care, stated that the Government was addressing the mental health aspects of diabetes; by collecting information from GP practices on people with diabetes and severe mental ill health, producing a pathway for people with long-term physical health conditions to deliver more effective psychological therapy services, and providing guidance to GPs to consider a patient's needs "as a whole [and] not just the condition that is presented at the time".[28]

Global Health Policy

The World Health Organisation's (WHO) *Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020* (2013) includes a target to reduce by 25 percent premature mortality from the four main noncommunicable diseases (NCDs): cardiovascular diseases (CVD), cancer, diabetes and chronic respiratory diseases (CRD). Specifically regarding diabetes, the plan includes a voluntary target to "halt […] the rise in diabetes and obesity".[29] The WHO's *Noncommunicable Diseases Progress Monitor 2017* (2017) reported that the UK had partially achieved the national noncommunicable disease targets, fully achieved most of the unhealthy diet reduction measures, fully achieved the public education and awareness campaign on physical activity target, and fully achieved

the guidelines for management of cancer, CVD, diabetes, and CRD target.[30]

More broadly, diabetes is in the remit of the third sustainable development goal[31] to "ensure healthy lives and promote well-being for all at all ages". Specifically, target 3.4 aims "by 2030, [to] reduce by one third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being".[32] The WHO states that the achievement of the NCDs target will require "major interventions in a context characterized by ageing populations, rapid unplanned urbanisation and the globalization of markets that promote tobacco use, physical inactivity and unhealthy diets".[33]

[1] International Diabetes Federation, 'About World Diabetes Day', accessed 2 November 2018.

[2] NHS, 'Diabetes', accessed 14 May 2018.

[3] Parliamentary Office of Science and Technology, *Preventing Diabetes*, 16 July 2012.

[4] Diabetes UK, *State of the Nation 2016*.

[5] Hypoglycemia is a complication that can arise from diabetes, colloquially referred to as 'a hypo' (Diabetes UK, 'What is a Hypo?', accessed 14 May 2018). A hypo occurs when the blood glucose level is too low, possibly resulting from an imbalance between diabetes medication, food consumption, and physical activity. Symptoms vary between individuals, but common symptoms include trembling, blurred sight, and headaches.

[6] Diabetes UK, *The Future of Diabetes*, 2017, p 6.

[7] There is a well-established inverse relationship between levels of deprivation and prevalence of type 2 diabetes (Arleen Brown *et al*, 'Socioeconomic Position and Health among Persons with Diabetes Mellitus: A Conceptual Framework and Review of the Literature', *Epidemiologic Reviews*, 2004, vol 26 no 1, pp 63–77), though the specific causal nature of the relationship is not clear. It has been hypothesised that the link relates to barriers to healthcare access such as (but not exclusively) low health literacy or a lack of access to transport (ibid, pp 67–70), "earlier and increased exposure to lifestyle and environmental risk factors for type 2 diabetes among people from areas of low socioeconomic status" (V Connolly *et al*, 'Diabetes Prevalence and Socioeconomic Status: A Population Based Study Showing Increased Prevalence of Type 2 Diabetes Mellitus in Deprived Areas', *Journal of Epidemiology and Community Health*, 2000, vol 54, p 177), and difficulty accepting dietary changes and antidiabetic drugs (C Jaffiol *et al*, 'Diabetes and Social Deprivation', *Bulletin de l'Academie Nationale de Medicin*, 2012, vol 196 no 4–5, pp 953–75). Such causal links are not necessarily competing, but are likely to be complementary (for example, a lack of transport limiting both access to a healthcare provider and access to healthy dietary staples).

[8] Diabetes UK, *15 Healthcare Essentials*, 2017.

[9] K Orgurtsova *et al*, 'IDF Diabetes Atlas: Global Estimates for the Prevalence of Diabetes for 2015 and 2040', *Diabetes Research and Clinical Practice*, 2017, vol 128, p 48.

[10] NCD Risk Factor Collaboration (NCD-RisC), 'Worldwide Trends in Diabetes Since 1980: a Pooled Analysis of 751 Population-Based Studies with 4.4 Million Participants', *Lancet*, 2016, vol 387, pp 1513–30.

[11] International Diabetes Federation, *Diabetes Atlas, Eighth Edition*, 2017, p 41.

[12] NHS Scotland, *Scottish Diabetes Survey 2016*, August 2017.

[13] Parliamentary Office of Science and Technology, *Preventing Diabetes*, 16 July 2012.

[14] The Quality and Outcomes Framework is part of the General Medical Services contract for general practices and was introduced on 1 April 2004. The framework records indicators including the prevalence of diabetes among practice populations over the age of 17. The Scottish branch of the Quality and Outcomes Framework was decommissioned after the 2015/16 release, resulting in the use of the Scottish Diabetes Survey to estimate diabetes prevalence.

[15] Diabetes UK, *Diabetes Prevalence 2017 (November 2017)*, accessed 2 November 2018.

[16] National Audit Office, 'The Management of Adult Diabetes Services in the NHS: Progress Review', 21 October 2015, HC 489 of session 2015–16, p 15.

[17] The treatment standards are an Hb1Ac level of 7.5 percent or less, blood pressure of less than 140/80, and a cholesterol level of less than 4.0 mmol/l (National Audit Office, *The Management of Adult Diabetes Services in the NHS: Progress Review*, 21 October 2015, HC 489 of session 2015–16, p 7).

[18] NHS, *Next Steps on the NHS Five Year Forward View*, March 2017; and *Five Year Forward View*, October 2014.

[19] Jacqui Wise, 'NHS Diabetes Prevention Programme Helps Weight Loss, Analysis Shows', *BMJ*, 2018, vol 360 no i1669.

[20] HM Government, *Childhood Obesity: A Plan for Action*, August 2016.

[21] House of Commons, 'Written Question: Obesity', 8 May 2018, 138980.

[22] ResearchGate, 'Tahseen Chowdhury', accessed 14 May 2018.

[23] Tahseen Chowdhury, 'Diabetes Remission: A Realistic Goal?', *Clinical Medicine*, 2018, vol 18 no 2, p 116.

[24] ibid.

[25] HM Treasury, 'Soft Drinks Industry Levy Comes into Effect', 5 April 2018.

[26] House of Commons, 'Written Question: Diabetes', 18 April 2018, 135754.

[27] Diabetes UK, *The Future of Diabetes*, 2017, p 6.

[28] Debate on 'National Diabetes Audit: Mental Health', HC *Hansard*, 8 May 2018, cols 522–3.

[29] World Health Organization, *Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020*, 2013, p 31.

[30] World Health Organization, 'Noncommunicable Diseases Progress Monitor 2017', September 2017.

[31] The Sustainable Development Goals, also known as the 2030 Agenda, are a collection of 17 global goals set by the United Nations. They replaced the Millennium Development Goals, which expired in 2015, and cover a broad range of social and economic issues including poverty, hunger, health, education, and the environment.

[32] World Health Organization, *World Health Statistics 2016: Monitoring Health for the SDGs*, 2016, p 60.

[33] ibid, p 60.