

# Diabetes and Dentistry

## Almost Everything You need to Know

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# What is Diabetes?

“A complex metabolic disorder characterised by chronic hyperglycaemia resulting from defects in insulin secretion or insulin action, or both”

First described in 1552 BC in the Ebers papyrus



# Two Main Types

- Type 1
  - Autoimmune destruction of the  $\beta$  cells of the Islets of Langerhans in the pancreas. This leads to an absolute insulin deficiency. Insulin treatment is therefore mandatory
  - Previously known as IDDM or juvenile onset diabetes

# Two Main Types

- Type 2
  - Impaired insulin action (insulin resistance) and eventually, impaired insulin secretion as well
  - Usually treated with oral medication initially, then may move onto insulin
  - Formerly known as NIDDM or maturity onset diabetes

# Epidemiology

- The 2008/9 National Diabetes Audit found the prevalence of diabetes to be 4.13% in England and Wales
- 90% of whom have type 2 diabetes
- Lifetime risk of developing diabetes is about 10%

# Some Statistics

- The incidence of diabetes has risen from 1.8 to 3.3 per 1000 person years between 1994 and 2003
- The prevalence is now 2.7 per 1000 person years
- Estimated at 4.67% of the population has either diagnosed or undiagnosed diabetes

# Some More Statistics

- Type 2 diabetes accounts for 92% of all cases in the UK
- The incidence of type 2 diabetes doubled between 1994 and 2000
- Diabetes reduces life expectancy by 15 years for type 1 and 5 or 7 years in type 2 (M/F)

# Some More Statistics

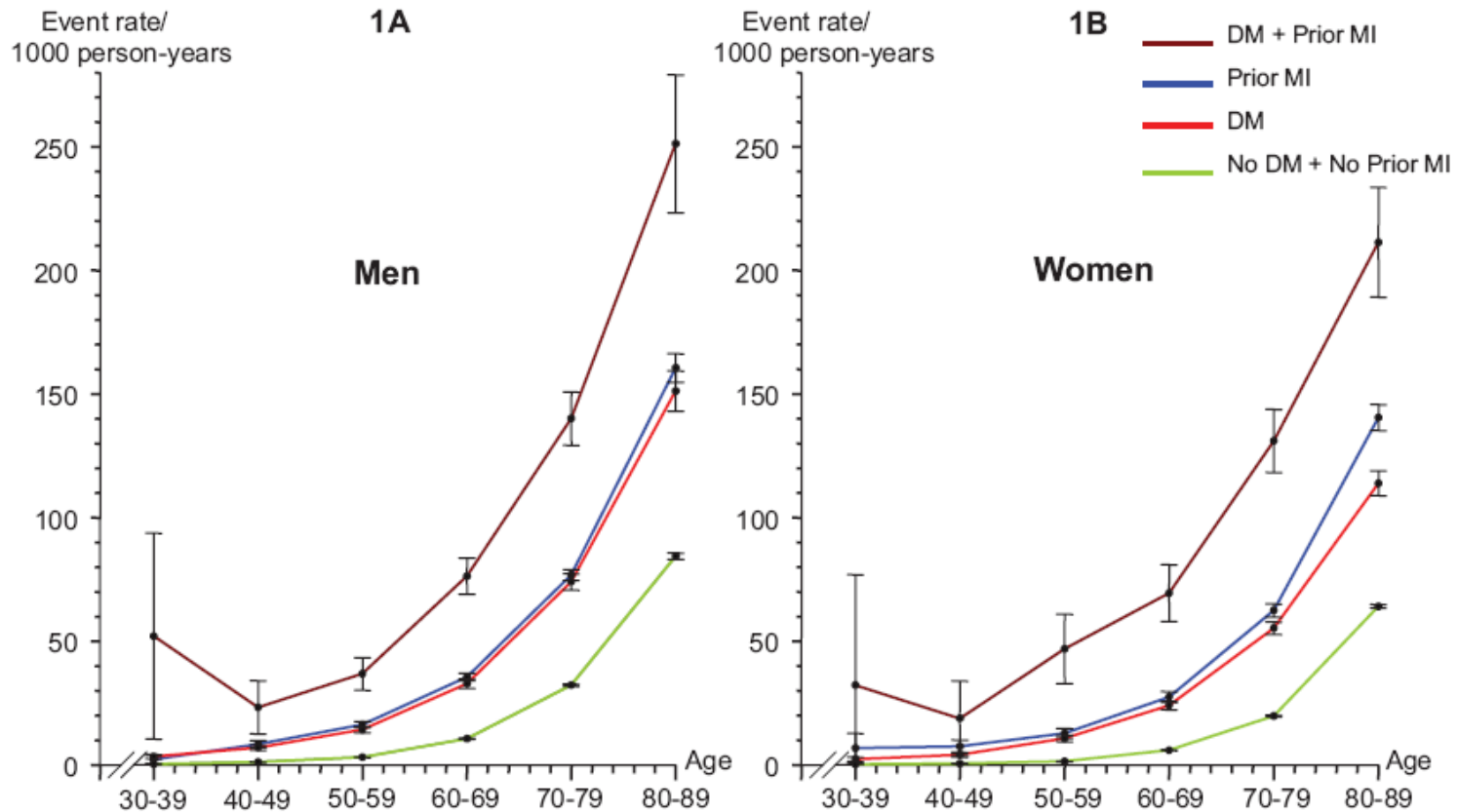
- Diabetes accounts for 5% of all NHS expenditure – in 2002 £1.3bn
- It accounts for 12% of all hospital costs
- Drugs used in the treatment of diabetes account for the second biggest cost



# Why is it Important?

- Poorly controlled diabetes leads to accelerated cardiovascular morbidity and mortality
- A combination of microvascular and macrovascular disease

# Data From 3.3M Danes

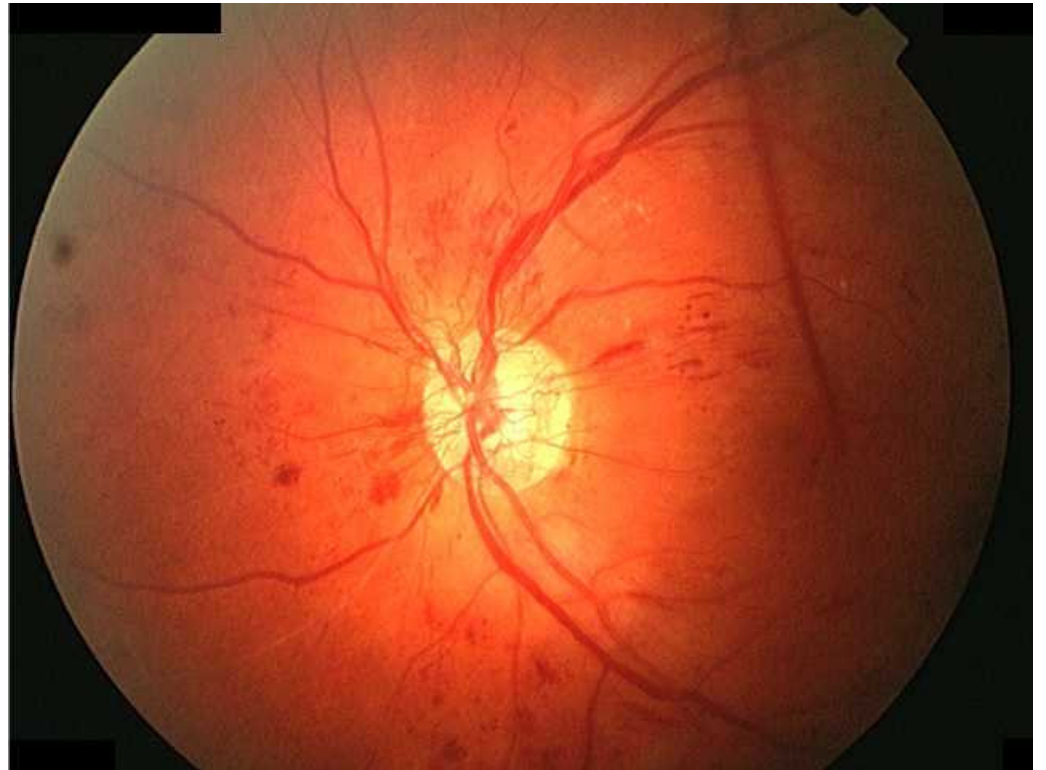


**Numbers at risk:**

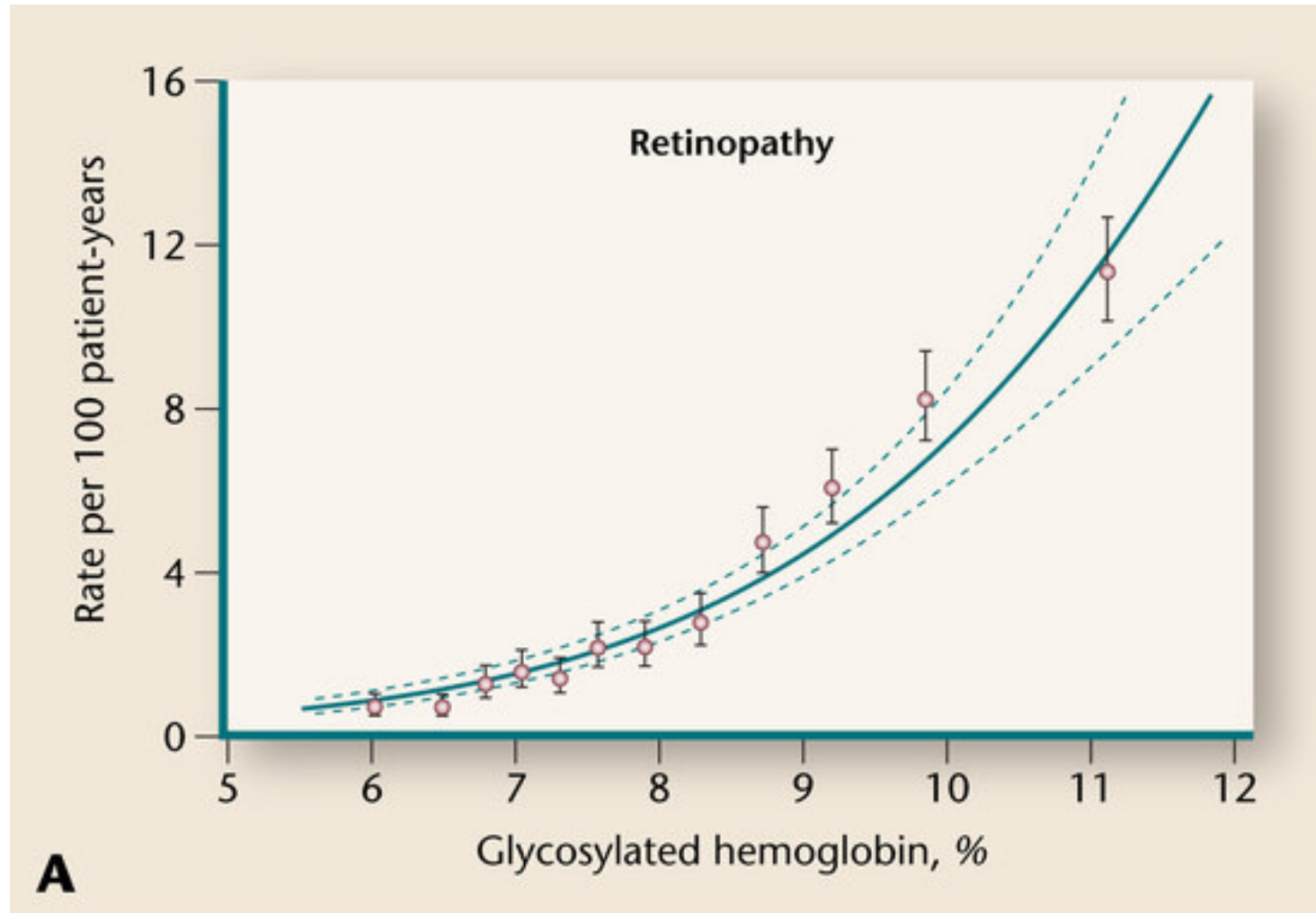
No DM + No Prior MI	407 796	374 738	323 089	197 672	134 052	57 626	389 797	368 588	328 918	229 144	193 244	124 858
Prior MI	561	3 299	9 733	14 580	14 769	6 416	149	801	2 585	5 404	7 954	6 905
DM	2 989	4 895	7 985	8 032	6 738	3 102	2 271	3 355	5 101	6 901	8 328	5 685
DM + Prior MI	28	168	735	1 363	1 348	508	13	67	207	502	874	606

# OK, so You Die – So What?

- Diabetes remains:
  - The most common cause of blindness in the developed world



# Retinopathy and Glycaemic Control



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DCCT Research Group NEJM 1993;329(14):977-986

# OK, So You Go Blind Before You Die

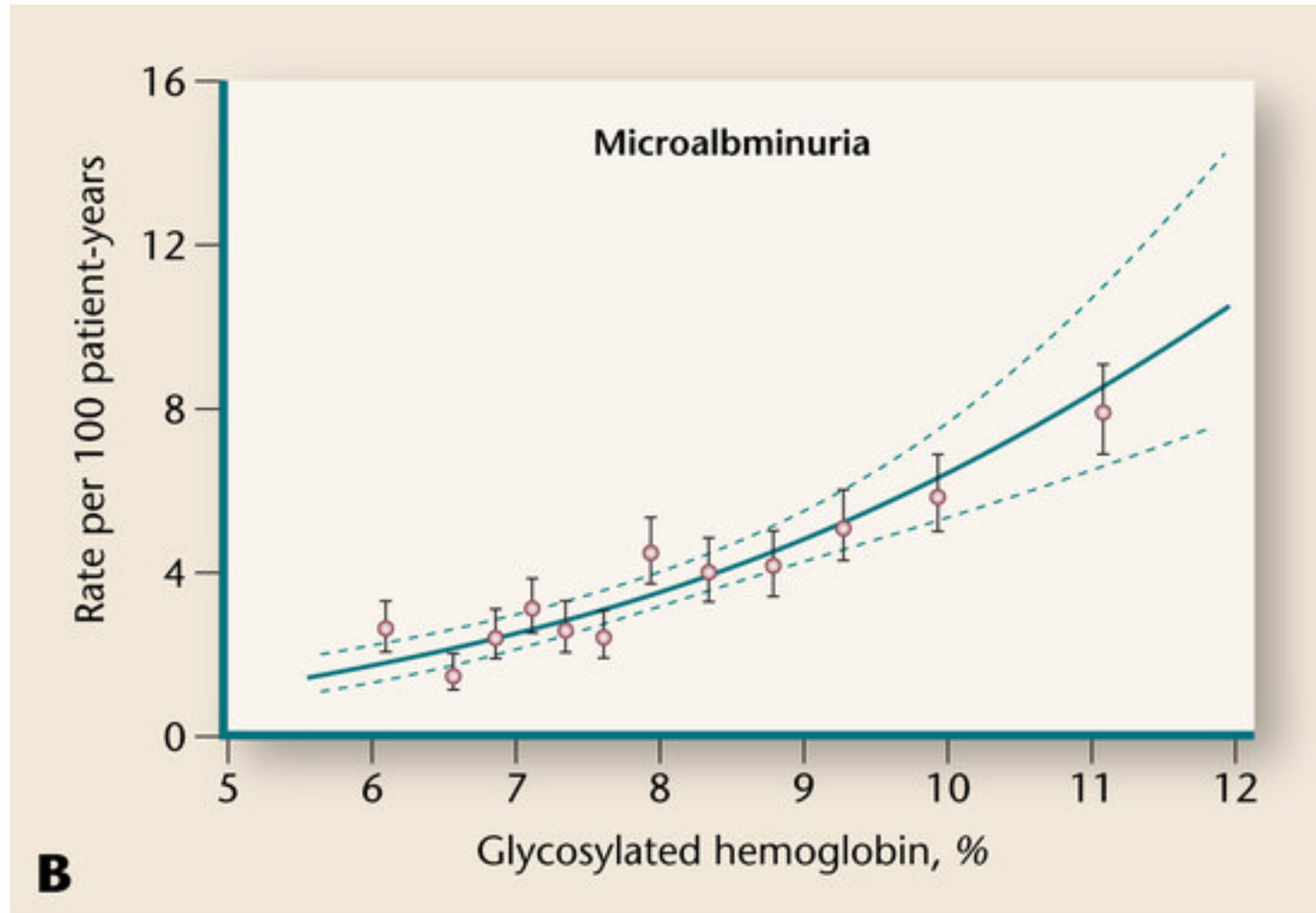
- It is the most common cause for non-traumatic lower limb amputations in the world – in the UK, 50% of these occur in the 4% of the population who have diabetes



# OK, So You're Blind and Limp

- Diabetes is the most common cause of end stage renal disease in the world

# Nephropathy and Glycaemic Control

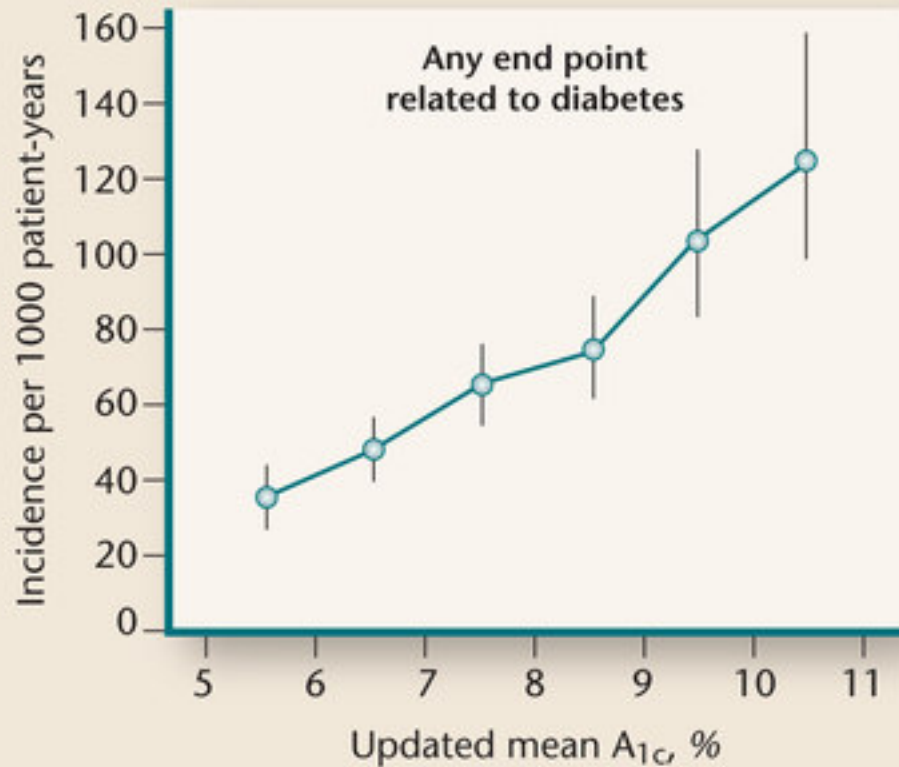


# Blind, Limp and on Dialysis

- You have a 2 – 3 fold increased risk of macro-vascular risk
  - i.e. strokes and heart attacks



# Glycaemic Control is Important



## Reduction in risk per 1% reduction in A<sub>1c</sub>

Overall: 21%\*

Diabetes mortality: 21%\*

MI: 14%

Stroke: 12%†

Microvascular: 37%\*

Heart failure: 16%†

Cataract extraction: 19%\*

Amputations or PVD death: 43%\*

\*  $P < 0.0001$ .

†  $P < 0.05$ .

# Blind, Limp, on Dialysis and Someone Wiping your Bottom

It's all preventable

# Diabetes and Dentistry

- You all know that there is a very strong association between poorly controlled diabetes and periodontal disease
- You all know that there is a very strong association between periodontal disease and accelerated cardiovascular disease
- Thus people with diabetes and periodontal disease should have their CV risk factors aggressively managed

Löe H. Diabetes Care 1993;16(1):329-334

Taylor GW, Borgnakke WS. Oral Dis 2008;14(3):191-203

# The List of Conditions

- Gingivitis and periodontitis
- Dental caries,
- Salivary dysfunction,
- Oral mucosal diseases,
- Oral infections such as candidiasis,
- Taste and other neurosensory disorders
- Burning mouth syndrome
- Glossodynia
- Lichen planus

# Other Considerations

- Joint stiffness
  - This can affect the jaw
- Xerostomia,
  - as a sign of autonomic neuropathy



# Things to Watch Out For

- Hypoglycaemia

- Blood glucose levels less than 4.0 mmol/L

- Symptoms include

- Hunger

- Sweating

- Anxiety

- Palpitations

- Confusion

- Aggression

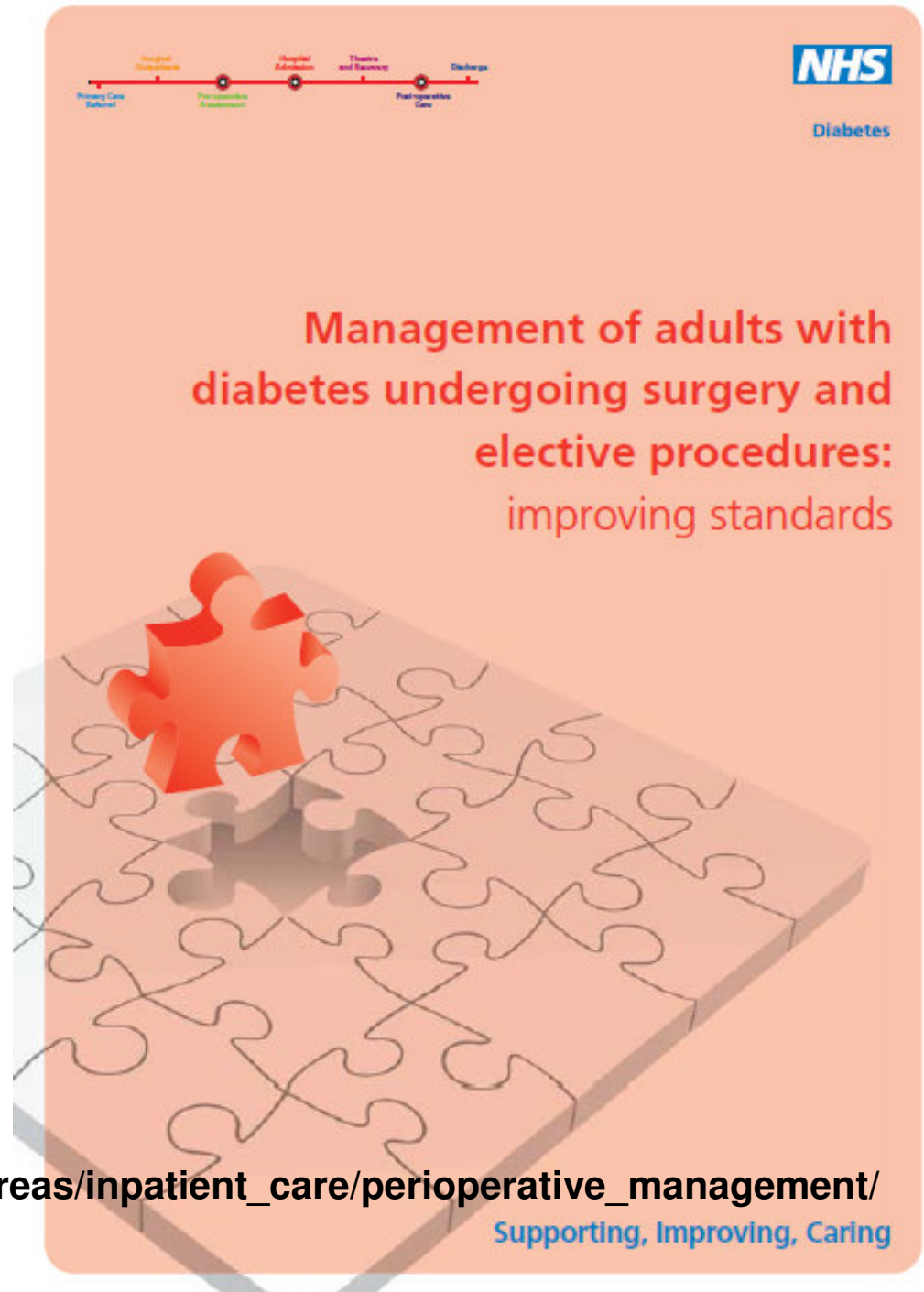
- Drowsiness

The drugs most likely to cause hypoglycaemia are sulfonylureas and insulin

If in doubt, do a blood glucose measurement (or ask the patient to do one)

# There is This

- For more major procedures – where the patient is likely to miss more than 1 meal – how to manipulate their medications are fully explained in this on line document



[http://www.diabetes.nhs.uk/our\\_work\\_areas/inpatient\\_care/perioperative\\_management/](http://www.diabetes.nhs.uk/our_work_areas/inpatient_care/perioperative_management/)



# Don't Forget Acromegaly



1989



1994



1999



2002



2003



2005



2009



# So What Can YOU Do?

- Be active
  - Ask if they take their medications every day
  - Ask if they experience any side effects
  - Ask if they have mentioned any of these things to their doctors
  - TELL THEM TO STOP SMOKING
  - Be their advocate

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[www.norfolkdiabetes.com](http://www.norfolkdiabetes.com)