



Cardiovascular Disease Diabetes and Oral Health

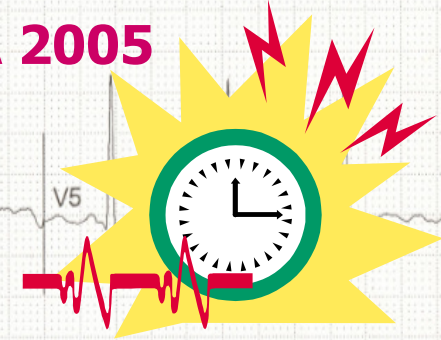
Shelagh Thompson

dentistry SCHOOL OF DENTISTRY
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CARDIFF UNIVERSITY PRIFYSGOL CARDIFF

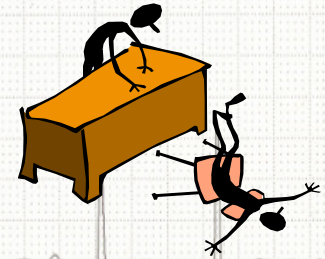
Dentists can play a role in fighting heart disease

Glick et al. JADA 2005

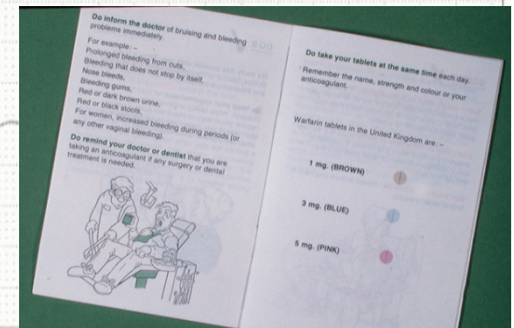
- Number 1 cause of death in UK
- Dentists could take more blood pressures as chair-side screening and refer to physicians for consultation and treatment
- .. 'play an important role in primary prevention of cardiovascular disease'



Questions you need to to ask



- Are you ever short of breath?
- What limits are there on your activities?
- Fatigue easily? Number of pillows? Snore?
- Are you taking any medicines?
- Do you have pain in your chest?
- When did you have your cardiac event ?
 - Who is your Consultant?
 - Frequency of review...any other clinics?



Examination

- Age, sex, general health, position in chair
- Top to bottom
 - Eyes (xanthelasma) lips (cyanosis)
 - hands (clubbing, splinter haemorrhage, nicotine stain), ankle swelling
- Pulse rate and rhythm
- Capillary refill- nail bed (5 secs then 2 sec return)
- Information from referral, patient, Carer, GMP, Hospital.

http://www.bhsoc.org/bp_monitors/BLOOD_PRESSURE



Relationship of BP to fitness for dental treatment

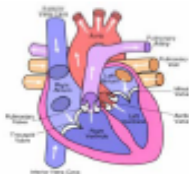
BP(mmHg)	ASA	Considerations
<ul style="list-style-type: none">• <140/<90	I	routine dental care
<ul style="list-style-type: none">• 140-160 / 90-95	II	recheck BP pre-op otherwise routine Rx
<ul style="list-style-type: none">• 160-200 / 95-114	III	recheck after 5 mins, medical assessment
<ul style="list-style-type: none">• >200 / >115	IV	no treatment, temporise until BP controlled

http://www.bhsoc.org/bp_monitors/BLOOD_PRESSURE

<http://www.easyhealth.org.uk/FileAccess.aspx?id=953>

South Staffordshire and Shropshire Healthcare NHS Foundation trust

What is High Blood Pressure ?



When you have High Blood Pressure it can cause problems with your health.

What can you do to help keep your blood pressure lower?



Do not smoke as this can cause heart disease and cancer.



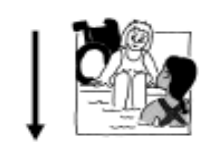
If you are overweight it can put a strain on your heart. Try to lose weight.



Eat fruit and vegetables everyday. 5 portions is best.



Try to cut down on how much salt you eat and do not drink too much alcohol.



Do more exercise such as walking, dancing, swimming. Do not do too much, take it slowly.



It can also help you lose weight.

Risk charts

How to use the Cardiovascular Disease Risk Prediction Charts* for Primary Prevention

These charts are for estimating cardiovascular disease (CVD) risk (non-fatal myocardial infarction [MI] and stroke, coronary and stroke death and new angina pectoris) for individuals who have not already developed coronary heart disease (CHD) or other major atherosclerotic disease. They are an aid to making clinical decisions about how intensively to intervene on lifestyle and whether to use antihypertensive, lipid lowering medication and aspirin.

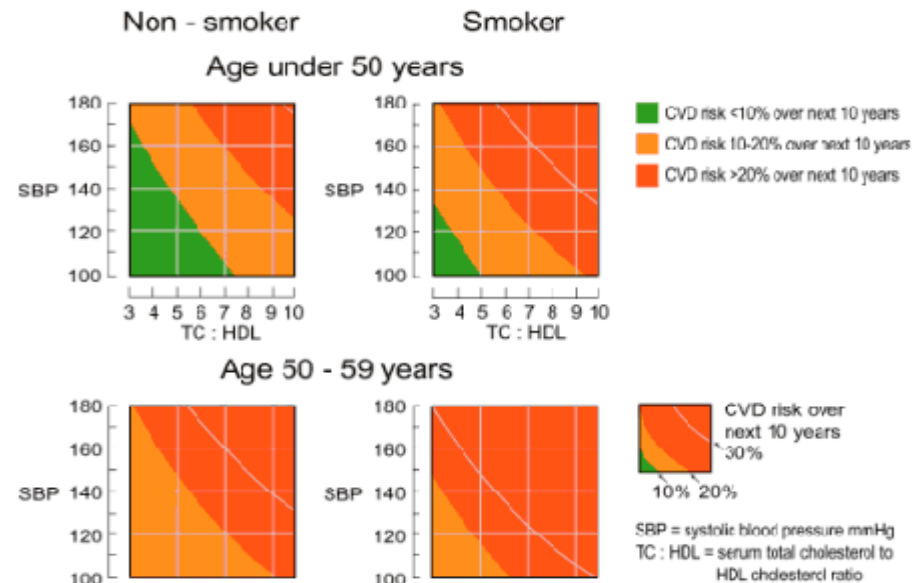
The use of these charts is not appropriate for the following patients groups. Those with:

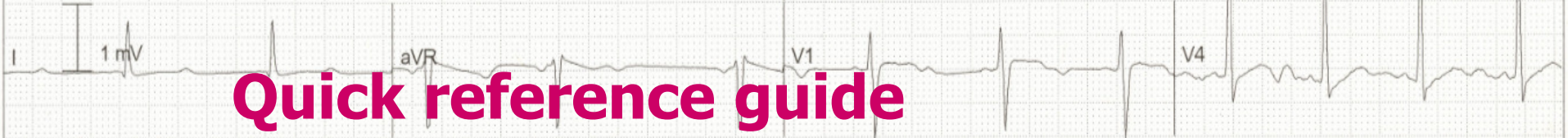
- CHD or other major atherosclerotic disease
- Familial hypercholesterolaemia or other inherited dyslipidaemias
- Chronic renal dysfunction
- Type 1 and 2 diabetes mellitus

The charts should not be used to decide whether to introduce antihypertensive medication when blood pressure (BP) is persistently at or above 160/100 or when target organ damage (TOD) due to hypertension is present. In both cases antihypertensive medication is recommended regardless of CVD

FH cascade testing project
 Make a donation
Risk charts
 JBS CV risk assessor
 Follow Your Heart

Nondiabetic Men





Quick reference guide

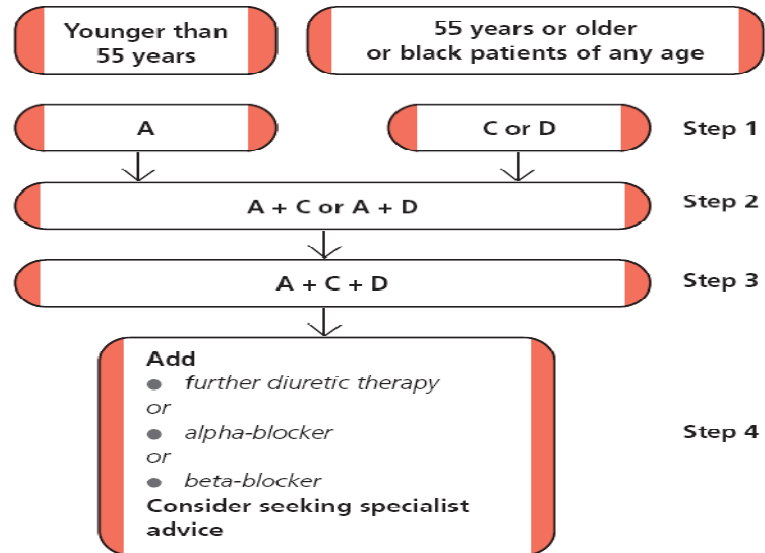
www.nice.org.uk/CG034quickrefguide

Choosing drugs for patients newly diagnosed with hypertension

Abbreviations:

A = ACE inhibitor
(consider angiotensin-II receptor antagonist if ACE intolerant)
C = calcium-channel blocker
D = thiazide-type diuretic

Black patients are those of African or Caribbean descent, and not mixed-race, Asian or Chinese patients








NHS
National Institute for
Health and Clinical Excellence

Lifestyle measures

<http://www.bhsoc.org>

- Maintain normal weight for adults (body mass index 20-25 kg/m²)
- Reduce salt intake to <100 mmol/day (<6g NaCl or <2.4 g Na⁺/day)
- Limit alcohol consumption to ≤3 units/day men. ≤2 units/day women
- Engage in regular aerobic physical exercise (brisk walking rather than weight lifting) for ≥30 minutes per day, ideally on most of days of the week but at least on three days of the week
- Consume at least five portions/day of fresh fruit and vegetables
- Reduce the intake of total and saturated fat

http://www.bhsoc.org/Healthy_Eating.stm

	CHOOSE FROM THIS GROUP DAILY	EAT IN MODERATION 2-3 TIMES A WEEK ONLY	EAT IN MODERATION ONCE A WEEK OR LESS	AVOID EATING
 <p>Cereal food <i>i.e. cornmeal</i></p>	<p>Wholemeal flour, oatmeal. Wholemeal bread, whole grain cereals, porridge oats, crispbreads, brown rice, wholemeal pasta, cornmeal, untoasted sugar-free muesli, rice cakes.</p>	<p>White bread, white flour, white rice & pasta, water biscuits, wholemeal or oat scone, teacake, pancake.</p>	<p>Sugar-coated cereals. Plain semi-sweet biscuits. Ordinary muesli.</p>	<p>Sweet biscuits, cream-filled biscuits (unless cooked in rapeseed oil), croissants.</p>
 <p>Fruit & vegetables</p>	<p>All fresh, frozen & dried vegetables. Baked potatoes (eat skin), tofu. Eat at least 5-7 portions per day.</p>	<p>Olives, avocado.</p>	<p>Fruit in syrup, crystallised fruit, chips & roast potatoes cooked in rapeseed oil. Oven chips labelled "cooked in sunflower oil and 40% less fat" (grill if possible).</p>	<p>Deep-fat-fried chips, roast potatoes, (unless cooked in rapeseed oil), crisps & savory snacks.</p>
 <p>Nuts</p>	<p>Chestnuts.</p>	<p>Walnuts, pine nuts.</p>	<p>Pistachio nuts, pecan, almonds, sesame or sunflower seeds. Peanuts & most other nuts, e.g. hazelnuts, brazil nuts.</p>	<p>Coconut, cashew.</p>
 <p>Fish</p>	<p>All fresh & frozen fish, (avoid frying) e.g. cod, plaice, herring, mackerel.</p>	<p>Fish fried in suitable oil, fish fingers or fish cakes (grilled). Tinned fish in oil (drained), or tomato sauce e.g. sardines, tuna.</p>	<p>Prawns, lobster, crab, oysters, molluscs, winkles. Smoked fish e.g. salmon.</p>	<p>Fish roe, taranako, fried scampi.</p>
 <p>Meat</p>	<p>Chicken, turkey (without skin), veal, rabbit, game, soya protein meat substitute, very lean red meat (grilled).</p>	<p>Lean beef, pork, lamb, ham & gammon, very lean minced meat.</p>	<p>Liver, kidney, tripe, sweetbreads. Grilled back bacon (pre-boil in water). Deck (without skin). Low-fat pale.</p>	<p>Sausages, luncheon meats, corned beef, paie, salami, streaky bacon, burgers, goose, meat pies & sausage rolls, pasties, Scotch eggs, visible fat on meat, crackling.</p>

http://smokefree.nhs.uk



Stop Smoking
Start Living

Easy read



WHAT SUITS ME?

REAL LIFE QUITTERS

QUESTIONS?

QUIT TOOLS

WHY GO SMOKEFREE?

SMOKING & PREGNANCY

FIND YOUR LOCAL NHS STOP SMOKING SERVICE

Enter postcode to find your local Stop Smoking Service:

Search

DOES SMOKING WORRY YOUR LOVED ONES?

We know it's tough to give up but your loved ones are the best reason

Watch the videos

LOVED ONES

SMOKEFREE UNITED

ADDICTION QUIZ

Ready to quit?



Thinking about quitting?



Need to try again?



WHAT ARE YOU SPENDING?

CALCULATE



PATCHES, GUM AND MORE

SEE MORE



HELP WHEN YOU NEED IT

LEARN HOW



FREE DVD, LEAFLETS AND MORE

ORDER NOW



Smoking cessation services

Implementing NICE guidance

2008

NICE public health guidance 10



Background

- Smoking causes 86,500 deaths a year in England
- Smoking causes a wide range of diseases including cancers and coronary heart disease
- Smoking is estimated to cost the NHS £1.5 billion a year
- Smoking accounts for over half the difference in excess risk of premature death for men between social classes

<http://www.nice.org.uk/nicemedia/pdf/PH010SmokingCessationServicesPresenterSlides>

Smoking cessation services: service delivery

NHS Stop Smoking Services should:

- ensure staff providing behavioural support are trained and supervised in compliance with the 'Standard for training in smoking cessation treatments'



<http://www.nice.org.uk/nicemedia/pdf/PH010SmokingCessationServicesPresenterSlides>

Dental treatment modifications

Consider liaison with GMP

Stress reduction factors

- pre-medication night before and am
- sedation (ASA I and II in Primary care)

Timing

- am appointment, avoid excess temperatures
- do not exceed patient's tolerance - time factor

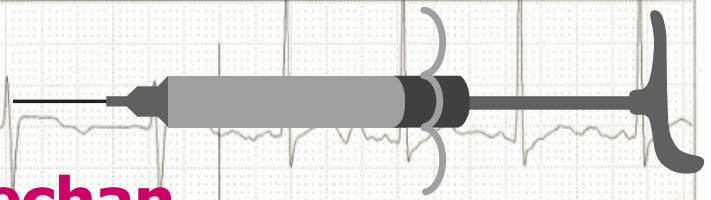
Pre-op BP

Avoid postural hypotension

Effective pain control

- post-operative pain control
- post-operative phone call

LA dose Meechan



- limit LA dose in use in cardiac patients and elderly
 - maximum 3 cartridges = 75 micrograms adrenaline
- Severe hypertension or unstable cardiac rhythm
 - use of adrenaline (epinephrine) in LA may be hazardous
 - prilocaine with or without felypressin can be used but no evidence that it is any safer

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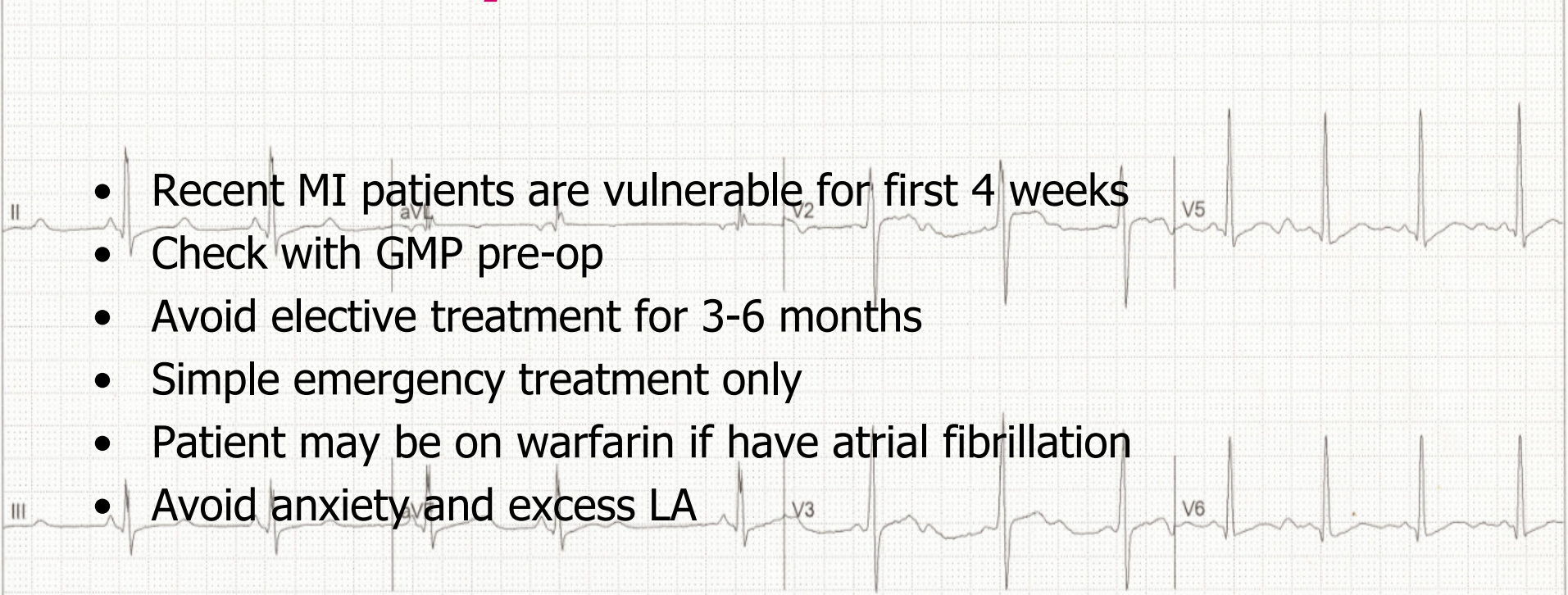
aVR

V1

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Angina

- Treat when angina is stable
- Make sure patients have GTN spray or tablets or isosorbide dinitrate tablets with them
- Let patient use GTN tablets if want to pre-op
- 300_{mg} GTN tablet lasts 20-30 mins, spray > rapid
- Isosorbide dinitrate slower action, lasts several hours



- Recent MI patients are vulnerable for first 4 weeks
- Check with GMP pre-op
- Avoid elective treatment for 3-6 months
- Simple emergency treatment only
- Patient may be on warfarin if have atrial fibrillation
- Avoid anxiety and excess LA



Safety of dental treatment in patients with previously diagnosed acute myocardial infarction or unstable angina pectoris

Niwa et al. OS,OM,OP 2000;89:35-41 used prilocaine

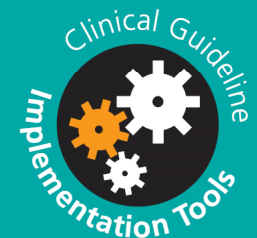


Prophylaxis against infective endocarditis

Implementing NICE guidance

2008

NICE clinical guideline 64



Advise and document

Offer people at risk clear and consistent information about prevention, including:

- the benefits and risks of antibiotic prophylaxis, and an explanation of why antibiotic prophylaxis is no longer routinely recommended
- **the importance of maintaining good oral health**
- symptoms that may indicate infective endocarditis and when to seek expert advice
- risks of undergoing invasive procedures, including non-medical procedures such as body piercing and tattoos.

Change of advice

Do not offer antibiotic prophylaxis against infective endocarditis:

– to people undergoing dental procedures

Investigate and treat promptly any episodes of infection in people at risk of infective endocarditis to reduce the risk of endocarditis developing

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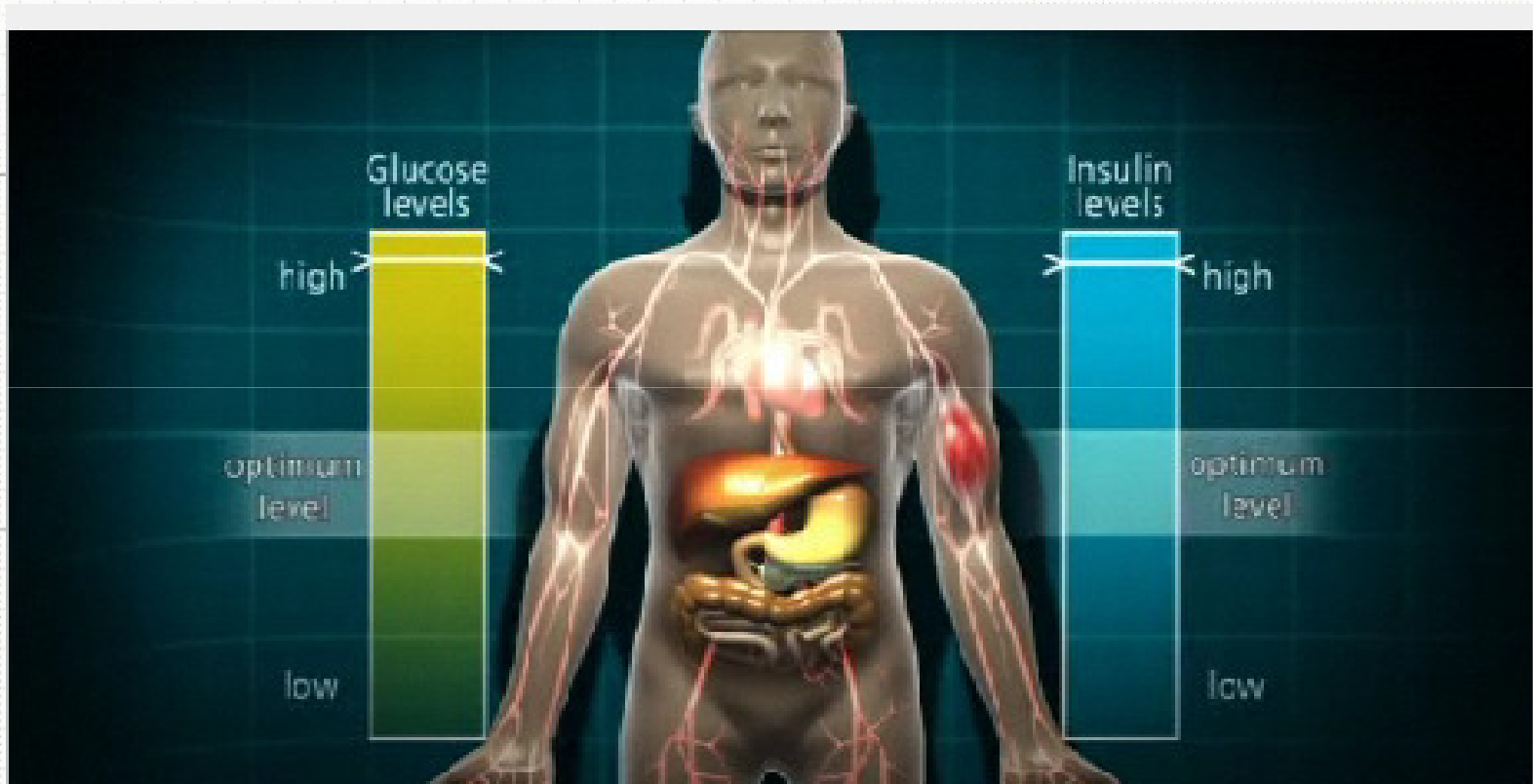
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Diabetes UK

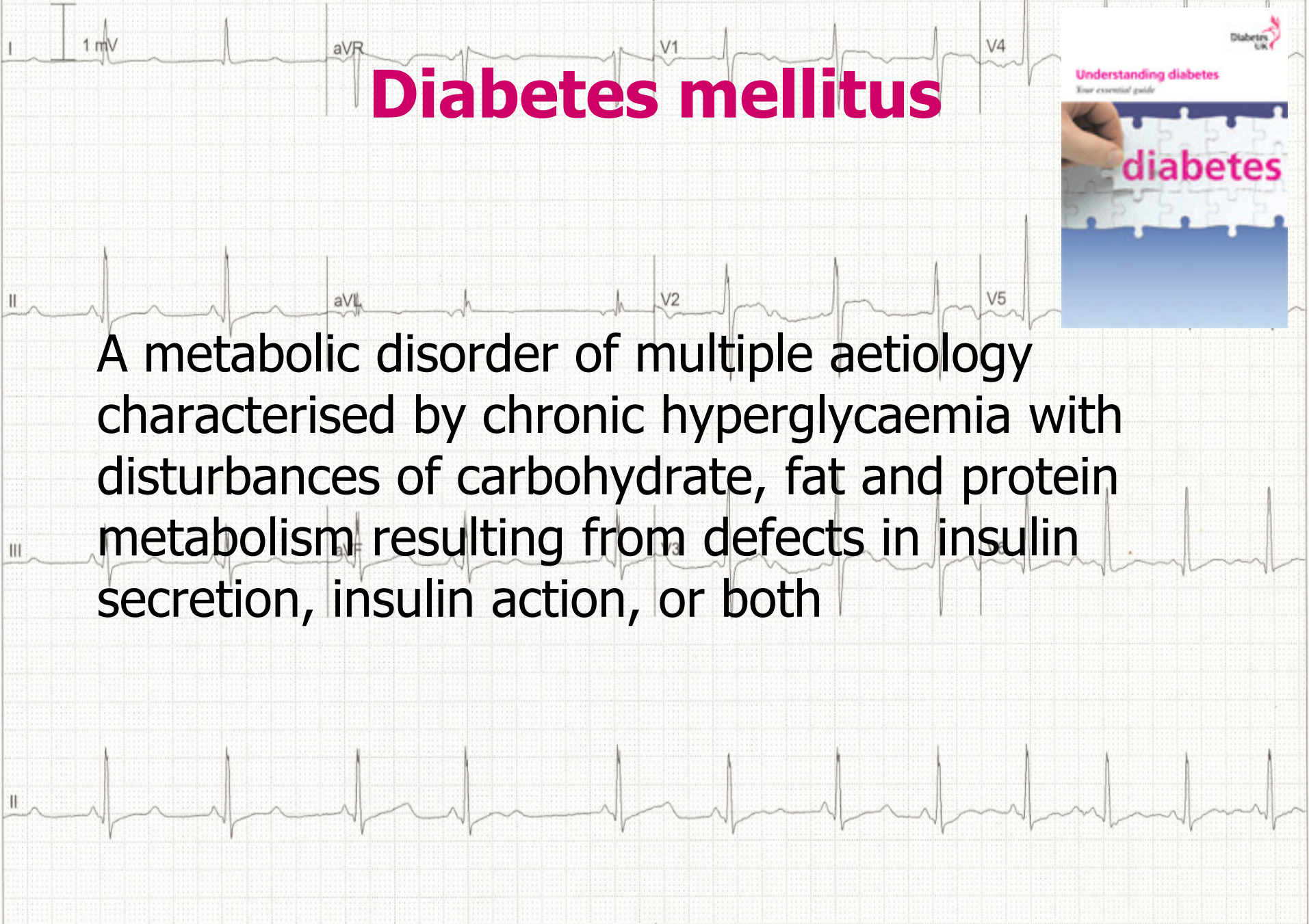
II

III

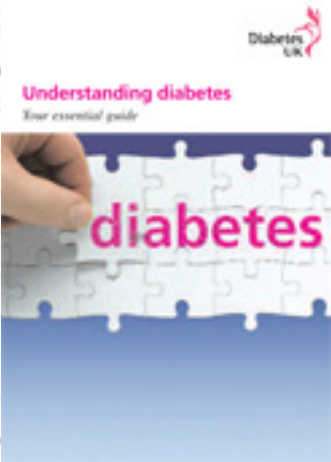


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Diabetes mellitus



A metabolic disorder of multiple aetiology characterised by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both



Figures by nation for diabetes and obesity

Nation	Number of people with diabetes registered with GP practices in 2009	Diabetes prevalence in 2009	Increase in number PWD over the past year
England	2,213,138	5.1%	124,803
NI	65,066	4.5%	4,244
Wales	146,173	4.6%	7,185
Scotland	209,886	3.9%	9,217
UK total	2,634,263	4%	145,449

Nation	Number of people registered as obese with GP practices in 2009	Obesity prevalence in 2009	Increase in number of people registered as obese in the past year
England	4,389,964	9.9%	260,660
NI	165,956	11.27%	4,085
Wales	305,923	9.7%	5,442
Scotland	375,649	7%	22,476
UK total	5,237,492	8.1%	292,663

Up to half a million with undiagnosed diabetes

In addition to the 2.6 million people diagnosed with diabetes, there are still up to half a million people who have Type 2 diabetes in the UK and don't know it.



Type 1

- Type 1 diabetes develops if the body is unable to produce any insulin
- usually appears before the age of 40
- Type 1 diabetes is the least common of the two main types
- between 5 and 15 % of people with diabetes
- No prevention of Type 1 diabetes

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Shropshire County 
Primary Care Trust



Produced by:



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ALDD/049
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With acknowledgement to:

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Specialist Healthcare & Support Services
With People with Learning Disabilities
Arthur Webster Clinic
Landgaud Manor Road
Shanklin
Isle of Wight

DIABETES



<http://www.easyhealth.org.uk>

THERE ARE TWO COMMON TYPES OF DIABETES

Type 1:

Usually happens before you are 40 years of age.



It is treated by injections



And a healthy diet



Needing to go to the toilet a lot.



Tired



Not seeing so well

Type 2 diabetes

- develops when pancreas still makes some insulin, but not enough, or when the insulin produced does not work properly (known as insulin resistance).
- most cases are linked with being overweight
- usually people > 40 , but in South Asian and African-Caribbean people often appears after age of 25
- more children are being diagnosed, as young as seven
- most common of two main types between 85 and 95 %

- > 2.5 million people with diabetes in UK
- $>$ half a million people have diabetes and are unaware

<http://www.easyhealth.org.uk/FileAccess.aspx?id=1263>

When we have diabetes, the amount of sugar in the blood is too high and there is not enough insulin in the body.

Sometimes the pancreas is not working properly.
This makes us feel unwell. We may be:



Thirsty

Type 2:

Usually happens after the age of 40



A healthy diet

And/or

Tablets or injection



Diet and Medication

Eating a healthy, balanced diet can help with your Diabetes.
Taking your tablets regularly, at the right time will help you too.

Type 2 diabetes

Risk factors

White and over 40 years old

Black, Asian or minority ethnic group and over 25 years old

+ one or more risk factors- see GMP for test for diabetes

Risk factors

- close family member with Type 2 diabetes (parent or sibling)
- overweight and waist is 31.5 inches or over for women
 - 35 inches or over for Asian men
 - 37 inches or over for white and black men
- high blood pressure, previous MI or stroke
- woman with polycystic ovary syndrome and overweight
- impaired glucose tolerance or impaired fasting glycaemia
- gestational diabetes.
- severe mental health problems (antipsychotic side effect)



Complications

Diabetes is second only to smoking as the leading cause of cardiovascular disease in the UK

- Complications lead to the most premature deaths in people with diabetes.
- significant strain on limited NHS resources and increasing
- 9 to 12 year gap between onset and diagnosis
 - on diagnosis up to 50 % already suffer from one complication
- Early diagnosis of Type 2 diabetes is vital to reduce likelihood of complications

Blood glucose target ranges

Children with Type 1 diabetes (NICE 2004)

- Before meals: 4-8mmols/L
- Two hours after meals: less than 10mmols/L

Adults with Type 1 diabetes (NICE 2004)

- Before meals: 4- 7mmols/L
- 2 hours after meals: less than 9mmols/L

Type 2 diabetes (NICE 2008)

- Before meals: 4-7mmol/L
- Two hours after meals: less than 8.5mmols/L

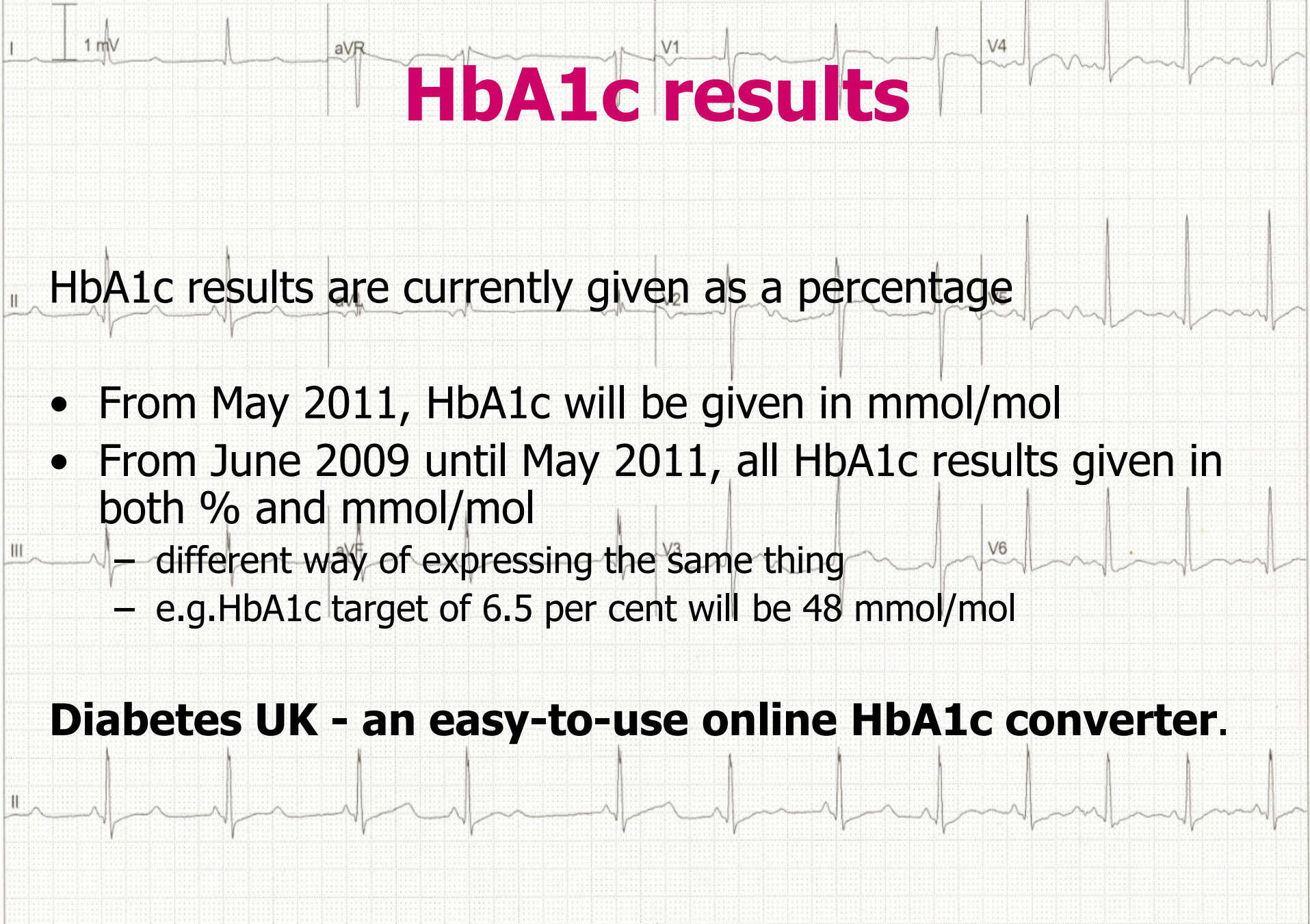
HbA1c (Glycated haemoglobin) and fructosamine

HbA1c

- indicates blood glucose levels for previous two to three months
- measures amount of glucose carried by red blood cells
- GMP should check long-term control at least once a year

HbA1c targets

- most people HbA1c target is < 6.5 per cent,
- reduces risk of developing diabetic complications



HbA1c results

HbA1c results are currently given as a percentage

- From May 2011, HbA1c will be given in mmol/mol
- From June 2009 until May 2011, all HbA1c results given in both % and mmol/mol
 - different way of expressing the same thing
 - e.g. HbA1c target of 6.5 per cent will be 48 mmol/mol

Diabetes UK - an easy-to-use online HbA1c converter.

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V1

V4

Medical Interventions

NHS
National Institute for
Health and Clinical Excellence

Type 2 diabetes

Implementing NICE guidance

2009

NICE clinical guideline 87



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Self-monitoring

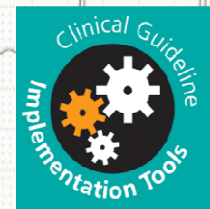


- Offer self-monitoring of plasma glucose to a person newly diagnosed with type 2 diabetes only as an integral part of his or her self-management education
- Discuss the purpose and agree how it should be interpreted and acted upon.

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Costs and savings – recommendations with significant cost impact

- Use of DPP-4 inhibitors (sitagliptin, vildagliptin)
- Use of thiazolidinediones (pioglitazone, rosiglitazone)
- Use of a GLP-1 mimetic (exenatide)



Setting a target glycated haemoglobin (HbA_{1c})

- Involve the person with diabetes in setting their individual targets
- Encourage maintenance of individual target unless quality of life is impaired
- Avoid pursuing highly intensive management to levels of less than 6.5%
- Offer lifestyle advice and medication to help people maintain individual targets

Starting insulin therapy

- When other measures no longer achieve adequate blood glucose control, discuss the benefits and risks of insulin therapy.
- When starting insulin therapy, use a structured programme employing active insulin dose titration.

Dental treatment and diabetes

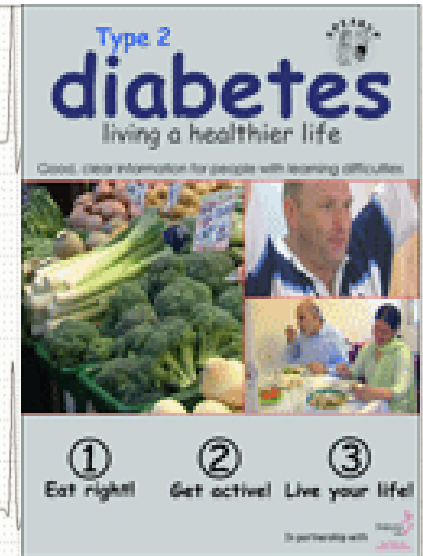
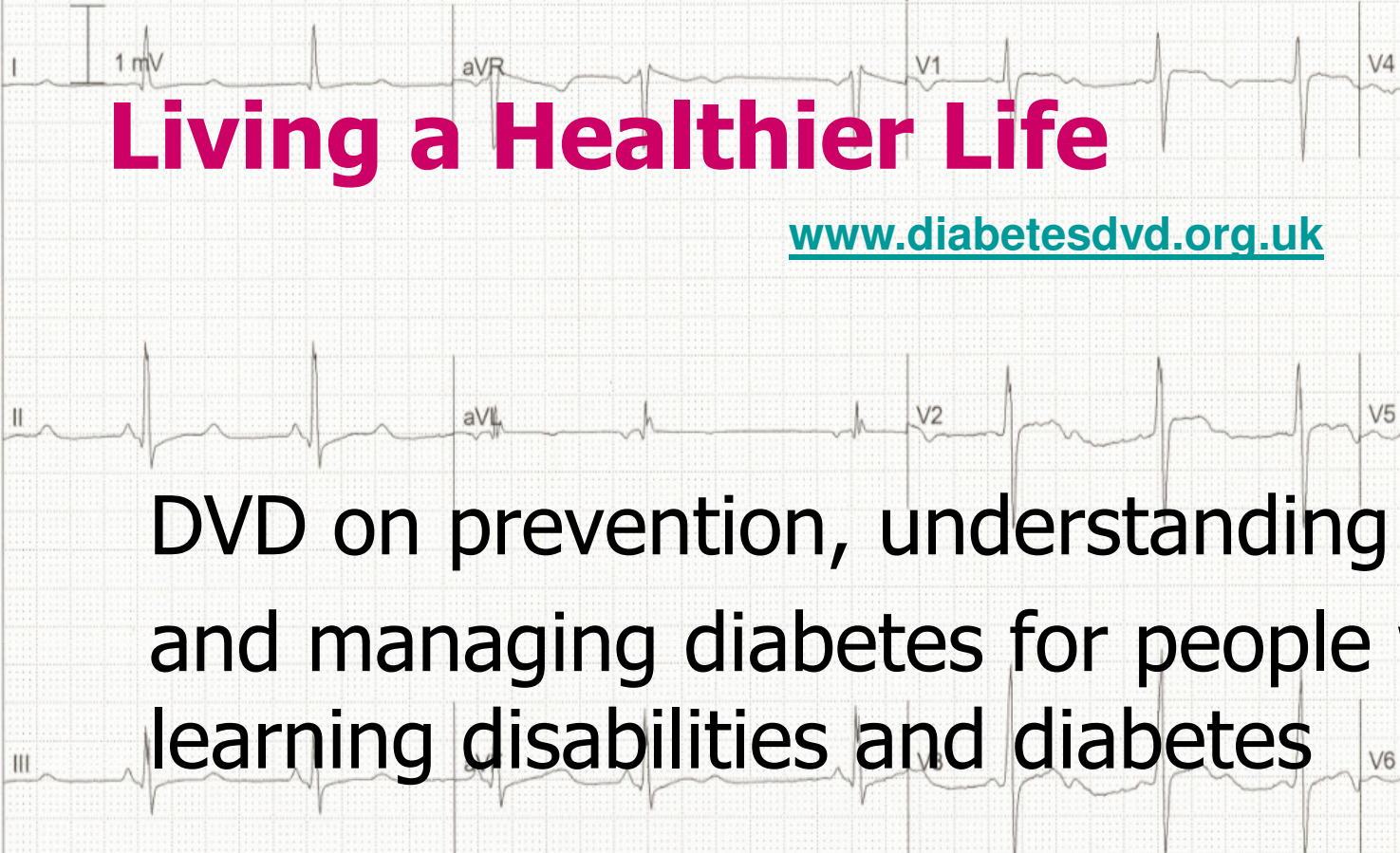


- Treat early in day
- Check eaten and taken medication before appointment
- If well controlled ASA II can be treated in GDP
- If prone to hypoglycaemia
 - Check blood sugar before surgery (should be > 5 mmol/l)
- If in doubt, give sugar
- Monitor behaviour carefully
- Predispose to perio disease and poor wound healing
 - prompt management of acute infections
 - chronic oral infection adversely affects blood glucose control

Genetic syndromes sometimes associated with diabetes

- Down's syndrome**
- Friedreich's ataxia**
- Huntington's chorea**
- Klinefelter's syndrome**
- Lawrence–Moon–Biedel syndrome**
- Myotonic dystrophy**
- Porphyria**
- Prader–Willi syndrome**
- Turner's syndrome**
- Wolfram's syndrome**
- Others**

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DVD on prevention, understanding and managing diabetes for people with learning disabilities and diabetes

- Diabetes UK in partnership with Speakup

Obesity

yes we do have to discuss it

- Genetic
- Metabolic
- Biochemical
- Cultural
- Psychosocial factors
- Gender

Males-accumulate adipose first around abdomen

Women- hips and thighs

Progressive widespread deposition in both as increase weight

- Race

60% of black women, older than 45 have obesity (NHANES III 1998)

Mexican American men and women of low socioeconomic status

> higher than average incidence of obesity

Asian populations vulnerable to obesity-related diseases with co-morbidities from BMI 23

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National Audit Office

Being obese can take up to nine years off your lifespan

More likely to develop a range of health-related problems:

- **diabetes**
- **heart disease**
- **stroke**
- osteoarthritis
- **high blood pressure**
- gallstones
- Infertility
- depression
- combined with lack of exercise, obesity contributes to one third of cancers of the colon, breast, kidney and stomach.

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I 1 mV

aVR

V1

Measure Up Diabetes UK



'Measuring up is a reality check, the first step to recognising that you may not be as well as you feel'

- being overweight in mid life affects how healthy women are when older
- being overweight is associated with 79 % decrease in probability of maintaining best possible health for those surviving to 70 or older
- for every 1kg gained since 18, there is a 5 % decrease in likelihood of having a healthy lifestyle free from major chronic conditions such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes
- compared with women who were lean in mid life.

Size does matter .. and men still get it wrong



Diabetes UK's Conference in Glasgow 2008

- 502 people variety of ethnic backgrounds estimated waist size
- White European backgrounds worse than people from South Asian backgrounds when estimating measurements
 - South Asian women were most accurate
- Men most deluded & underestimated waist size by significant 3.1 inches (7.9 cm)

Risk factor for Type 2 diabetes

- large waist is one of the main risk factors for developing Type 2 diabetes leading to complications such as blindness, heart disease, stroke, amputation and kidney disease
- 80 per cent of people diagnosed with Type 2 diabetes are overweight at the time of diagnosis.

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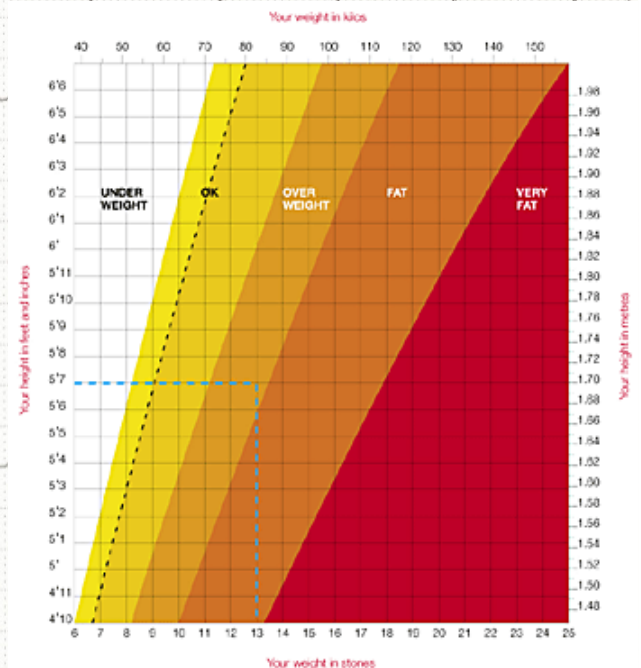
Body Mass Index (BMI)

Currently most accurate and reliable way of measuring total body fat in **adults**

- weight in kilograms
- divided by height in metres squared

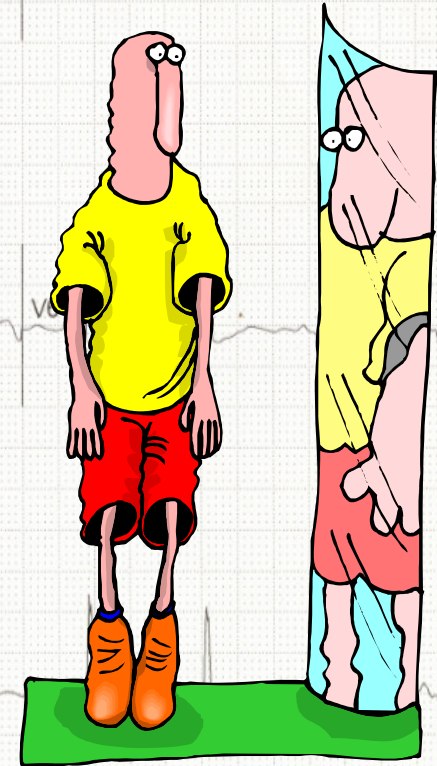
Kg/m²

www.nhs.uk/Tools/Pages/Healthyweightcalculator



BMI Categories

- **Underweight = <18.5 kg**
- **Normal weight = 18.5-25 kg**
- **Overweight = 25-30 kg**
- **Obesity = >30 kg**
- **Morbid obesity = > 40 kg**



BMI combined with waist circumference to improve risk stratification

- Indicators of central distribution of fat
- BMI range of 25-35
 - + waist circumference of $> 40''$ (102cm) in men **or**
 - + waist circumference of $> 35''$ (89cm) in women
- Increased risk of obesity –related comorbidities
- Measure waist with a tape measure just above the hip bone at the side, while breathing out



Metabolic syndrome



Three dominant factors

Lipids pattern

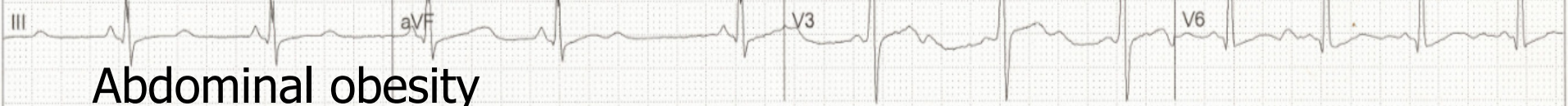
low high density lipoprotein, cholesterol, high triglycerides

Glucose/blood pressure

high fasting glycemia / high blood pressure

Abdominal obesity

waist circumference > 35 inches for women / 40 inches for men



Abdominal Obesity and Lung function impairment

- waist circumferences were strongest predictor of the respiratory disturbance
 - 121,965 French men and women 1999 and 2006
- Observed a positive, independent relationship between lung function impairment and metabolic syndrome in both sexes
 - predominantly linked to abdominal obesity for both women and men

Am. J. Respir. Crit. Care Med. 2009;179:509-16

OSA (Obstructive Sleep Apnoea) OHS (Obesity hypoventilation syndrome)

- Strong association with obesity > 55% of morbidly obese
- Neck circumference >17" has > risk of OSA
- Heavy snorers

multiple apnoeas (>5 episodes/hour and 40 in 8 hours) or hyponeas

- Systemic complications

cardiac dysrhythmias, systemic and pulmonary hypertension,
gastroesophageal reflux, excessive sweating

- PaO₂ can go low enough to cause cardiac arrest (supine)
- exaggerated respiratory depression secondary to opioid administration -Primary factor in anaesthetic related complications

Efficacy of periodontal treatment on glycaemic control in diabetic patients: A meta-analysis of international studies

Systematic review of 25 intervention studies 1976-2007 (9 CCTs and 16 uncontrolled studies)

'As the authors indicate, this review is limited by the poor quality of the included studies; characterised by small samples sizes and, in most instances, a lack of examiner blinding.'

'.....standardized mean difference in HbA(1c) with the treatment of periodontal disease was 0.46 (95% CI: 0.11, 0.82).....'

'One study significantly deviated from the overall effect. Without this study the overall SMD decreased to a non-significant value of 0.27 (95% CI: -0.01-0.60).'

Darre L, Vergnes JN, Gourdy P, Sixou M.. *Diabetes and Metabolism*, 2008; 34(5): 497-506

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