Prevention of type 2 diabetes:
Making the evidence work in the UK

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Aims of the presentation

- Structured education in the prevention of diabetes
- The PREPARE and Walking Away programmes
- Lessons from implementation
Prediabetes

- Evidence suggests that 80-90% of all cases of type 2 diabetes could be prevented through lifestyle factors

- Lifestyle interventions have been shown to reduce the risk of type 2 diabetes by 40-60%
  (Gillies et al. BMJ 2007)
Preventing diabetes in the “real world”

- Interventions used in international RCTs have been very resource intensive – not suitable for translation into routine care

More worrying still......

- Traditional diabetes prevention programmes in the UK have had limited effectiveness
Preventing diabetes in the UK

- Interventions compatible with primary health care resource and infrastructure limitations needed

Do examples of such interventions exist?

- Yes – structured education!
Choice of behaviour to promote

- There is a need to prioritize information and behavioural targets in the real world
- Evidence-based approach needed
- Traditional advice has been “weight loss” centric
- Emphasis on physical activity needed
Relative risk of all-cause mortality in men with type 2 diabetes
(Church et al. Diabetes Care, 2004)
The importance of physical activity
(Blair BJSM 2009)
Self-reported walking activity
(Laaksonen et al. Diabetes, 2005)
The PREPARE programme
(Yates et al. Diabetes Care 2009)

- Single session
- 3 hours long
- Written, theory-driven curriculum
- Person-centred philosophy
The PREPARE programme

(Yates et al. 2008, Patient Education and Counseling 73, 264-271)

Physical activity
- Physical activity and glucose control
- Physical activity recommendations
- Physical activity in everyday life
- Barriers
- Action plans and diaries

Patient Story
- 40%
- 10%

Professional story
- Health glucose metabolism
- Etiology of prediabetes
- Risk factors and complications
- 40%
- 10%

Diet
- Perceptions around diet and diabetes
- 40%
Randomized controlled trial

- Participants with impaired glucose tolerance were recruited from ongoing diabetes screening programmes

- Three groups
  - Control (detailed leaflet)
  - PREPARE programme
  - PREPARE programme plus pedometers

- Primary outcome
  - Oral glucose tolerance test (2-hour post-challenge glucose)

- Follow-up at 3, 6 and 12 months

- Ongoing annual follow-up
Results at 12-months: Physical activity

Change in pedometer counts (steps per day)

Change in self-reported physical activity (MET-minutes/week)

$P < 0.001$

$P = 0.002$
Results at 12 months: Glucose control
(Yates et al. Diabetes Care 2009)

Change in 2-hour glucose (mmol/l)

Control

Education

Education + Pedometer

Change in fasting glucose (mmol/l)

Control

Education

Education + pedometer

P = 0.004

P = 0.028
Results at 24-months: Glucose control
(Yates et al. 2011, Diabet Med in press)

Change in 2-h glucose (mmol/l)  

Change in fasting glucose (mmol/l)

$P = 0.012$  

$P = 0.073$
Results at 24-month: progression to diabetes

(Yates et al. 2011, Diabet Med in press)
Identification

- OGGTs not routinely carried out in primary care

- Pragmatic methods of finding those with a high risk of diabetes are needed

- International best practice suggests that risk scores are a cheap and effective method of identifying those with a high risk of diabetes
Walking Away from Type 2 Diabetes

- Aimed at individuals with a high risk of diabetes identified through pragmatic methods (such as a risk score)

- Includes a fully developed educator training and quality assurance programme

- Both the curriculum and educator training programme have been fully piloted and found to be effective
Know Your Score

1. How old are you?
   - 49 and younger: 0
   - 50 - 59: 5
   - 60 - 69: 9
   - 70 and older: 13

2. Are you male or female?
   - Male: 1
   - Female: 0

3. How would you describe your ethnicity?
   - White European: 0
   - Other Ethnic Group: 6

4. Do you have a father, mother, brother, sister and/or own child with Type 1 or Type 2 diabetes?
   - Yes: 5
   - No: 0

5. What is your waist circumference?
   - Less than 90 cm: 0
   - Less than 35.3 inches: 0
   - 90 - 99 cm: 4
   - 39.4 - 42.9 inches: 8
   - 110 cm & above: 9
   - 43 inches and above: 9

6. What is your Body Mass Index (BMI)? (See instructions)
   - Less than 25: 0
   - 25 - 29: 3
   - 30 - 34: 5

7. Has a doctor given you medicine for high blood pressure OR told you that you have high blood pressure?
   - Yes: 5
   - No: 0

Add up your score here -

Your Score

0-8: Low Risk
   - 0-8 points
   - Everyone is at some risk; a low score now will increase with time if you do nothing. It is important to keep active and a healthy weight for your size.

7-15: Moderate Risk
   - 7-15 points
   - This means you are at an increased risk of having diabetes now, but you may be at higher risk in the future.
   - Taking more exercise and thinking about the kinds and amounts of food you eat will help to control your risk.
   - Contact your doctor or practice nurse and talk to them about how you can reduce your risk of diabetes

16 or More: High Risk
   - 16 or more points
   - You are at much greater risk of developing diabetes or having undiagnosed diabetes.
   - You need to see your GP or pharmacist for a blood test as soon as possible. They will look for blood ketosis to confirm or rule out diabetes.
Structured Curriculum

Visual resources
# Physical Activity Diary

**Week 1**

<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
<th>Duration</th>
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Date started: [Blank]

**My goal for this week is:** [Blank]

**How did I do?** [Blank]

**What might I change?** [Blank]
Exercise Goals

2000 steps = 1 mile
Lands End to John O’Groats
= 850 miles
Lands End to John O’Groats
= 1,700,000 steps
National Implementation
Lessons Learned

• Most effective when a systematic and locally led pathway is in place

• Accurate pedometer crucial

• Likely to be very cost effect with an estimated cost of £30 per patient
  (Westgate 2011 Diabetes UK)