Outline

• Background
• Definition(s) of pre-diabetes
• Pre-diabetes and primary care
• Risk factors for/ importance of pre-diabetes
• Interventions for pre-diabetes
• Discussion
Background

• Scotland: “A healthier future: type 2 Diabetes prevention, early detection and intervention: framework” published July 2018

• English diabetes prevention programme identifies people at high risk and refers them onto a behaviour change programme, started June 2016

Type 2 diabetes in Scotland

- 257,728 people diagnosed with T2D in 2016
- 4.8 % of Scottish population

- 2010/11: 10% of all NHS expenditure
  - T2D: 8.8 billion GBP/year

- Next 25 years: 17% of NHS budget
  - T2D: 15.1 billion GBP or 1.7 million GBP/hour

(Hex et al., 2012)

Number of people with a Type 2 diabetes diagnosis, 2001-2016

What is prediabetes?

- Abnormally high levels of blood glucose that are not yet at diagnostic threshold
- ?18 million people with prediabetes in UK
- One alteration of glucose homeostasis:
  - -> 30-40% progression to overt T2D in 3-8 years
  - -> 5-10% progression to overt T2D/year

Read codes:
IFG = C11y3
IGT = C11y2
Pre-diabetes = C11y5

* WHO definition
Prediabetes in Primary Care

• Is prediabetes diagnosed and coded?
• Management and follow up?
• Useful resources:
  • MEHIS
Resources used:

Minority Ethnic Health Inclusion Service (MEHIS)

“We support BME people to understand their Diabetes better, to consolidate the self management messages and assist with lifestyle change in a person centred, culturally relevant context. Many individuals require assistance to access physical activity opportunities and we have support workers who can assist with this and even accompany individuals until they have the confidence to carry on. The concept of self management is alien to many individuals. We have categorised many information leaflets by language and type and also developed a video resource.”

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Who is at risk?

- **OBESITY:**
  - 80-85% of prediabetes cases linked to obesity (PH England, 2014)

- **FAMILY HISTORY:**
  - 1st degree relative with T2D 2-6 times more likely to develop T2D than those without (DUK, 2014)

- **ETHNICITY:**
  - T2D 6 times more common in S. Asians (Winkley et al, 2013)
  - T2D 3 times more common in African-Caribbeans (Winkley et al, 2013)

- **DEPRIVATION** (2.5 times more likely to develop prediabetes/T2D) (DUK, 2012)

- **SEVERE MENTAL ILLNESS** (2-3 times higher prediabetes/T2D prevalence) (Holt et al, 2005)
Why is prediabetes important?

Prediabetes is associated with:
- Coronary artery disease
- Peripheral vascular disease
- Stroke
- Heart failure

Bodyweight Insulin Res Beta-cell dysfunction

IFCC HbA1c mmol/mol

DCCT HbA1c %
Prognosis of Prediabetes

- Prediabetes is a **heterogeneous** entity:
  
1. Precursor to T2D

1. Never progresses to T2D but still confers an increased risk of death from CV causes

Source: [http://care.diabetesjournals.org/content/41/7/e117](http://care.diabetesjournals.org/content/41/7/e117)
Weight loss reduces the risk of T2D

- Weight loss of 7% reduces risk of T2D by 58% (ADA 2014)

<table>
<thead>
<tr>
<th>Study</th>
<th>Therapy</th>
<th>Relative risk reduction of T2D</th>
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<tbody>
<tr>
<td>US Diabetes Prevention Program</td>
<td>Diet + Exercise</td>
<td>58% (95% CI 48-66%)</td>
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<tr>
<td>(DPP research group, 2002)</td>
<td>Metformin 850mg BD</td>
<td>31% (95% CI 17-43%)</td>
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<td>Finnish Diabetes Prevention Study</td>
<td>Diet + Exercise</td>
<td>39% (95% CI 21-52%)*</td>
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<td>(Lindstom et al, 2006;2013)</td>
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<tr>
<td>Indian Diabetes Prevention Programme</td>
<td>Diet + Exercise</td>
<td>28.5% (95% CI 20.5-37.3%)</td>
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<tr>
<td>(Ramachandran et al, 2006)</td>
<td>Metformin 250mg BD</td>
<td>26.4% (95% CI 19.1-35.1%)</td>
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<td></td>
<td>Diet + Exercise + Metformin 250mg BD</td>
<td>28.2% (95% CI 20.3-37.0%)</td>
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<tr>
<td>Lets Prevent</td>
<td>6 hour structured group education</td>
<td>26% (95% CI 52% reduced risk to 14% increased risk)</td>
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<td>(Davies et. al, 2016)</td>
<td>+ annual refresher + regular phone contact</td>
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Over 50% of people that started the English diabetes prevention programme achieve an average weight loss of 3.3kg

Let’s Prevent: a possible option for East Region?

Money allocated by Scottish Government towards an evidence-based prediabetes programme:

- Urgency/Opportunity to develop a prediabetes programme
- Money cannot be used for a different purpose
- Let’s prevent for East Region

BUT:

- 64/447 of treatment group developed T2D
- 67/443 of the controls developed T2D
- Inadequate staffing for DESMOND
- Increased GP workload? GP involvement
- Labs workload
- Is this screening?
- Can we modify “Let’s PREVENT” to create an effective and feasible intervention?
Weight management in Lothian

“Get Lighter in Lothian”
The Lothian Weight Management Service (Adults) 2019

Tier 1: “once for Scotland” approaches in development

Tier 2: Get Moving with Counterweight

Tier 3: Get Lighter

Tier 4

Tier 5

Local Council and Leisure Trust Health Coaches
12 week dietary (Counterweight) and physical activity group programme
Follow up at 6, 9 and 12 months

Specialist Weight Management Team
Advanced Weight Management
1:1 consultations with specialist dietitian
Orlistat/Counterweight Plus/BEYOND study

Bariatric Surgery
Patient information seminar
12 week ‘IPIC’ programme
Further 12 week 1:1 if required

Rising Body Mass Index
General population-based advice and services e.g. websites, apps, community initiatives

Community Dietetic Team and Specialist Weight Management Team
14 week core group programme
9 month maintenance group programme
12 week Exercise group programme
8 week Disordered Eating Group “Eat.Think.Change”
Encourage people to have a risk assessment

Identify those at risk

Low/intermediate risk  High risk

Reassess risk every 5 years  Manage risk

Source: NICE guidelines [https://www.nice.org.uk/guidance/ph38](https://www.nice.org.uk/guidance/ph38)
Communicating and managing risk

Moderate risk
• High risk score but
  • FBG <5.5mmol/mol or
  • HbA1c <42mmol/mol

Reassess risk every 3 years

High risk
• High risk score +
  • FBG 5.5-6.9mmol/l or
  • HbA1c 42-47mmol/mol

Let’s Prevent Intervention

Reassess BMI and bloods annually

Source: NICE guidelines https://www.nice.org.uk/guidance/ph38
Obesity (and T2D) are complex so multiple approaches to prevention are needed.
Discussion

• Useful resource: A desktop guide for busy practitioners

  • https://medicine.exeter.ac.uk/media/universityofexeter/medicalschool/research/healthservicesresearch/docs/primarycare/WAKEUP_Pre-diabetes_Practitioner_Desk_top_guide_Print_or_Read_2016.pdf