

Type 2 Diabetes Remission: the latest evidence

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&

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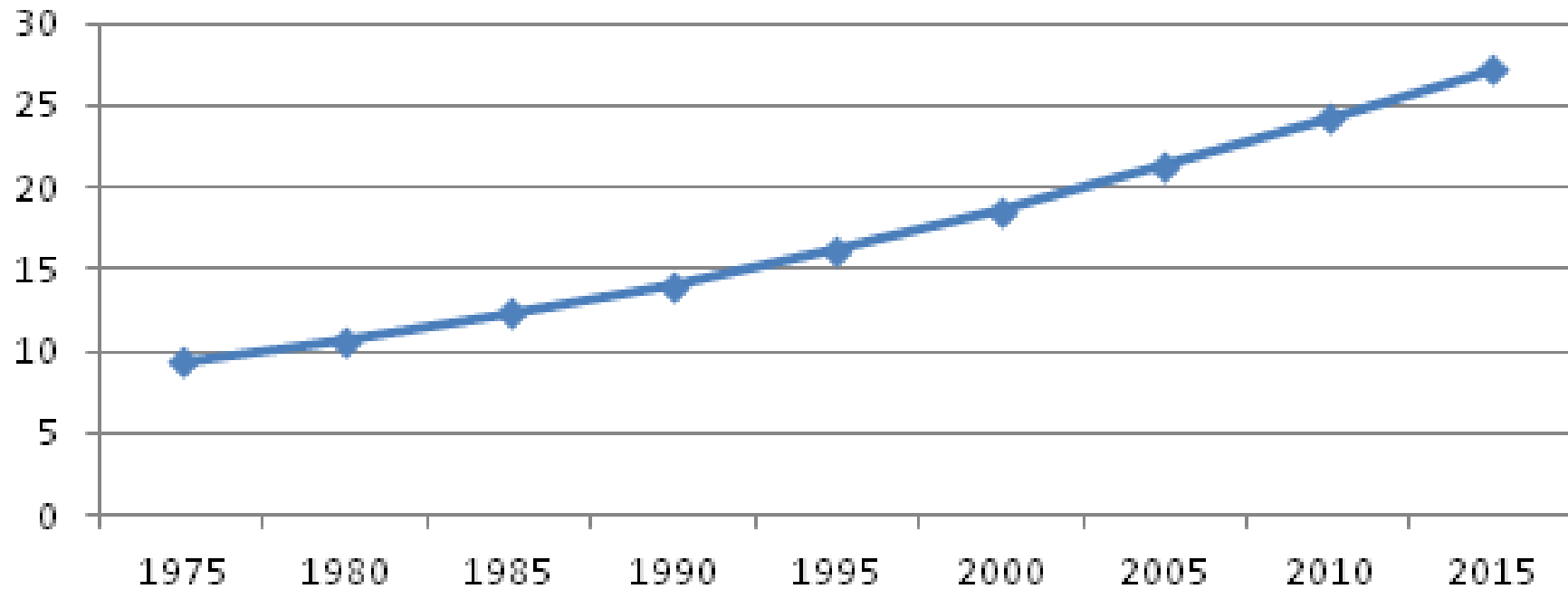
Questions we might ask ourselves.....

- Do we consider food habits or just drugs?
- Is T2D remission achievable for patients?
 - Is there a non-surgical solution?
- What support do our patients need to be successful?



Study tested the hypothesis:
that negative energy balance alone
reverses T2D by normalising both beta cell
function & insulin sensitivity.

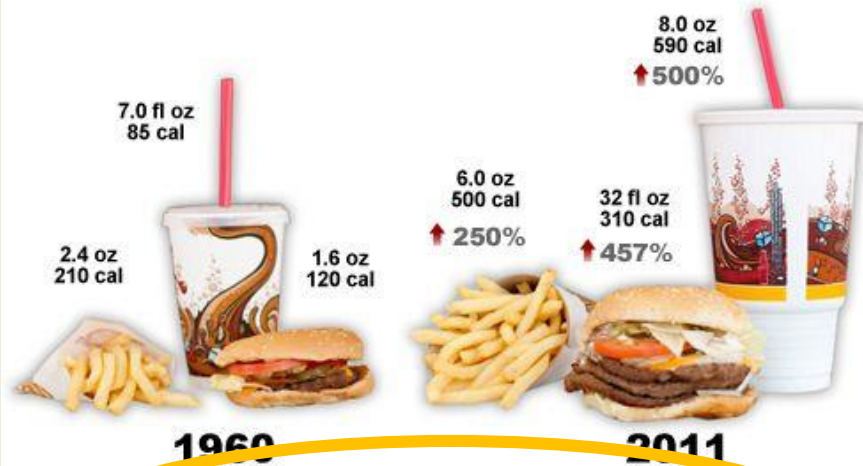
Prevalence of Obesity in UK (%)



(Ref: Data sourced from Global health Observatory WHO 2017)

Portion Sizes—Then and Now

Fast food portions have increased dramatically since 1960. Here's how they stack up, then and now:



1960: 416 kcals

2011: 1400 kcals



Portion Distortion

20 YEARS AGO	TODAY	DIFFERENCE	20 YEARS AGO	TODAY	DIFFERENCE
 <p>333 Calories</p>	 <p>590 Calories</p>	257 MORE CALORIES	 <p>45 Calories</p>	 <p>350 Calories</p>	305 MORE CALORIES
Lifting weights for 1 HOUR AND 30 MINUTES burns approximately 257 calories* *Based on 130-pound person			Walking 1 HOUR AND 20 MINUTES burns approximately 305 calories* *Based on 130-pound person		
 <p>500 Calories</p>	 <p>850 Calories</p>	350 MORE CALORIES	 <p>210 Calories</p>	 <p>500 Calories</p>	290 MORE CALORIES
Playing golf (while walking and carrying your clubs) for 1 HOUR burns approximately 350 calories* *Based on 160-pound person			Vacuuming for 1 HOUR AND 30 MINUTES burns approximately 290 calories* *Based on 130-pound person		
 <p>500 Calories</p>	 <p>1,025 Calories</p>	525 MORE CALORIES	 <p>55 Calories</p>	 <p>275 Calories</p>	220 MORE CALORIES
Housecleaning for 2 HOURS AND 35 MINUTES burns approximately 525 calories* *Based on 130-pound person			Washing a car for 1 HOUR AND 15 MINUTES burns approximately 220 calories* *Based on 130-pound person		

Portion Distortion

Obesity: identification, assessment and management

Clinical guideline [CG189]Published date: November 2014

- Offer an expedited assessment for bariatric surgery to people with a BMI of 35 or over who have recent-onset type 2 diabetes as long as they are also receiving or will receive assessment in a tier 3 service (or equivalent). **[new 2014]**
- Healthcare bariatric services could not meet this demand (only reaches 1% of eligible population)
- High cost approx £8,000-£15,000
- Many individuals would not choose/be eligible or be in a position to pay privately
- Potential for complications & long term problems such as micronutrient deficiencies
- Non-reversal/ life changing event

Need for an evidence based non-surgical solution.....

Diabetes Remission in Type 2 Diabetes is defined as:

HbA1c <48mmol/mol and off ALL antidiabetes drug therapy

“...means that your blood sugar levels are healthy without needing to take any diabetes medication.”

Diabetes UK

Normoglycaemia	<41 mmol/mol
Prediabetes	42-47 mmol/mol
Diabetes	>48mmol/mol

Primary care-led weight management for remission of type 2 diabetes (DiRECT): an open-label, cluster-randomised trial

Michael EJ Lean*, Wilfong S Leslie, Alison C Barnes, Naomi Brosnahan, George Thom, Louise McCombie, Carl Peters, Sviatlana Zhyzhneuskaya, Lucia Rehackova, Ashley J Adamson, Falko F Sniehotta, John C Mathers, Paul Welsh, Sharon Kean, Ian Ford, Alex McConnachie, Naveed Sattar, Roy Taylor*

9/10 achieved remission
if lost >15kg

Give people the option of:
Lifestyle treatment rather
than drugs!

...long treatment. We aimed to assess whether ... remission of type 2 diabetes.

... primary care practices in Scotland and the ... computer-generated list, to provide either a ... lines (control), with stratification ... participants, carers, and ... cation was con ... sed with typ The inter ... 3 kcal/day ... g-term we ... es, defined ... iabetic medica ... ster with the ISRC

... we recruited 306 individuals from 49 ... per group comprised the intention-to-treat po ... 36 (24%) participants in the intervention group and ... ssion was achieved in 68 (46%) participants in the inter ... up (odds ratio 19·7, 95% CI 7·8–49·8; $p<0\cdot0001$). Remissi ... tion, with achievement in none of 76 participants who ... ght, six (7%) of 89 participants who ... 0–5 kg weight loss, 19 (34%) of 56 participants with ... loss, 16 (57%) of 28 participants with ... kg loss, and 31 (86%) of 36 participants who lost 15 kg ... e. Mean bodyweight fell by 10·0 kg (SD ... the intervention group and 1·0 kg (3·7) in the control ... p (adjusted difference –8·8 kg, 95% CI –10·3 to ... 3; $p<0\cdot0001$). Quality of life, as measured by the EuroQ ... 5 Dimensions visual analogue scale, improved by 7·2 points (SD 21·3) in the intervention group, and decreased by 2·9 points (15·5) in the control group (adjusted difference 6·4 points, 95% CI 2·5–10·3; $p=0\cdot0012$). Nine serious adverse events were reported by seven (4%) of 157 participants in the intervention group and two were reported by two (1%) participants in the control group. Two serious adverse events (biliary colic and abdominal pain), occurring in the same participant, were deemed potentially related to the intervention. No serious adverse events led to withdrawal from the study.

Interpretation Our findings show that, at 12 months, almost half of participants achieved remission to a non-diabetic state and off antidiabetic drugs. Remission of type 2 diabetes is a practical target for primary care.

Funding Diabetes UK. Cardiff & Vale UHB Community Dietetics Department

Primary Outcome Results of DiRECT the Diabetes REmission Clinical Trial

Aim:

To assess whether intensive weight management, within routine primary care, would achieve remission of T2DM

Design:

Open-label, cluster randomized, clinical trial. Randomized by GP practices, stratified for sex and practice size

Intervention:

- Counterweight-Plus Weight management programme: Aim to achieve & maintain at least 15kg weight loss
- Withdraw **all** anti-diabetes and antihypertensive medication
- Plus best practice care by guidelines

Control: best practice care by guidelines

DiRECT: inclusion & exclusion criteria

• Inclusion

- Men and women
- Age 20–65 years
- BMI 27–45kg/m²
- T2DM diagnosed within 6 years
- HbA1c ≥ 48 mmol/mol
(≥ 43 mmol/mol on anti-diabetes drugs)
- Signed informed consent

Exclusion

- Insulin treatment, anti-obesity drugs
- Learning difficulties
- Pregnancy or considering pregnancy,
- Weight loss >5 kg within 6m, eGFR <30 mls/min, severe or unstable heart failure, known cancer, myocardial infarction within 6m
- Eating disorder/ purging , severe depression, antipsychotic drugs, substance abuse

DiRECT Intervention: Counterweight-Plus Programme

Total Diet Replacement- Counterweight Pro800

- Nutritionally complete in 4 x shakes/soups
- 825-853kcal: 59% CHO, 13% fat, 26% protein, 2% fibre (approx. 20g protein per shake)
- >2.25l fluid per day
- Follow for 12-20 weeks

Maintain PA: ~30mins/day

- STOP all antidiabetes medication
- STOP all antihypertensive medications

Screening



Total Diet Replacement





Counterweight-Plus Programme

Stepped Food Reintroduction

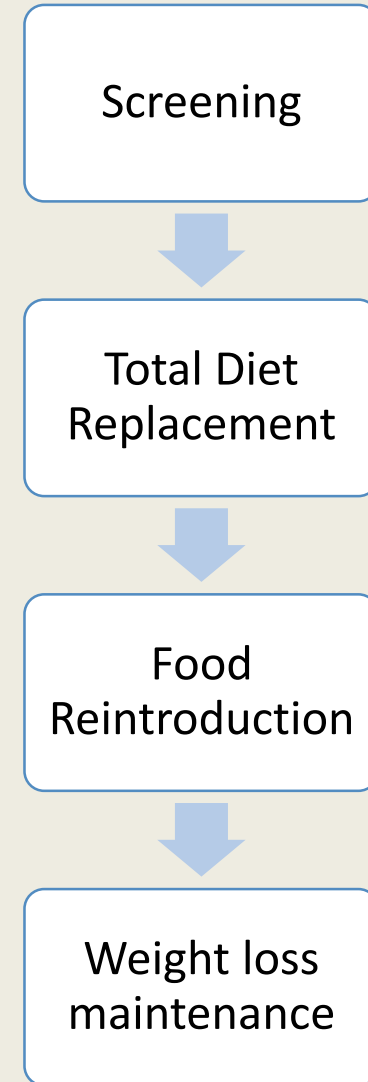
- Add ~400 kcal meal every 2-3 weeks
- Step counters: gradually increase PA

Weight loss Maintenance

- Food based diet (1200,1400 or 1600kcal)
- 50% CHO, 35% fat, 15% protein
- Encourage upto 15,000 steps/day

Relapse Management (regain >2kg, relapse of diabetes)

- Tool-kit approach: meal replacement, brief TDR and FR



Input Required during Intervention

- Patients attended their own primary care practice
- Programme delivered and supervised by Practice nurse or local dietitian

Individual appointments:

- TDR: 2- weekly
- Food reintroduction 2- weekly
- Maintenance 4-weekly

(Total of 20 appointments over 1 year)

Results: weight changes over 12 months

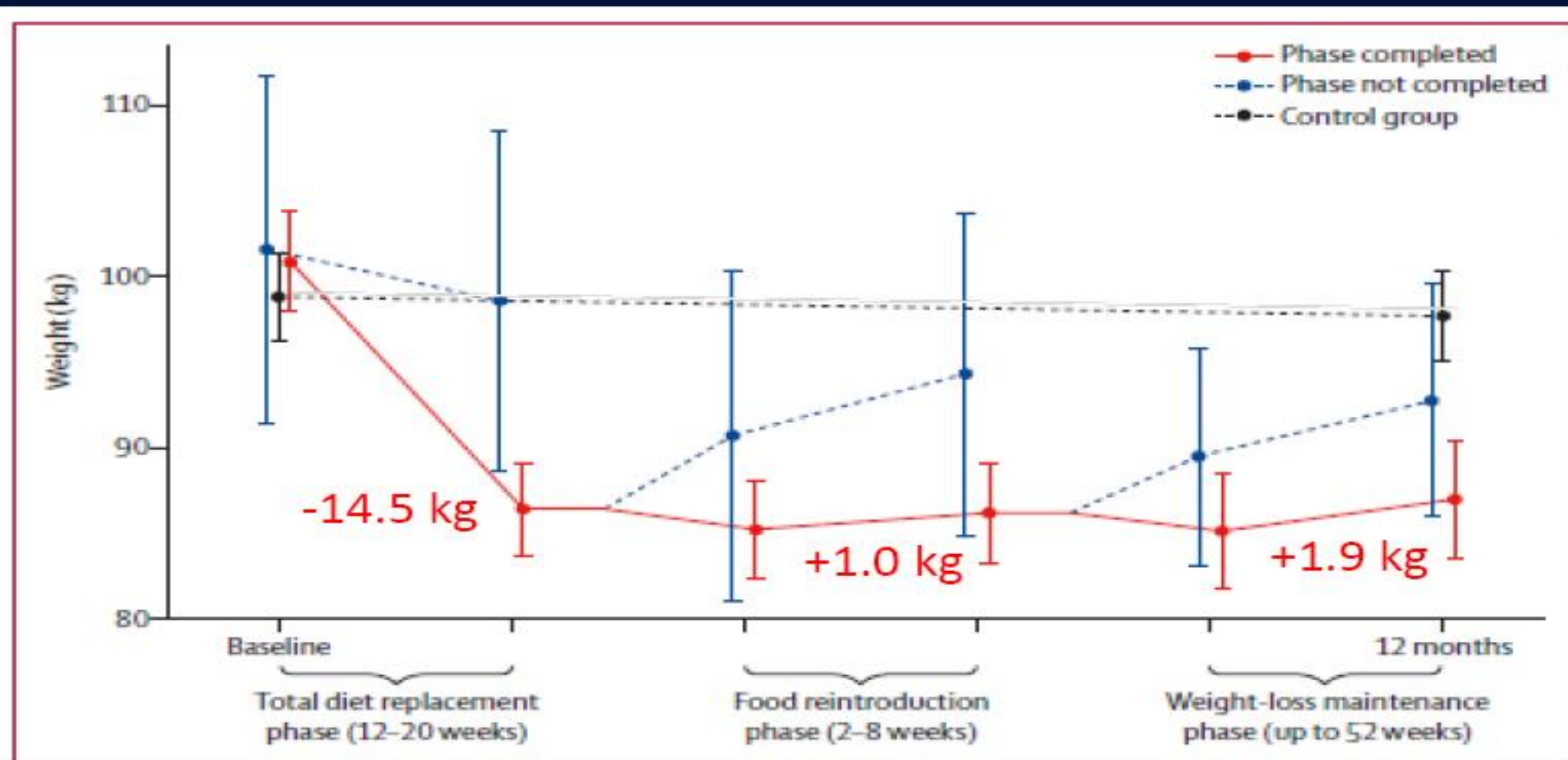


Figure 2: Change in weight of participants who remained in the trial and those who dropped out during each phase of the intervention

Error bars represent 95% CIs.

Primary outcome Results

A. 1st Co-primary outcome: >15kg weight loss

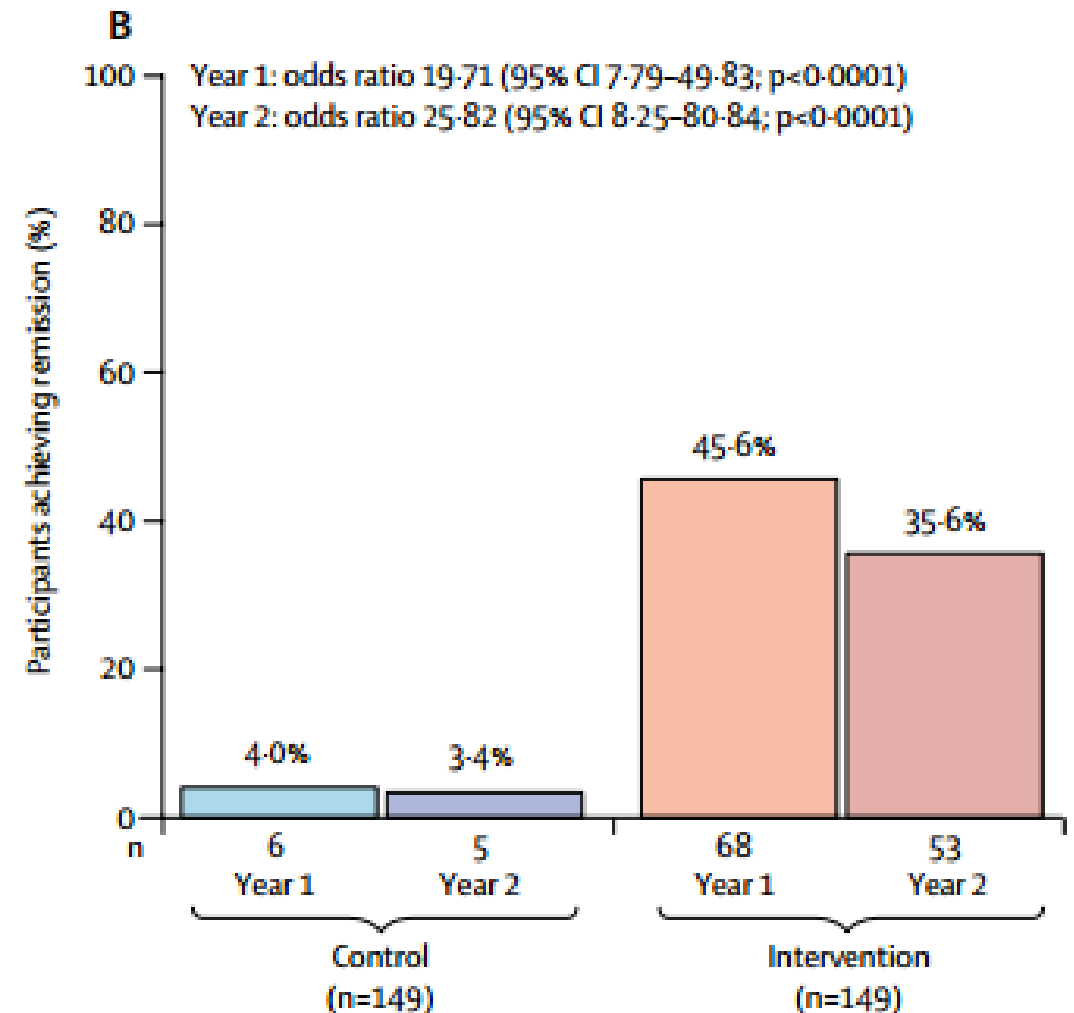
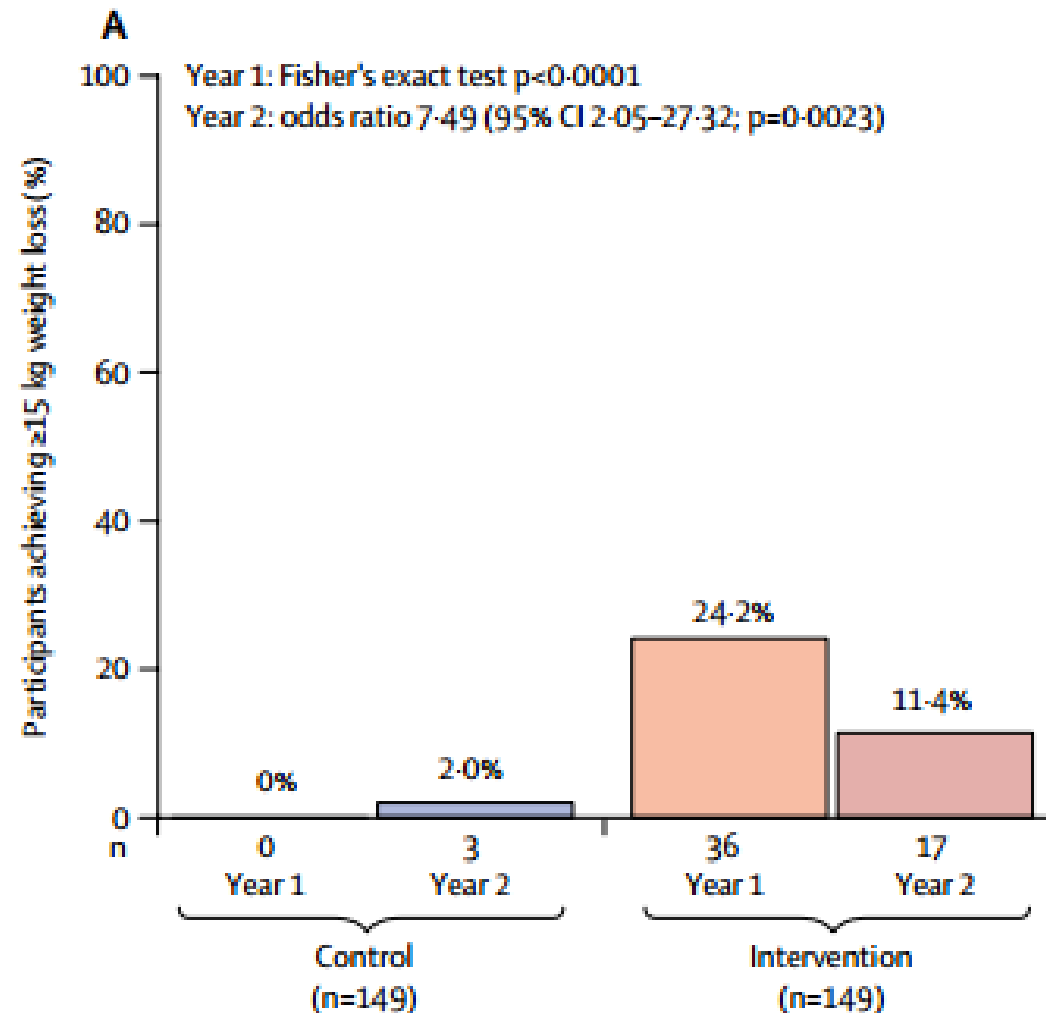
- Intervention 36/149 (24%) (28/149 lost 10-15kg)
- Control 0/149

B. 2nd Co-primary outcome: Remission of diabetes (HbA1c<48mmol/mol)

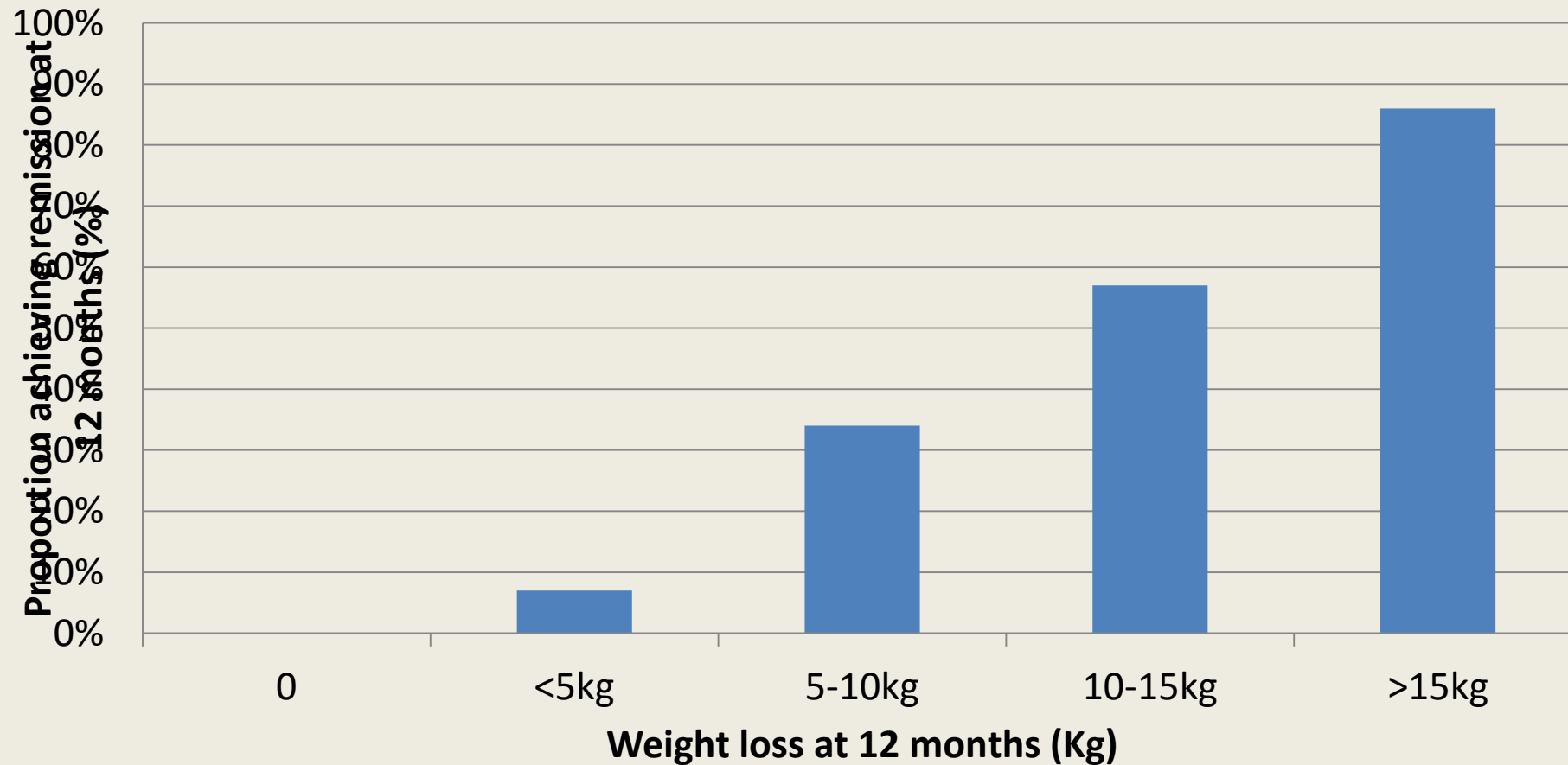
- Intervention 68/149 (46%) (53/149 at 2 years)
- Control 6/149 (4%)

At 12 months **74%** intervention group vs 18% control group were taking no antidiabetic medications

DiRECT Trial 2 year results



C. Remission of diabetes in relation to weight loss as 12 months (both groups combined)



DiRECT: Conclusions

- T2D of upto 6 years duration is not necessarily a permanent lifelong condition.
- T2DM is a complication of weight gain and excess body fat, and it is not necessarily a permanent condition
- Almost half with early T2DM can achieve remission
- Effective long term weight management with a resetting of long term energy consumption is essential.
- Individual flexibility is important to optimize results

DIABETES REMISSION PILOTS IN ENGLAND AND SCOTLAND..... WHAT ABOUT WALES?

**Pilot project Jan 2020- March 2021 across 4 UHBs
(C&V, BCUHB, ABUHB & Hywel Dda)
Plan to recruit 90 people in total
Following the DiRECT principles.....**

1. **4 key inclusion criteria**

Age 20-65 years
Diagnosed T2D within 12 months
HbA1c >48mmol/mol
BMI 27-45kg/m²

2. **An integrated care pathway
strategies for lapse**

Period of TDR provided
Supported by Dietitian
Supervised food reintroduction
Relapse management

3. **Protocols for**

4. **Prospective**

Weight, WC, HbA1c,



**KEEP
CALM
AND
WATCH THIS
SPACE**

our change and

ICP

e medication.

ne improvement



GIG
CYMRU
NHS
WALES

Bwrdd Iechyd Prifysgol
Caerdydd a'r Fro
Cardiff and Vale
University Health Board

Raising the topic of weight.....



Something to bear in mind.....

04/11/2019

Cardiff & Vale UHB Community Dietetics Department
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CYMRU
NHS
WALES

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The report found that over a 1 year period those with an ACE of 4+ were:

X **4** times more likely to develop diabetes type 2

X **3** times more likely to develop heart disease

X **3** times more likely to develop respiratory disease

WWW.WOW4U.COM

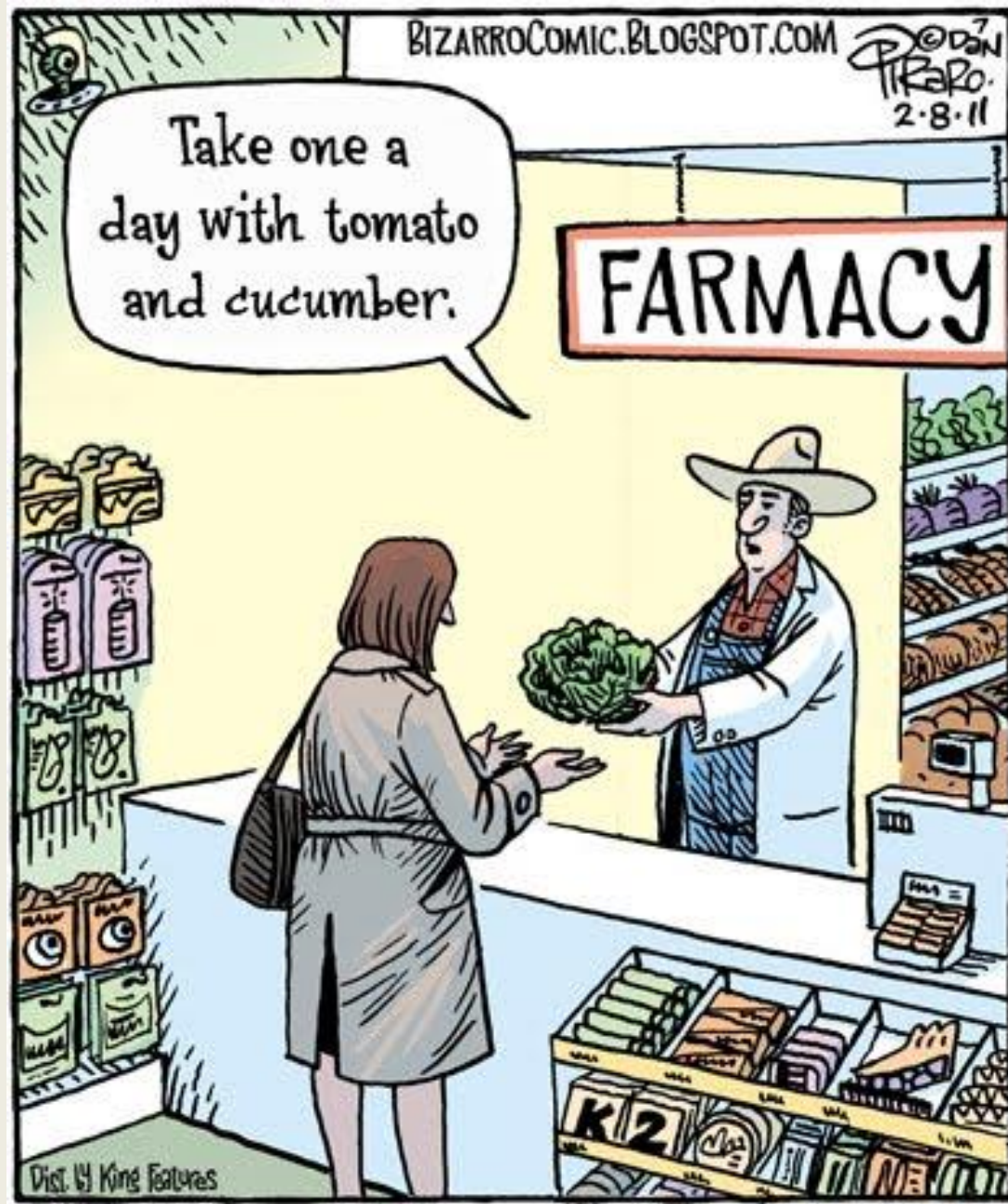


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Key messages:

- Aim for 15kg weight loss (where appropriate) as soon as possible after diagnosis to help achieve remission.
- At least 5% weight loss will reduce the risk and glycaemia
- Recognising remission of disease is a powerful motivator for patients
- Need to take into consideration individual environmental factors which influence health







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