

How do we adapt diet approaches  
for patients with obesity with or  
without diabetes?

Therese Coleman

Dietitian

# Developing a specialist weight management programme

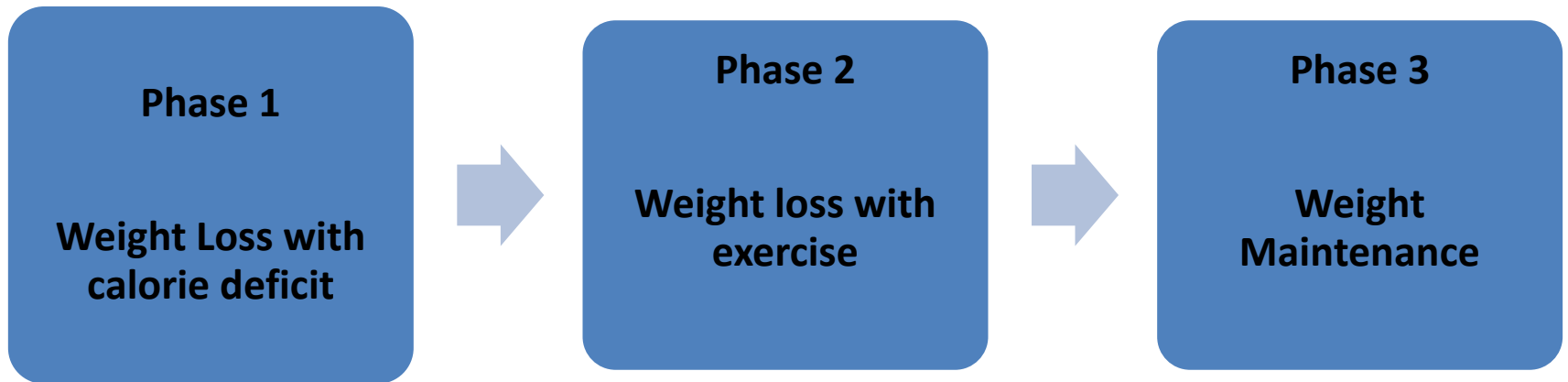
- How did we adapt dietary approaches for patients with obesity?
- What is the evidence base?



# Consider the patient profile

- Not their first visit to a health professional to discuss their weight
- Likely repeated weight loss efforts
  - >20kg weight loss but regained with extra
- Specialist weight management service will have a toolbox of evidence based treatments to help manage obesity

# Typical Diet and Lifestyle Programme



# Lifestyle Change

- Diet - to promote a calorie deficit and longer term healthier eating
- Exercise - to rehabilitate to an active and more healthy lifestyle
- Behavioural modifications - self monitoring and more mindful eating for successful weight loss maintenance



# Randomised control trials

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

## Cardiovascular Effects of Intensive Lifestyle Intervention in Type 2 Diabetes

The Look AHEAD Research Group\*

Full Text Content and  
Glycemic Index for Weight-Loss Maintenance

Thomas Meinert Larsen, Ph.D., Stine-Mathilde Dalskov, M.Sc.,  
Marleen van Baak, Ph.D., Susan A. Jebb, Ph.D., Angeliki Papadaki, Ph.D.,  
Andreas F.H. Pfeiffer, M.D., J. Alfredo Martinez, Ph.D.,  
Teodora Handjieva-Darlenska, M.D., Ph.D., Marie Kunešová, M.D., Ph.D.,  
Mats Pihlsøgård, Ph.D., Steen Stender, M.D., Ph.D., Claus Holst, Ph.D.

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Larsen et al Diogenes NEJM ...  
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### The Diogenes Study

## The Diet, Obesity and Genes (Diogenes) Dietary Study in eight European countries – a comprehensive design for long-term intervention

T. M. Larsen<sup>1</sup>, S. Dalskov<sup>1</sup>, M. van Baak<sup>2</sup>, S. Jebb<sup>3</sup>, A. Kafatos<sup>4</sup>, A. Pfeiffer<sup>5</sup>, J. A. Martinez<sup>6</sup>,  
T. Handjieva-Darlenska<sup>7</sup>, M. Kunešová<sup>8</sup>, C. Holst<sup>9</sup>, W. H. M. Saris<sup>2</sup> and A. Astrup<sup>1</sup>

# Look AHEAD Trial

- The Look AHEAD (Action for Health in Diabetes) study was designed to assess the effects of an intensive lifestyle intervention on health outcomes in overweight/obese individuals with type 2 diabetes.
- The trial's primary outcome was cardiovascular morbidity and mortality
- Largest and longest randomised control trial to date of an intensive lifestyle intervention for weight reduction

# Look AHEAD Trial

- 5000 patients in 16 research centres across the US
- Randomly assigned to an intervention or control arm
- Intervention – intensive lifestyle intervention that promoted weight loss through decreased caloric intake and increased exercise
- Control - to receive diabetes support and education which featured 3 group sessions per year focussed on diet, exercise and social support during years 1-4

# Intervention arm aimed at achieving and maintaining 7% weight loss

- 1200-1500kcal per day for patients weighing 114kg or less to support 0.5-1kg per week (1-2lb)
- This could be reduced to 1000-1200kcal if patient was not losing weight satisfactorily.
- 1500-1800kcal per day for clients >114kg. This could be reduced to 1200-1500kcal per day if patient not losing weight satisfactorily.
- Less than 30% of calories from fat and more than 15% of calories from protein
- *For reference average UK calorie intake is 35% from fat, 15% of energy from protein, and 50% from CHO*

# The intervention was adapted from the Diabetes Prevention Program

- Patients were offered two options:
  - 2 meal replacements and 1 meal or;
  - if patient disliked or did not want to follow a meal replacement plan a very structured meal plan
- Patients were encouraged to undertake 175 minutes of moderate intensity exercise per week.
- This group had continued support over 8 years

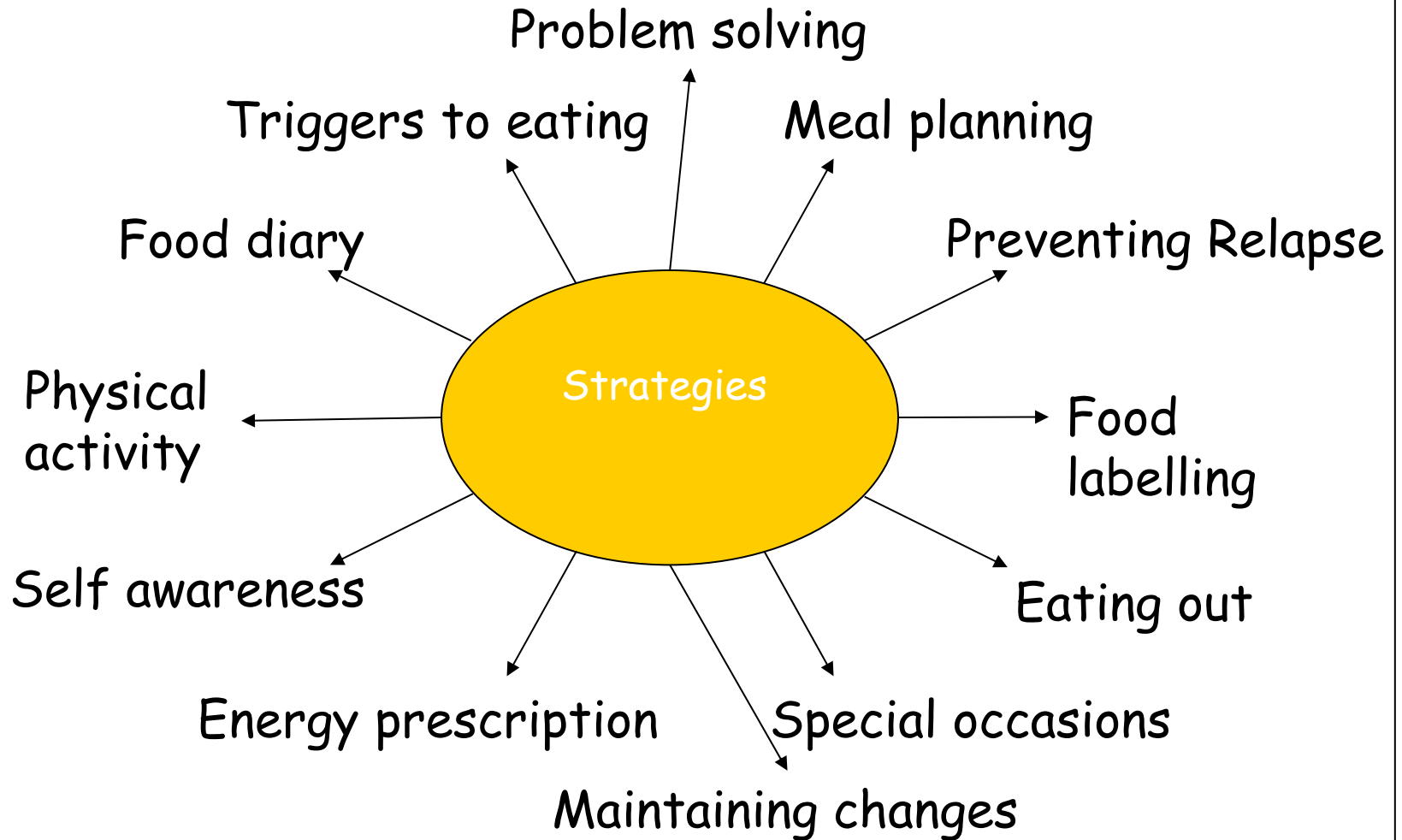
# Meal Plans

- Year 1 - Structured meal plans and meal replacements
- Years 2-8 Weight loss and physical activity maintenance
- Individualised calorie goals
- Encouraged to:
  - continue to use meal replacements OD;
  - exercise  $\geq 200$  minutes/week;
  - monitor weight weekly or more often.

# Behavioural approach

- Months 1-6
  - Weeks 1-3 participants attended group sessions (of 60-75 minutes)
  - Week 4, they met individually with their interventionist (for 20-30 minutes)
- In months 7-12
  - monthly individual meeting, but group sessions were reduced to twice a month
- Encouraged to keep food and physical activity diaries, and other targeted behaviours
- Toolbox for patients having difficulty

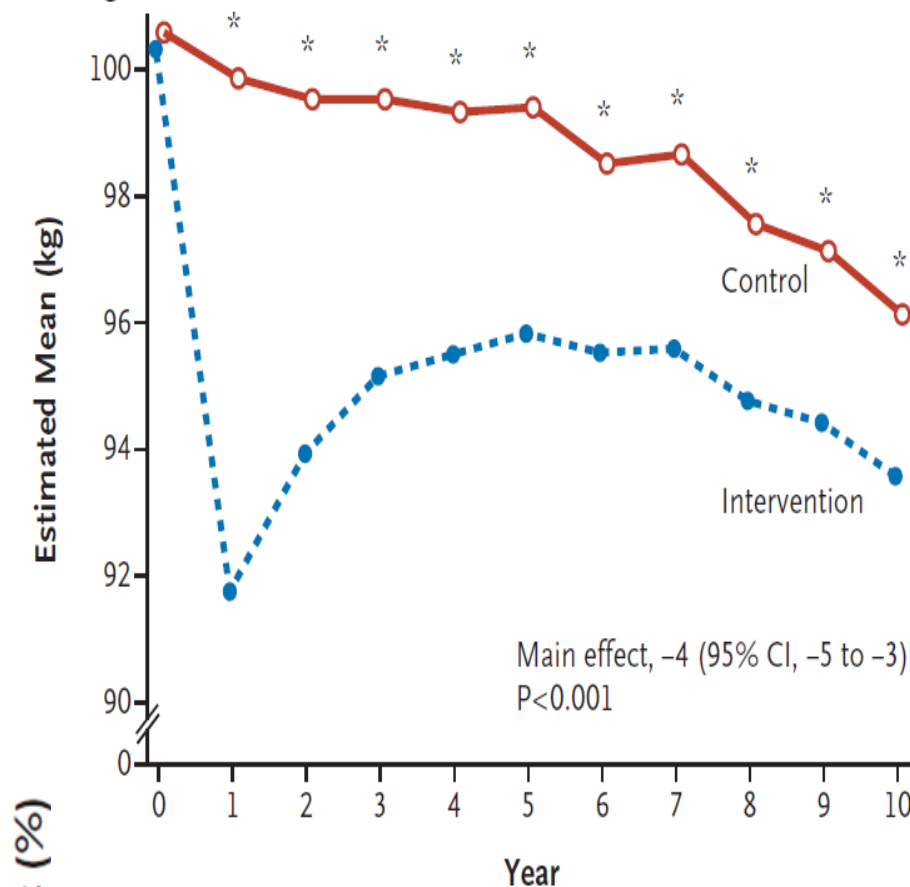
# Behavioural Modification



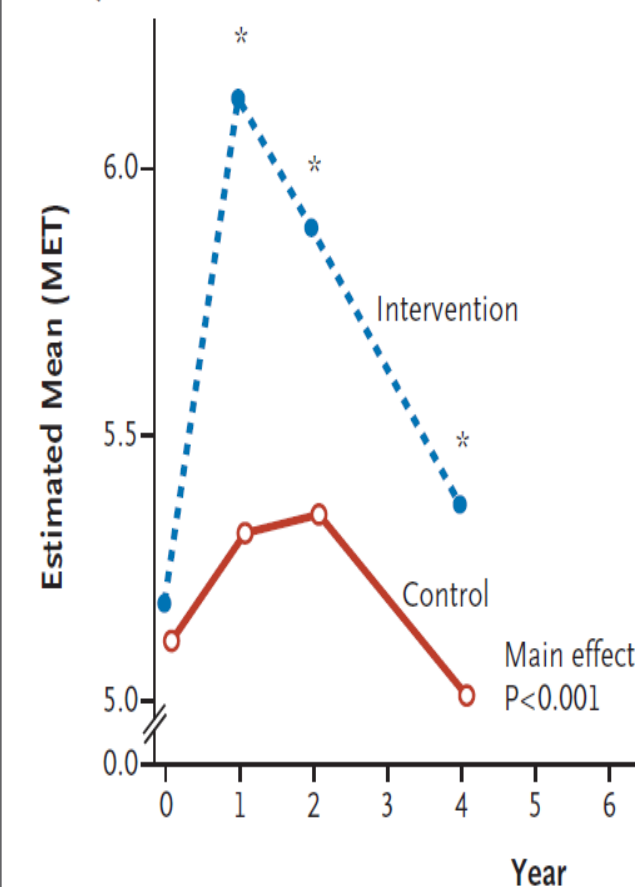
# Look AHEAD study

Wing et al NEJM  
2013

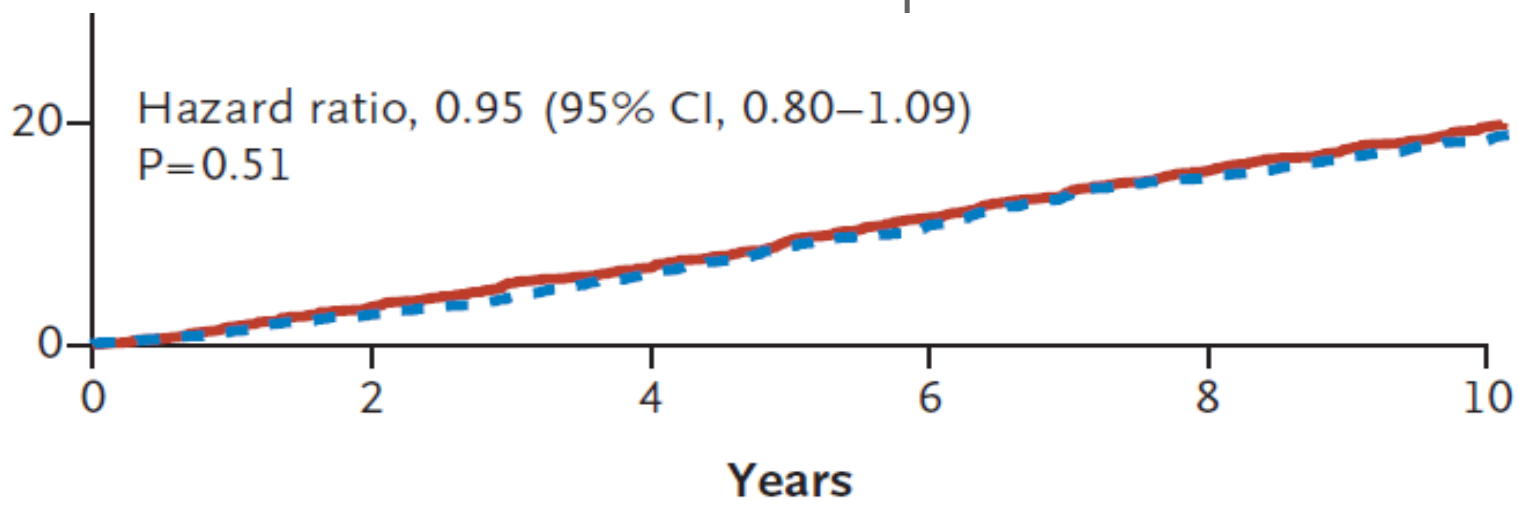
**A Weight**



**B Physical Fitness**

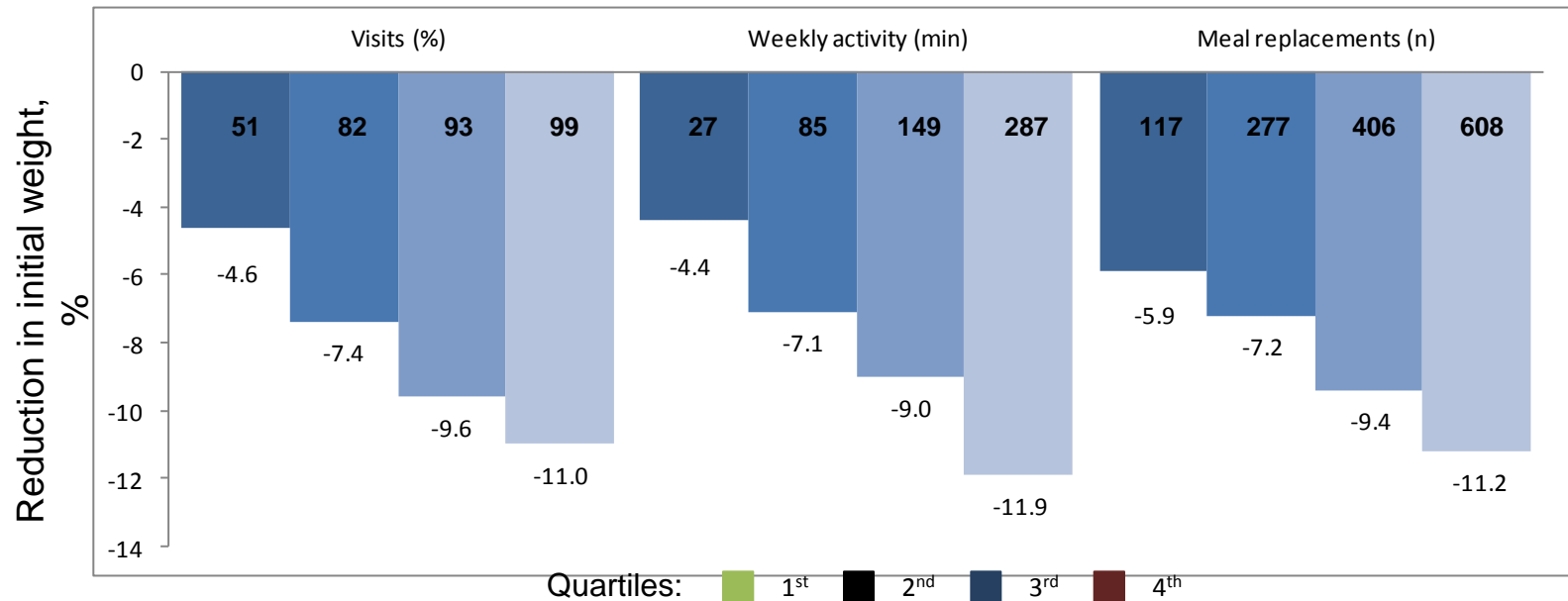


**Patients with End Point (%)**



# Factors associated with weight loss success

## 1-year data from Look AHEAD



Significant correlation between greater adherence (each measure) and weight loss ( $p < 0.001$ )

Mean weight loss value for each quartile printed at end of bar. Mean visits attended (%), weekly activity (mins), number of products used (n) per quartile group shown within bar. ILI, Intensive lifestyle intervention

# Why no difference between the groups in terms of CVD events ?

- May have needed sustained weight loss of more than that achieved by the intervention group may be required to reduce the risk of CVD
  - Difference between the 2 groups overall but only 2.4% by the end of the study
- Education and increased use of statins in the control group may have lessened the difference between the 2 groups
- Increased medical management of CVD risk in routine care over the study period
- Diet was based on a calorie deficit rather than diet manipulation e.g. Mediterranean diet

# Case Study 1 – 8 week weight loss on low calorie diet with exercise and behaviour change

- Weight at week 1 – 87.6kg BMI 38.4
- Week 3 - 85.3kg
- Week 5 – 83.8kg
- Week 7 – 81.3kg
- 7% weight loss in 8 weeks
- Patient reported improvements in functionality, BP improved, walking distance and activity level

# Case Study 2 – Behaviour approach

- Patient attended for weight loss following a cardiac rehabilitation programme
- Previously lost >12kg with a meal replacement programme. Did not want to try this approach again.
- Structured diet plan using a portion control approach instead of meal replacement
- Calorie deficit calculated to support 0.5-1kg weight loss per week

# Case Study 2 – Behaviour approach

- Weight at first appointment 86.2kg BMI 37.3kg/m<sup>2</sup>
- Week 3 – 85.5kg
- Week 5 – 85.9kg – weight re-gain, felt she had “let everyone down”
- Behaviour approach – used the toolbox, *Managing Negative Thoughts*
- Week 7 – 84.4kg – “turning point”
- Really engaged with behaviour change component of the programme.
- Week 10 – 83.2kg
- Achieved 6% weight loss in 6 months
- Improvements in functional and clinical outcomes

# DIOGENES STUDY

- Diet, Obesity and Genes
- The five-year programme started in 2005 and involves a consortium of 29 partners across Europe
- Five research arms RTD1-5
- RTD1: Obesity and macronutrient composition of the diet

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*The* NEW ENGLAND JOURNAL *of* MEDICINE

ORIGINAL ARTICLE

## Diets with High or Low Protein Content and Glycemic Index for Weight-Loss Maintenance

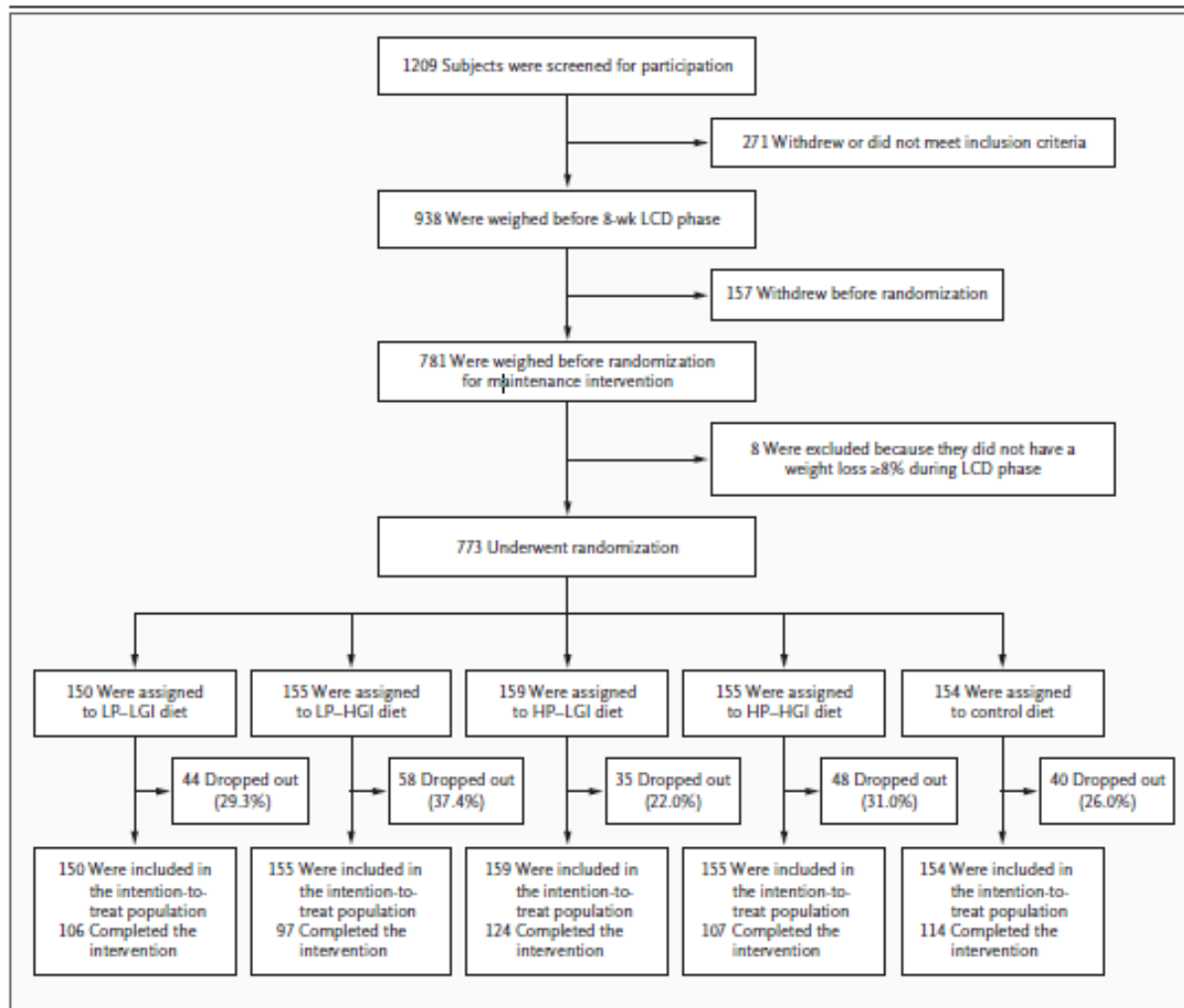
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Wim H.M. Saris, M.D., Ph.D., and Arne Astrup, M.D., Dr.Med.Sc.,  
for the Diet, Obesity, and Genes (Diogenes) Project

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ABSTRACT

# Study Design

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# Weight Loss Phase – 8 weeks

- 800kcal liquid meal replacement plus 400g vegetables
- Total calories 800-1000kcal per day
- Target  $\geq 8\%$  weight loss for at least one parent
- The median weight loss during the low-calorie diet was 10.3 kg (inter-quartile range: 8.7–12.8 kg,  $n = 775$ ).

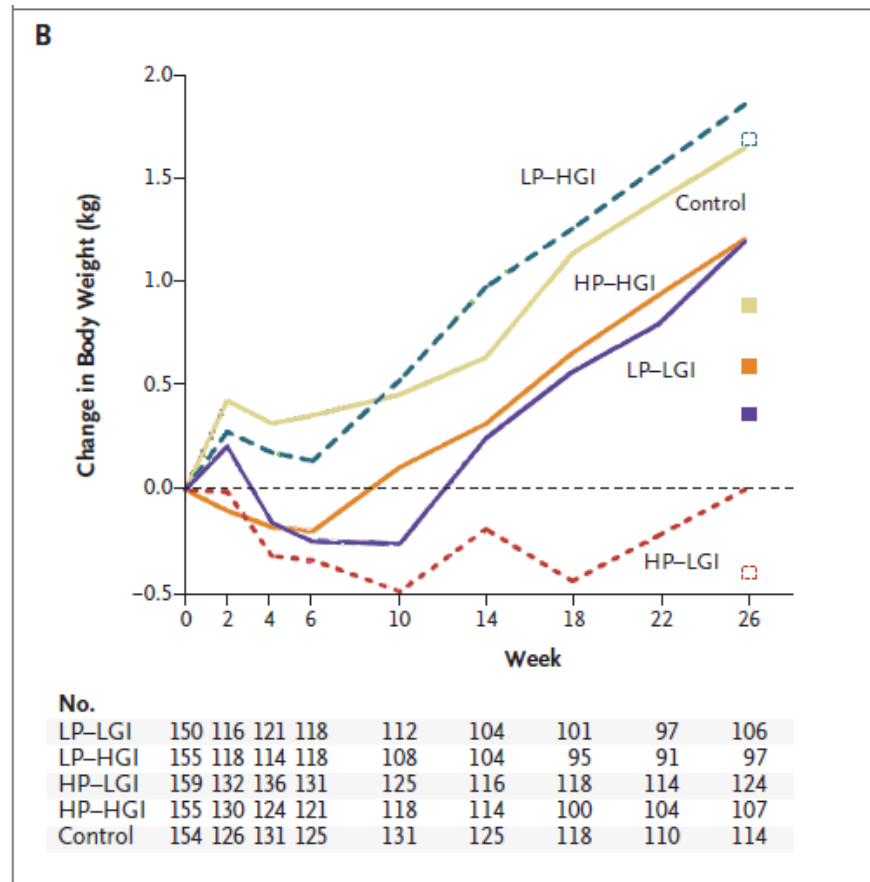
# Weight Maintenance phase – 26 weeks

- 733 randomised to one of five diets
    1. Low protein (13% of food energy) and low GI\*
    2. Low protein and high GI
    3. High protein (25% of food energy) and low GI
    4. High protein and high GI
    5. Control – following dietary guidelines from each country, moderate protein and no instructions on GI
- \*GI (Glycemic index) is a way of ranking CHO foods depending on the speed of their absorption. Low GI absorbed more slowly

# Additional support

- Dietary counselling every week for first six weeks and monthly thereafter
- Families provided with recipes, cooking and behavioural advice
- Points based system to achieve the targeted micronutrient composition

# Change in weight for each of the dietary groups during the weight maintenance intervention



# Results

- Weight ↑ during the maintenance phase was 0.93kg higher in the low protein group than in the high protein group
- 0.95kg higher in the high GI group than in the low GI group
- The high protein groups were more likely to achieve additional weight loss of more than 5% of body weight than at randomisation than the low protein groups
- Mean weight re-gain in the study was 0.56kg+/-5.44
- Only those assigned to low protein and high GI had significant re-gain
- Weight loss in all participants who completed the intervention was high 10.6kg

# Results

**Table 3. Weight Regain and Odds Ratios for Achievement of Additional Weight Loss of >5% of Body Weight at Randomization during the 26-Week Intervention.\***

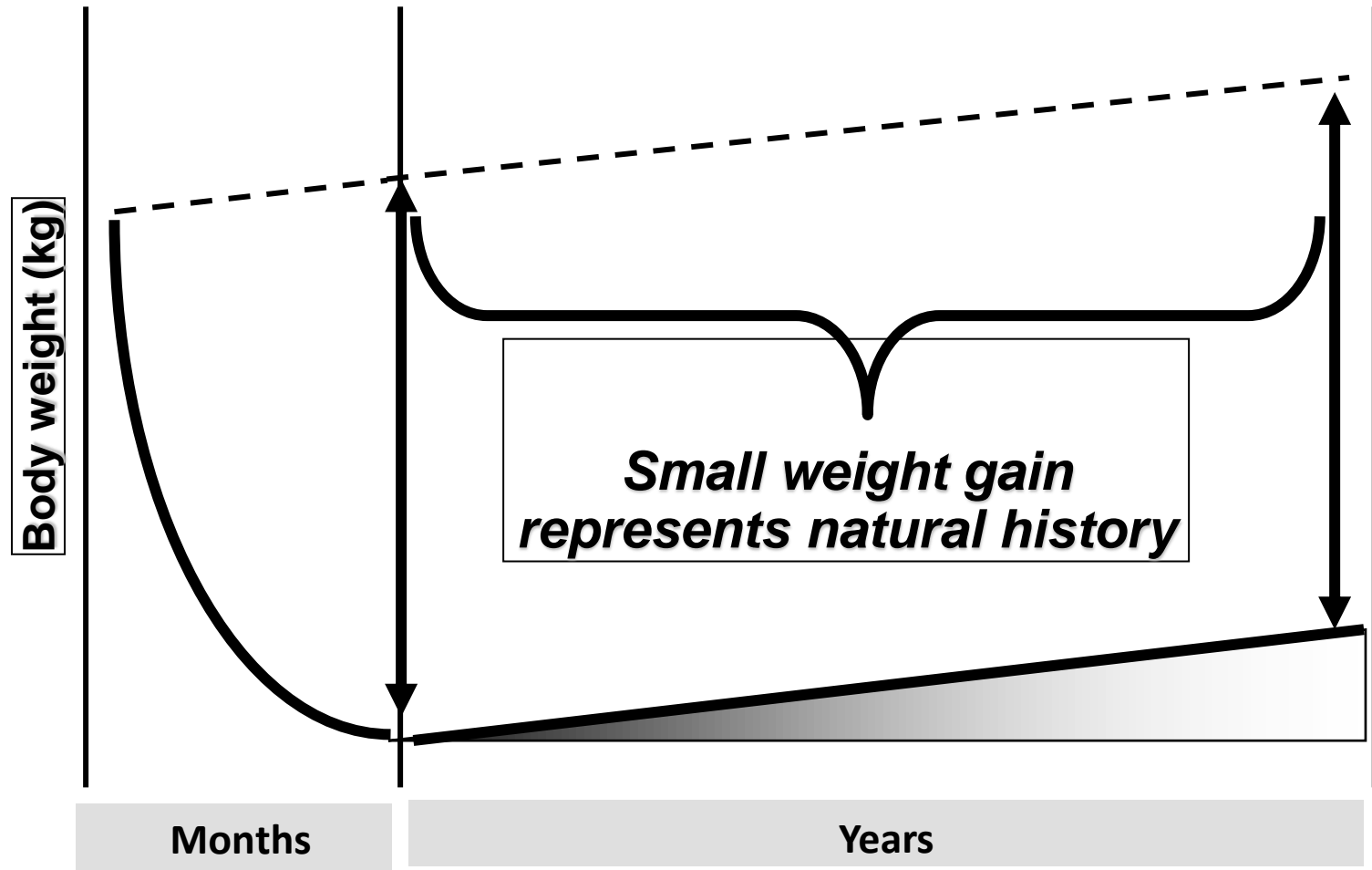
Variable	Low Protein	High Protein	Comparison of Protein Groups	P Value	High Glycemic Index	Low Glycemic Index	Comparison of Glycemic-Index Groups	P Value	Control
	Change in Body Weight kg (95% CI)		Low Protein – High Protein kg (95% CI)		Change in Body Weight kg (95% CI)		High-Glycemic Index – Low- Glycemic Index kg (95% CI)		Change in Body Weight kg (95% CI)
Weight regain									
Intention-to-treat analysis	1.62 (1.11 to 2.14)	0.69 (0.18 to 1.20)	0.93 (0.31 to 1.55)	0.003	1.63 (1.11 to 2.15)	0.68 (0.18 to 1.18)	0.95 (0.33 to 1.57)	0.003	1.76 (1.11 to 2.41)
Sensitivity analysis	3.20 (2.55 to 3.85)	2.19 (1.53 to 2.85)	1.01 (0.24 to 1.78)	0.01	3.19 (2.53 to 3.84)	2.20 (1.55 to 2.85)	0.99 (0.22 to 1.76)	0.01	3.00 (2.16 to 3.84)
Completion analysis	1.78 (0.96 to 2.60)	0.64 (–0.16 to 1.44)	1.14 (0.23 to 2.06)	0.02	1.75 (0.93 to 2.58)	0.67 (–0.12 to 1.45)	1.09 (0.18 to 2.00)	0.02	1.66 (0.67 to 2.66)
	Odds (95% CI)		Odds Ratio for High Protein vs. Low Protein (95% CI)		Odds (95% CI)		Odds Ratio for Low Glycemic Index vs. High Glycemic Index (95% CI)		Odds (95% CI)
Achievement of additional loss of >5% of body weight at randomization									
Intention-to-treat analysis	0.04 (0.02 to 0.07)	0.07 (0.04 to 0.12)	1.92 (1.06 to 3.45)	0.03	0.03 (0.02 to 0.06)	0.08 (0.05 to 0.13)	2.54 (1.38 to 4.66)	0.003	0.06 (0.03 to 0.12)
Sensitivity analysis	0.04 (0.02 to 0.07)	0.07 (0.04 to 0.12)	1.92 (1.06 to 3.45)	0.03	0.03 (0.02 to 0.06)	0.08 (0.05 to 0.13)	2.54 (1.38 to 4.66)	0.003	0.06 (0.03 to 0.12)
Completion analysis	0.05 (0.02 to 0.10)	0.11 (0.06 to 0.19)	2.20 (1.17 to 4.15)	0.02	0.04 (0.02 to 0.09)	0.12 (0.07 to 0.21)	2.89 (1.50 to 5.57)	0.002	0.09 (0.04 to 0.18)

\* The intention-to-treat analysis included all 773 participants who underwent randomization. In the sensitivity analysis, which also included all 773 participants who underwent randomization, we assumed a 1-kg weight gain per month for participants who had dropped out. The completion analysis included 548 participants for whom data were available from both the time of randomization and the end of the trial intervention.

# Conclusion

- Macronutrient modification with a diet higher in protein and lower in glycemic index can aid adherence , maintain weight loss and help prevent weight re-gain
- Why is the important?

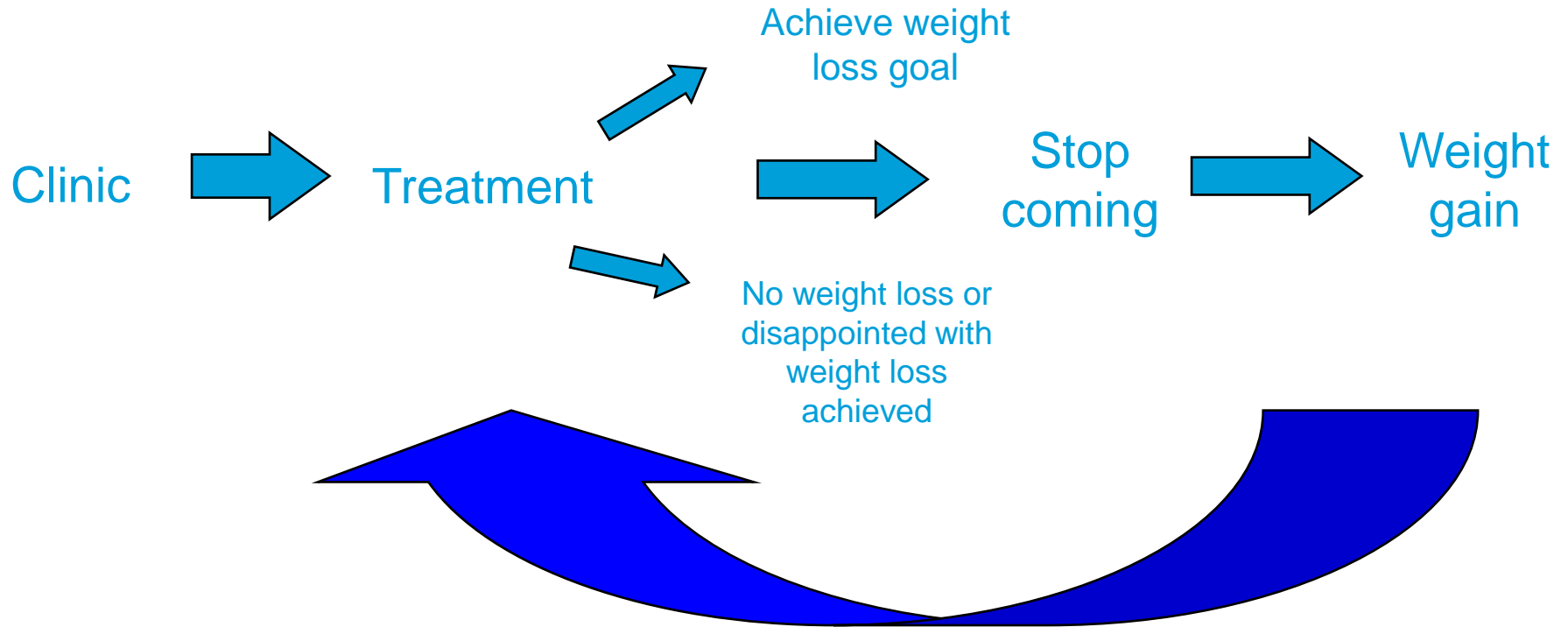
# Age-related weight gain



# Personalised approach

- Using the evidence base and clinical judgement develop an individualised approach for each patient
- **NICE guidelines [CG43]**
- 1.1.2.7 Interventions to improve diet (and reduce energy intake) should be multicomponent (for example, including dietary modification, targeted advice, family involvement and goal setting), be **tailored to the individual** and provide ongoing support.

# The challenge of weight management



# Conclusion

- Obesity is a chronic condition which cannot be cured but can be controlled with good interventions
- Practitioners should understand the complexity of obesity and convey this understanding and empathy to their patients – *“not their fault”*
- Use the evidence base to adapt the best dietary approach for your patients
- Review and follow up for successful weight loss maintenance