



European Association for the Study of Obesity

Medical Nutrition Therapy in Obesity Management

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Historically...nutrition & obesity

- Eat less, move more...
- Dieting...
- Linear relationship between energy restriction and weight loss...
- Focus on weight loss, not health...



The disease of obesity

○ Obesity: A complex chronic disease



○ Obesity: Excess or abnormal deposits of adipose tissue that impair health

Aims of nutrition interventions in obesity management?

- Improve health with obesity
 - Improve metabolic / mechanical / mental complications
 - ↓ excess / dysfunctional adiposity
- Support medical, psychological, pharmacological, physical and surgical interventions
- Promote long term nutritional strategies that are realistic → sustainable eating behaviours for that individual
- Promote a healthy relationship with food
 - Nourishment + enjoyment
- Promote satiety

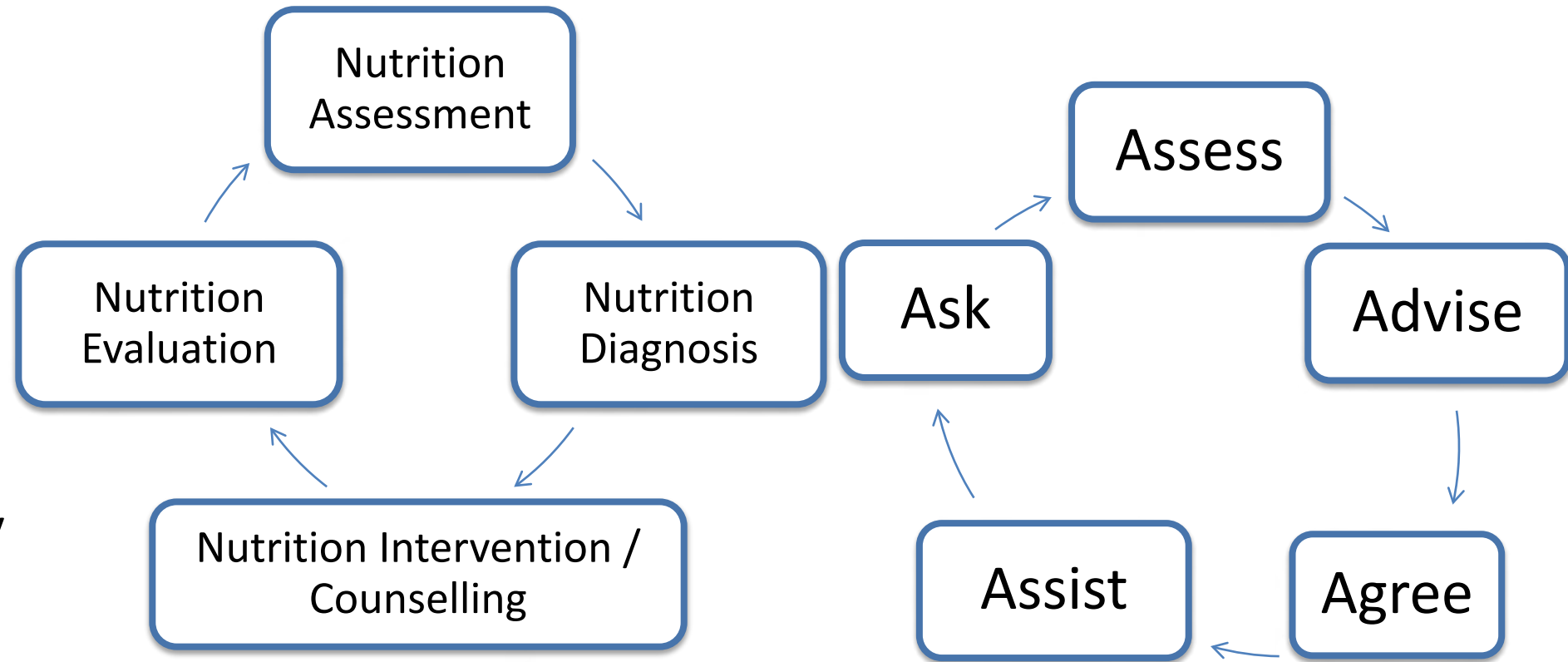
Why involve Registered Dietitians in obesity management?

- Combined clinical and behavioural interventions
- Registered Dietitians:
 - Understand wider neurobiological + environmental determinants
 - Understand social context of eating
 - Advanced communication, behaviour change and motivational interviewing skills
 - Regulated to undertake 'Medical Nutrition Therapy': nutrition assessment, diagnostics, therapy and counselling.



Medical Nutrition Therapy

- Identify health-related goals / problem areas
- Individualise, flexible interventions
- Incorporate concepts of best weight and obesity as a complex, chronic disease



Asking permission / raising the topic of food and weight

- Obesity stigma ↑ in relation to food + eating behaviours
 - Judgements about food
- Sensitive topic to raise
 - Negative experiences with HCPs in the past
- Social / pleasurable context of eating often lost
- Complex emotional relationship / psychopathology relating to food + eating



- ASK permission

“Would it be alright to talk about where food fits in for you?”

“Could we look at how eating affects your health / weight?”

“It’s possible the topics of increasing weight, high blood pressure, and diet are related. Would it be OK if we looked at that together?”

Nutrition **Assessment** in obesity: Clinical assessment

- Anthropometry
 - Weight, height, BMI, waist circumference
 - BIA / DEXA / CT
- Nutrition focused physical findings
 - Digestive system
 - Appetite
 - Odema / wounds
 - SARC-F / Hand-grip strength / knee extensor strength / chair-stand test
- Obesity Staging
 - EOSS



Nutrition **Assessment** in obesity: Clinical assessment

- Biochemistry
 - Medical complications e.g. T2DM, NAFLD
 - Micronutrient deficiencies: iron, Vitamin D, Vitamin B12, folate
- Nutritional requirements
 - Energy:
 - Indirect calorimetry
 - ['Mifflin St Jeor' equation] x [PAL]
 - [~30%]
 - Protein:
 - >1g/kg 'ideal' body weight / day
 - 1.2-1.5g/kg in sarcopenic obesity

Mifflin-St. Jeor Equation

Men: $(9.99 \times \text{weight}) + (6.25 \times \text{height}) - (4.92 \times \text{age}) + 5$
Women: $(9.99 \times \text{weight}) + (6.25 \times \text{height}) - (4.92 \times \text{age}) - 161$



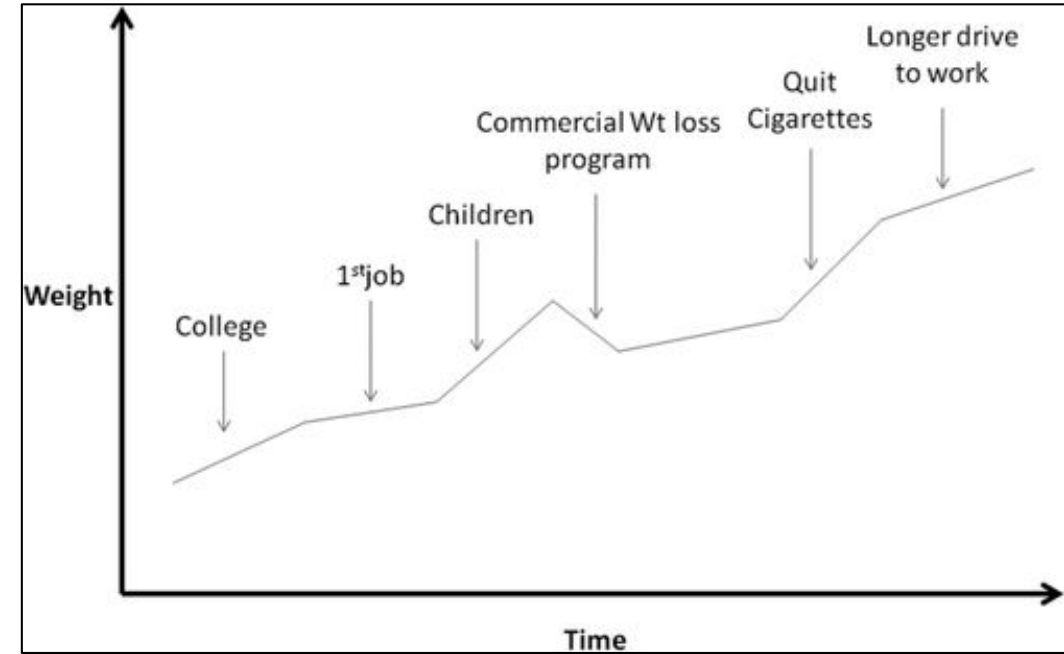
Nutrition **Assessment** in obesity: Clinical assessment

- Complications / associated conditions with (a) specific nutritional requirements or (b) impact on nutritional intake

Condition	Possible therapeutic dietary factors to consider
T2DM	Meal pattern, carbohydrate – quantity + quality; fat type
NAFLD	Alcohol, protein, salt, pre-sleep carbohydrate loading, fluid restrictions
Hypertension	Salt, alcohol
PCOS	Carbohydrate – quantity + quality; fat type
Kidney disease	Protein, potassium, phosphate, salt, fluid restrictions
OSA	Meal pattern, caffeine
Gastroesophageal reflux	Alcohol, spice, fat quantity
Sarcopenia	Protein
IBS	Meal pattern, fibre, probiotics

Nutrition **Assessment** in obesity: Behavioural assessment

- Weight history + weight targets
 - Nutrition interventions: ~3-8%
- Previous nutrition interventions
- Current eating behaviours
 - Diet history / 24 hour recall / Typical day
 - Self-monitoring records
- Food environment
 - Food access
 - Food preparation facilities + skills
 - Budget / food security
 - Social eating
- Food likes + dislikes



Disordered eating in obesity

- Associated with ↑ weight, metabolic dysfunction, ↑ psychopathology, ↓ mood, ↑ anxiety + sleep disorders
- Most common
 - Binge Eating Disorder: 1-47% (10% LABS)
 - Characterised by consuming an objectively large amount of food over a discrete period of time; accompanied by a sense of loss of control and distress
 - Night Eating Syndrome: 2-20%
 - Characterised by nocturnal hyperphagia, insomnia and morning anorexia
- Screening (in conjunction with Psychology colleagues in MDT)
 - Questionnaires: QEWP, EDE-Q, NEQ
 - Interviews: EDE, NESHI, SCID-1, SIAB
- Treatment
 - Medications: Lisdexamfetamine + SSRIs
 - CBT – incl. regulation + self monitoring of eating patterns

Nutrition **Advice** in obesity

- No single best nutrition intervention has been shown to sustain weight loss long-term
 - Literature supports the importance of long-term fidelity, regardless of the intervention
 - Tailored to meet individuals health- or weight-related outcomes
- Consider:
 - Nutritional requirements
 - Eating behaviours
- Explore:
 - What fits best with patients daily routines / food likes / budget / skills
 - Value of dietary self-monitoring
 - What building a healthy relationship with food and eating looks like for that person
 - Short term vs longer term strategies
 - Likely outcomes of various dietary interventions

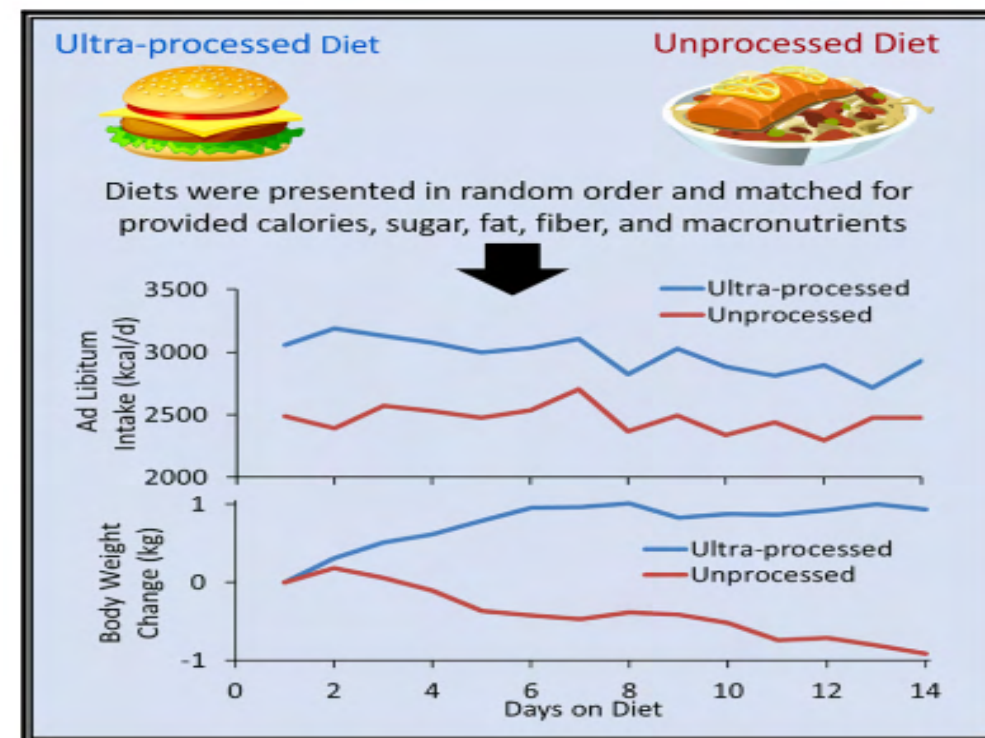
Nutrition **Advice** in Obesity: getting the basics right

○ Eating pattern

- Chrononutrition: Aligning feeding/fasting cycles with clock-regulated cycles helps may help to maintain behavioural and physiological circadian rhythms and health
 - OSA: sleep hygiene
 - Disordered eating

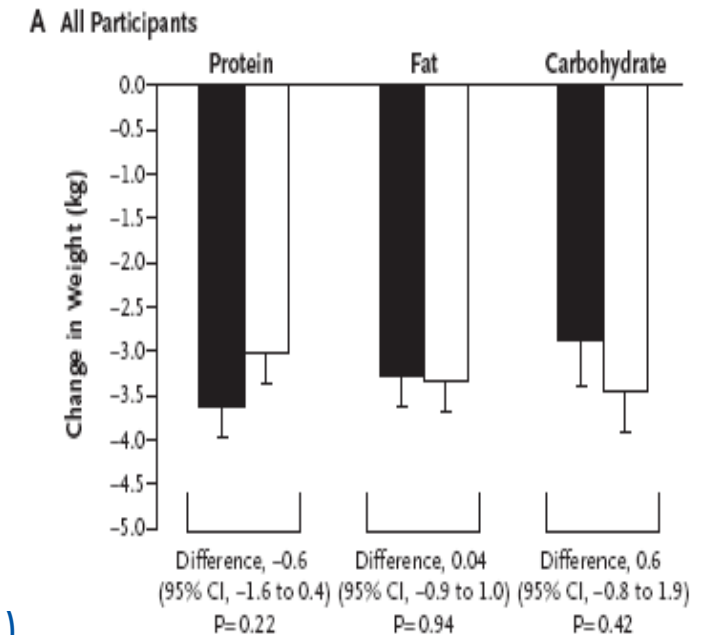
○ Dietary quality

- Reduce sugary sweetened beverages and high calorie (high fat / sugar / salt) processed foods
- Increase fibre, lean protein, fruit, vegetables and unsaturated fat sources



Nutrition **Advice** in obesity: Lower calorie diets

- 800-1500kcal/d (30% energy deficit)
 - ↓ energy density by ↓ portions of higher calorie foods + ↑ fibre (fruit / vegetables)
 - Manipulating macronutrients e.g. ↓ fat / carbohydrate / ↑ protein diets
- RCT – Sacks et al (2009)
 - 811 adults with overweight
 - 4 diets: fat / protein / carbs:
 - 20, 15, and 65%;
 - 20, 25, and 55%;
 - 40, 15, and 45%;
 - 40, 25, and 35%.
 - 2 year follow-up
 - Satiety, hunger, satisfaction similar
 - All improved CV risk factors
 - Attendance strongly associated with weight loss (0.2kg / session)



Nutrition **Advice** in obesity: Lower calorie diets

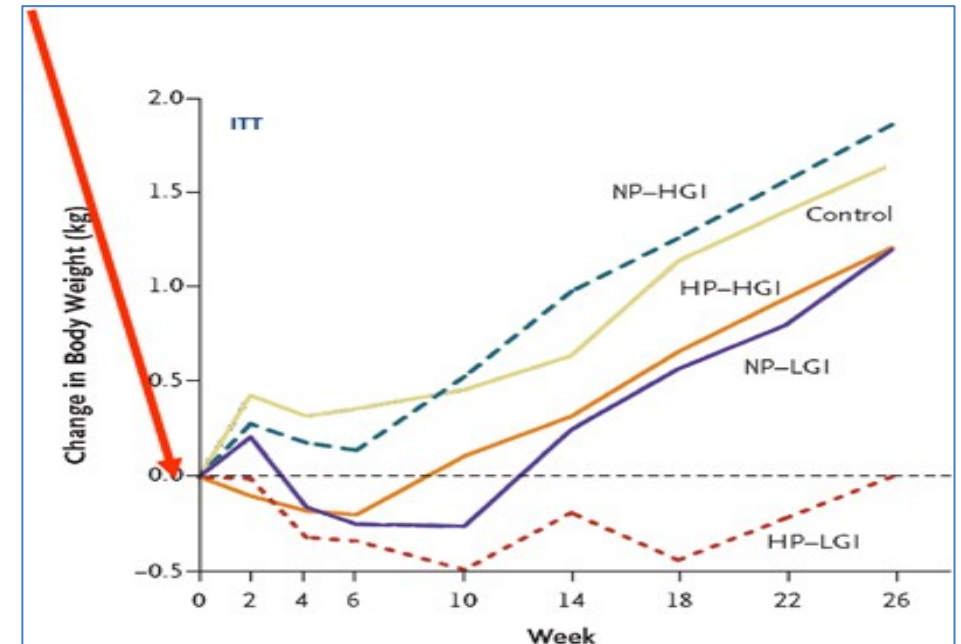
○ MA – Johnson (2014)

- 48 RCTS (n7286)
- Significant weight loss with any low-carbohydrate or low-fat diet
- Weight loss differences between individual named diets were small

		12-mo Weight Loss, kg			
6-mo Weight Loss, kg	No diet (6 mo: 0; 12 mo: 0) ^a	5.16 (2.68 to 7.63)	5.70 (4.14 to 7.35)	7.25 (5.33 to 9.25)	7.27 (5.26 to 9.34)
	6.07 (4.23 to 7.84)	LEARN (6 mo: 0; 12 mo: 0.02) ^a	0.55 (-1.71 to 2.87)	2.10 (-0.20 to 4.47)	2.12 (-0.33 to 4.59)
	6.78 (5.50 to 8.05)	0.71 (-0.97 to 2.44)	Moderate macronutrients (6 mo: 0; 12 mo: 0) ^a	1.55 (0.13 to 2.95)	1.56 (-0.17 to 3.30)
	8.73 (7.27 to 10.20)	2.66 (0.93 to 4.44)	1.95 (1.13 to 2.79)	Low carbohydrate (6 mo: 0.83; 12 mo: 0.48) ^a	0.02 (-1.78 to 1.79)
	7.99 (6.01 to 9.92)	1.92 (-0.19 to 4.06)	1.20 (-0.42 to 2.79)	-0.74 (-2.31 to 0.78)	Low fat (6 mo: 0.17; 12 mo: 0.50) ^a

○ Quality of macronutrients

- Isocaloric replacement of refined carbohydrate + SFA with high-quality MUFAs (from olive oil, avocado, nuts and seeds), protein + high-quality low GI carbohydrates is associated with weight maintenance (following LED), ↓ CHD + ↓ mortality



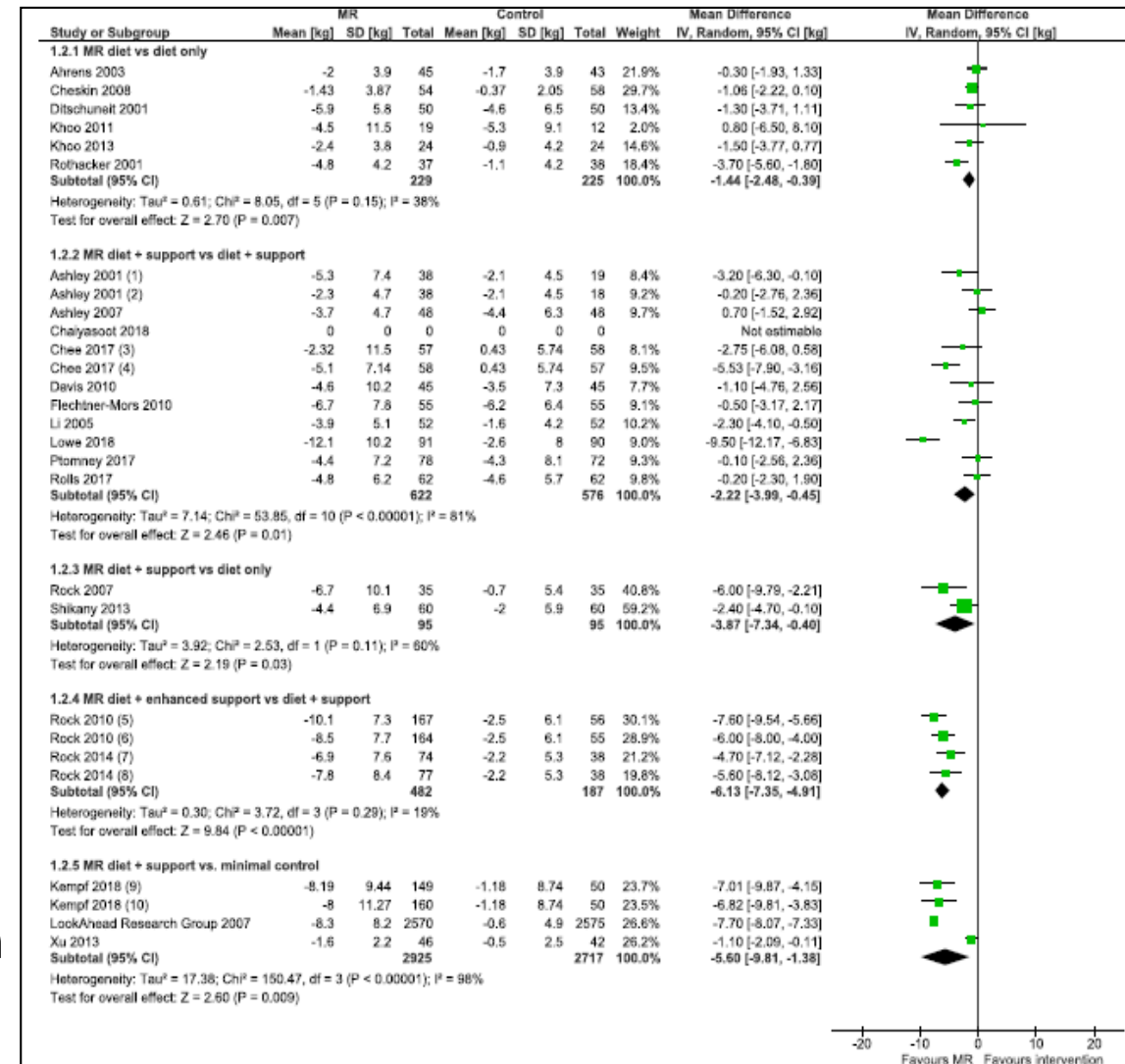
Nutrition **Advice** in obesity: Specific dietary patterns

- Mediterranean dietary pattern:
 - Improve glycaemic control, ↓ HDL-C, ↓ triglycerides, ↓ CV events + ↓ T2DM risk
- DASH dietary pattern:
 - Improve glycaemic control, ↓ body weight, ↓ waist circumference, ↓ LDL-C, ↓ blood pressure, ↓ CRP, ↓ CVD risk, ↓ CHD risk, ↓ T2DM risk + risk of stroke
- Low-glycaemic index dietary pattern:
 - Improve glycaemic control, ↓ body weight, ↓ LDL-C, ↓ blood pressure, ↓ CHD risk + ↓ T2DM risk
- Vegetarian dietary pattern:
 - Improve glycaemic control, ↓ LDL-C, ↓ body weight, ↓ CV disease incidence, ↓ risk of T2DM + ↓ mortality
- Nordic dietary pattern:
 - Improve blood pressure, ↓ body weight, ↓ weight regain, ↓ LDL-C / Apo B / non-HDL-C, ↓ CVD risk + ↓ all cause mortality



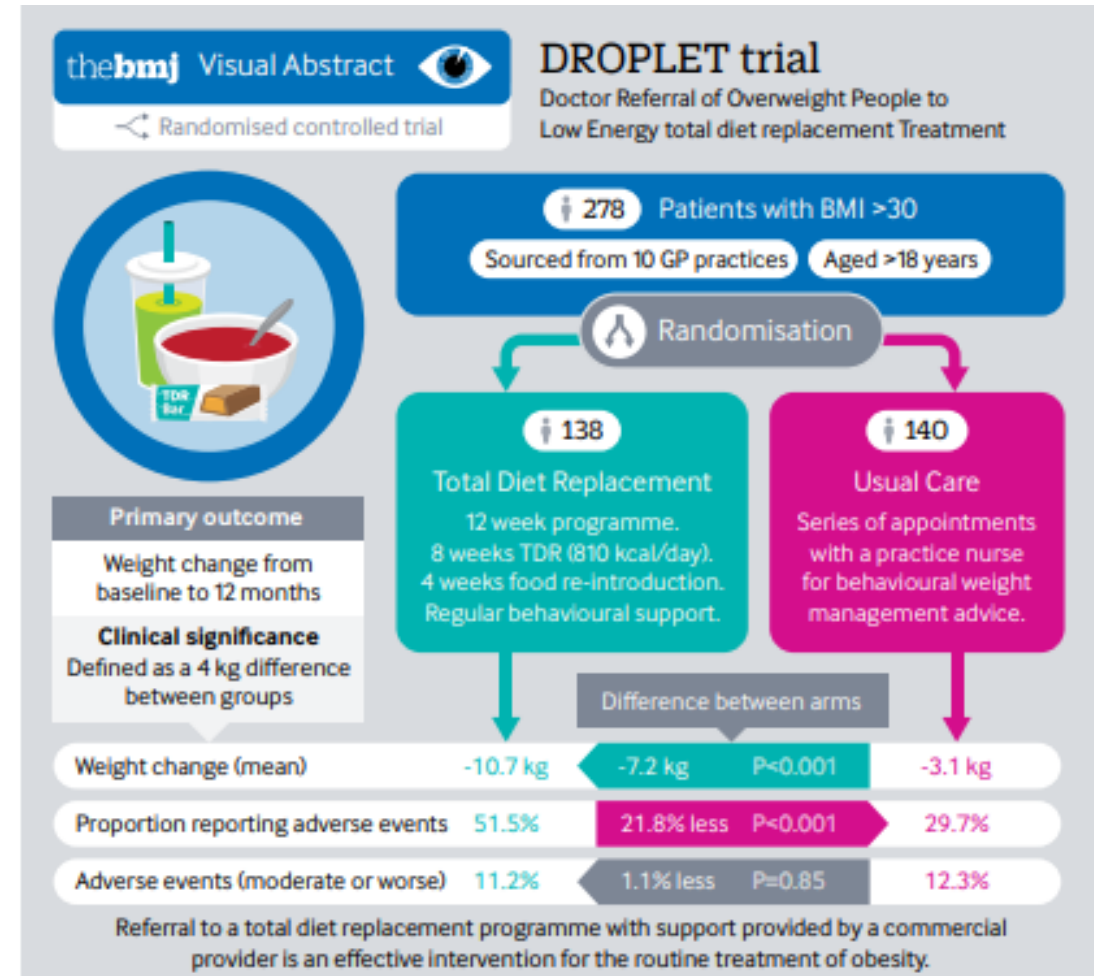
Nutrition **Advice** in obesity: Partial meal replacements

- Low calorie ($>800 \leq 1600$ kcal/day)
 - 1-2 portioned-controlled, micronutrient fortified products + reduced calorie meals/snacks
 - Soups / shakes / bars / ready meals
- Products typically ~250 calories / serving
 - 2 x 250 kcal MRs
 - 1 x 500 kcal balanced meal
 - +/- 100 kcal snacks
- Higher vs. lower use associated with:
 - 4 x likelihood of achieving $\geq 7\%$ weight loss goal at 12 mo
 - $\downarrow$ HbA1c, lipids + blood pressure
- Longer term use assoc/w 3 year wt stability
- Enhanced outcomes w/ behavioural intervention



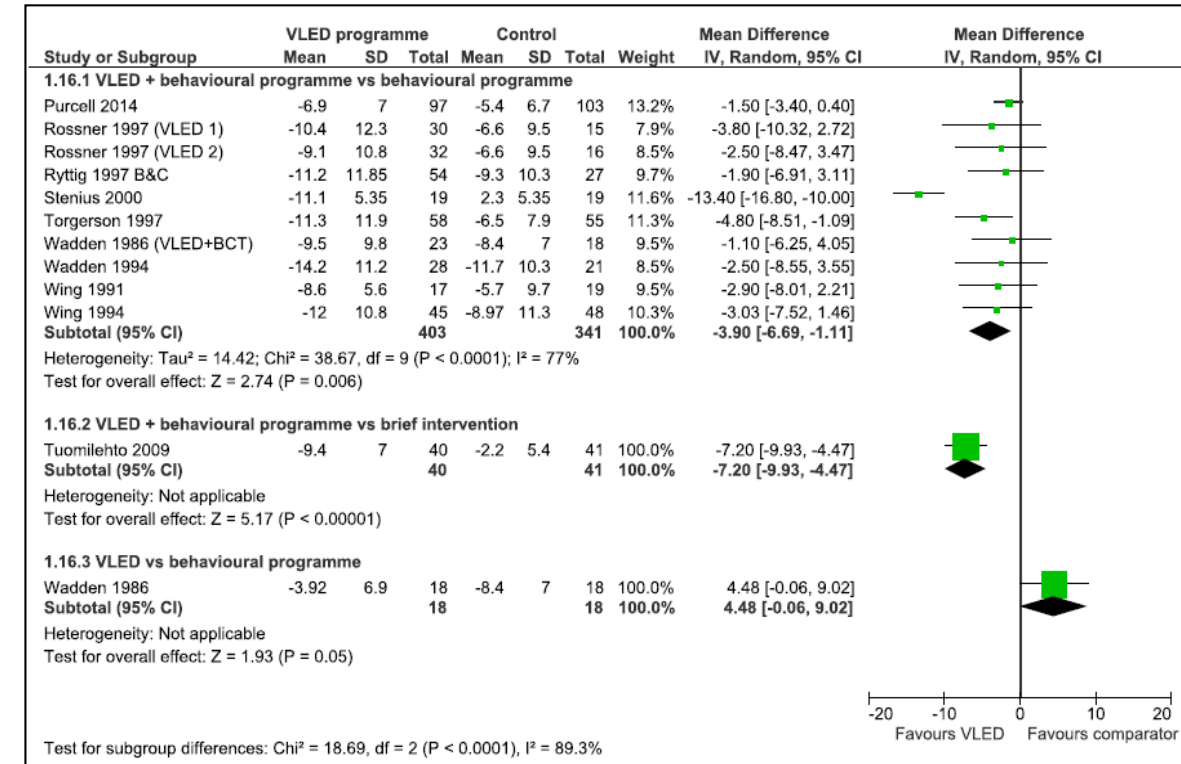
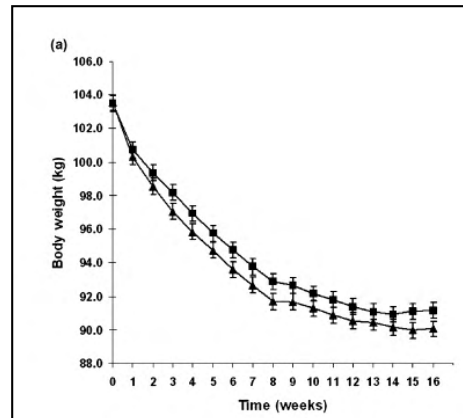
Nutrition **Advice** in obesity: Total diet replacement

- Low calorie ($>800 \leq 1200$ kcal/day) diet
 - Total food replacement with micronutrient fortified liquid formula
 - Soups / shakes / milk-based
- Typically 8-20 weeks duration
 - Structured food reintroduction
- 7-10kg weight ↓ @ 12/12
- Enhanced outcomes with behavioural intervention
- Intermittent use (3 x 5/52/year) assoc/w 3 year weight maintenance
- Type 2 diabetes remission + ↓ insulin req
 - 36% of participants @ 24/12
 - 73% of participants with >10 kg weight loss @ 12/12



Nutrition **Advice** in obesity: Very low energy diets

- Very low energy diets (<800 kcal/day)
 - Total food replacement with micronutrient fortified liquid formula
- Short-term weight ↓ with VLED > LCD (16.1 ± 1.6 vs. 9.7 ± 2.4%) but similar long-term losses (6.3 ± 3.2 vs. 5.0 ± 4.0%)
- Enhanced outcomes with behavioural intervention

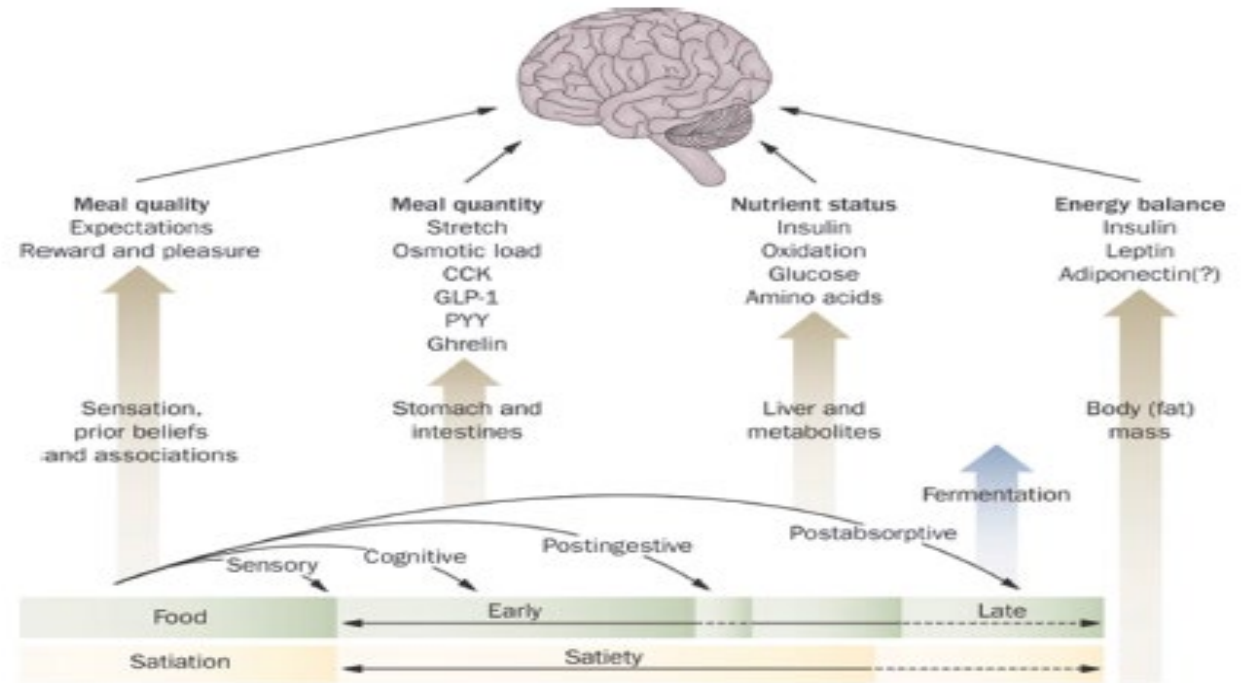


Nutrition **Advice** in obesity: Additional considerations with formulae diets

- Weight loss / maintenance outcomes improved with:
 - Concurrent multicomponent behavioural intervention (+ group support)
 - Gradual food reintroduction (> 6/52)
 - Use of obesity pharmacotherapy
 - Higher protein diets
- Better maintenance of lean tissue
 - Include physical activity
- Lower calorie options under medical supervision:
 - Reduce insulin, oral hypoglycaemics, anti-hypertensives
- Common side-effects:
 - Constipation, fatigue / muscle weakness, headache, dizziness, gallstone event
- Limited evidence in CKD / NAFLD

Dietary strategies to maximise satiety

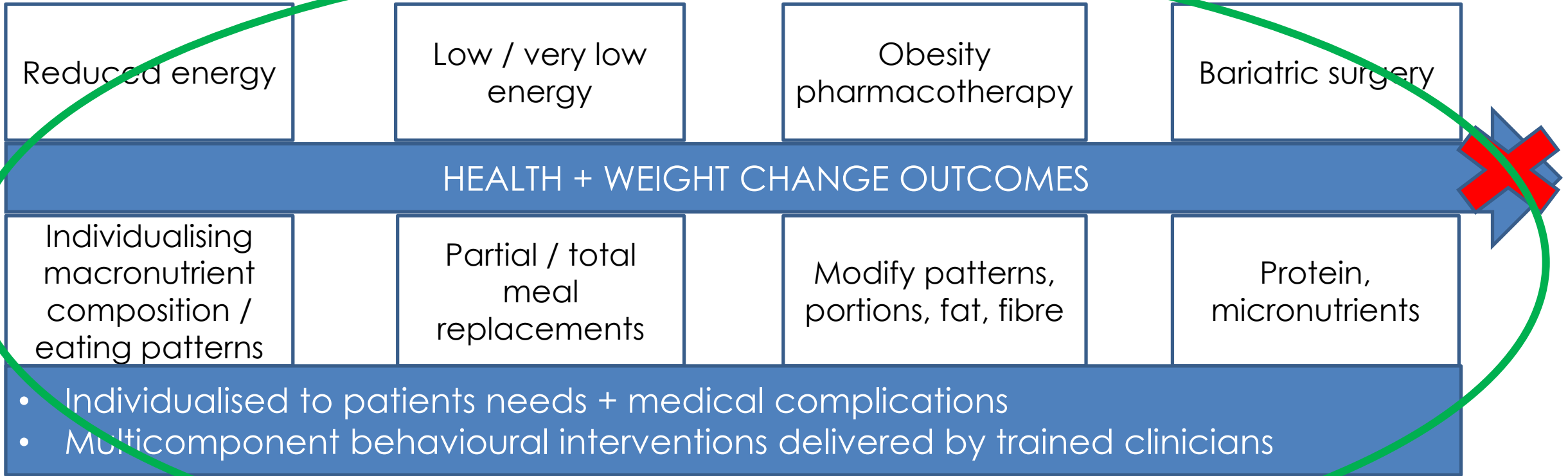
- ↑ protein
- ↑ fibre (insoluble)
- ↑ water
- ↑ food volume
- ↓ glycaemic index
- Non-distracted eating



Nutrition **Advice** in obesity: Nutrition and obesity pharmacotherapy

Agent	Orlistat (Xenical)	Liraglutide (Victoza) / Semaglutide (Ozempic)	Naltrexone/ Bupropion (Mysimba)
Side effects	Loose oily stools (steatorrhea), flatus	Transient nausea, constipation, vomiting, diarrhoea	Transient nausea, constipation, dry mouth, headache, dizziness, diarrhoea
Dietary counselling	- Low fat diet - Consider multivitamin OD (2 hours before/after medication)	- Nausea / diarrhoea: meal pattern; portion size; low fat foods - Constipation: fibre & fluid; consider a laxative	- Nausea: meal pattern; portion size; low fat foods - Constipation: fibre & fluid; consider a laxative - Dry mouth / dizziness: hydration

Nutrition **Advice** in obesity: individualised approach



Agreeing nutrition goals / ALL TREATMENT PLANS in obesity OR ANY CHRONIC DISEASE!

- Assessment + exchanged information about treatment options → agreeing a plan
- Behavioural strategies
 - Agreeing realistic collaborative goals
 - Unrealistic goals can set an individual up for failure and may cause them to blame themselves ('I have no willpower') when it is treatment itself that is at fault
 - Developing confidence in overcoming barriers (self-efficacy) and intrinsic motivation (personal, meaningful reasons to change)
 - Developing problem-solving and adaptive thinking /cognitive reframing (avoiding all or nothing thinking e.g. 'on / off' the plan)
 - Identify antecedent events (triggers) to behaviours & try new responses to them
 - Self monitoring: eating behaviours, health outcomes
 - Stimulus control: shopping lists, meal planning

Assisting patients with nutrition care plans in obesity

- Provide or signpost to education and resources
 - Credible & evidence based
- Arrange follow up / provide support
- Address barriers to implementing plans / escalate treatment
 - What's going well with the plan?
 - What's not going so well?
 - What would help with implementation?
 - Environmental; socioeconomic; emotional; medical
 - Do we need to change the plan / consider other options?
 - Investigations / Interventions
- Refer onwards
 - Specialist obesity centre; local dietetic / psychology / physiotherapy services, bariatric surgery
 - Guide expectations on waiting times

Health indicators for evaluating nutrition interventions

Health Improvement	Health indicator	Example
Cognitive improvements	Memory, concentration, attention, problem solving, sleep hygiene	Rate each of these health outcomes using a 0–10 scale, where 0 is low/poor and 10 is high/great: – Energy levels – Stress – Sleep hygiene – Mobility – Strength – Pain – Bowel health – Mood – Relationship with food – Hunger – Cravings – Overall health
Functional improvements	Strength, flexibility, mobility, coordination, physical activity capacity, endurance, pain	
Medical improvements	Cardiometabolic, endocrine, gastrointestinal, wound care, nutrient deficiencies, changes to medications	
Body composition improvements	Body fat, muscle mass, bone health, waist circumference	
Appetite-related improvements	Hunger, satiety, cravings, drive to eat, palatability of foods	
Mental health	Disordered eating behaviours, self-esteem, self-efficacy, emotional regulation, mood/anxiety, addiction	

Thank you

- Questions?
- Case studies
 - Practical application

Come to Dublin!

