

A Comprehensive Approach To Treating Obesity with the VLCD and Meal Replacement Products

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Objectives

- Review the current treatment paradigm and guidelines for obesity management, including the role of the VLCD and Meal Replacement (MR) Products
- Discuss the efficacy and safety of the VLCD utilizing MR
- Discuss the team management of obesity treatment during the VLCD and weight loss maintenance

Pillars or Foundation of Obesity Management

- Diet
- Physical Activity
- Behavior Changes
- Obesity is a complex disease requiring comprehensive, lifetime treatment by multispecialties as exemplified by hormonal changes in weight loss maintenance



VLCD

Very Low Calorie Diets

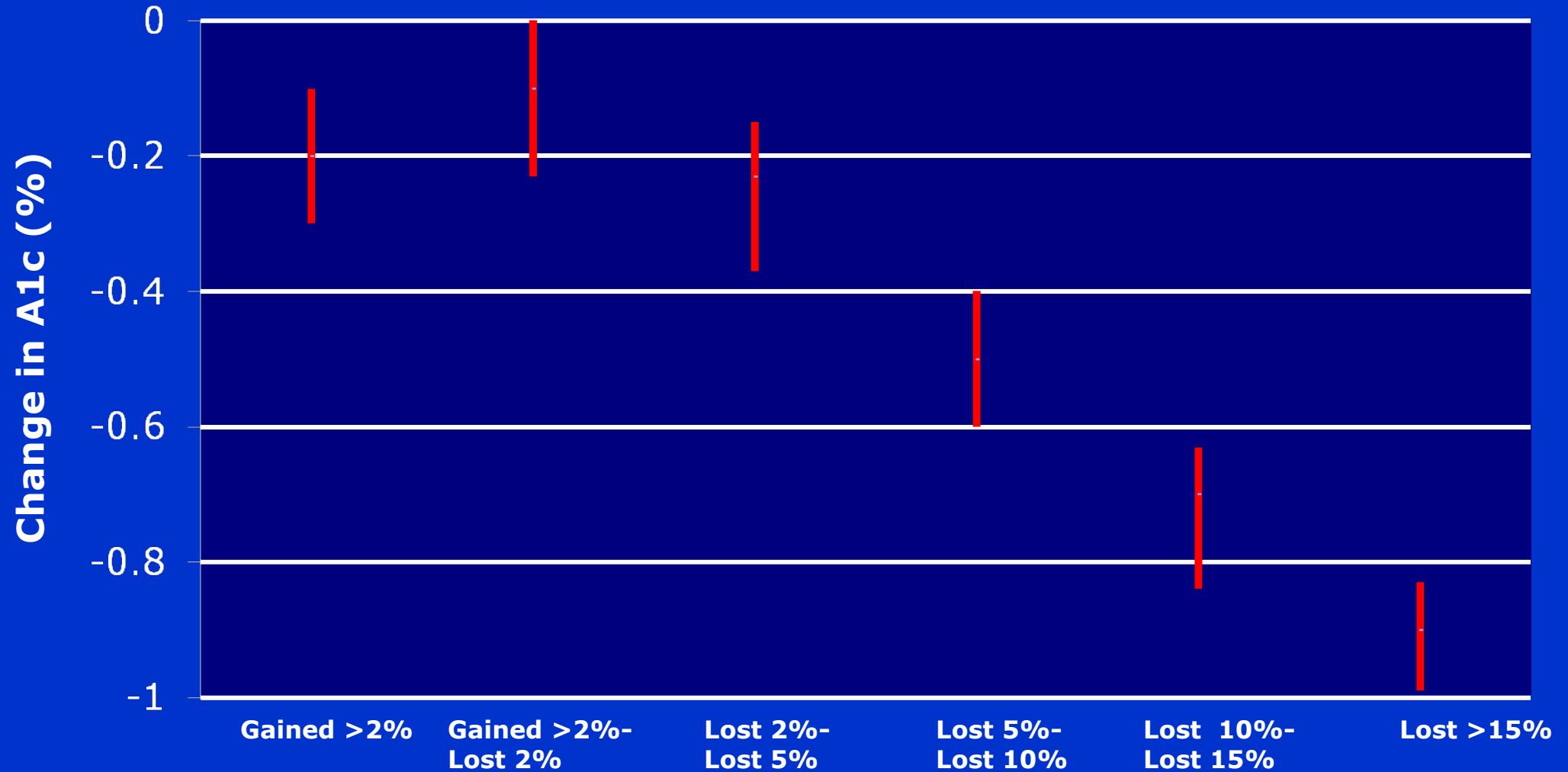
- 800 kcal/diet (600-1000 kcal)
- 2-5lb + weekly weight loss
- Meal replacements
- Quality protein/electrolytes
- Medical
supervision/comprehensive/multidisciplinary
- USPTF
- Relative contraindications
- Transition to LCD

Obesity Management Guidelines

VLCD

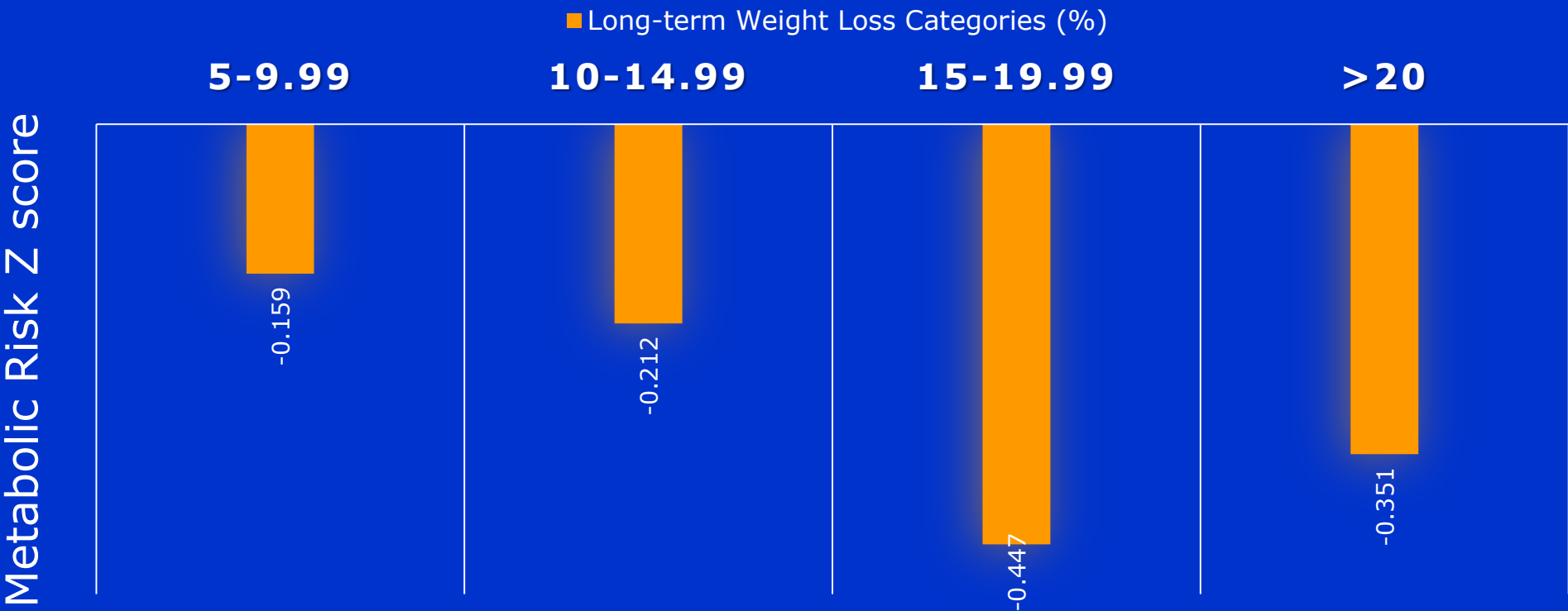
- USPTF – intensive, multicomponent behavioral interventions in adults with obesity can lead to significant improvements in weight
- AACE – VLCD can lead to diabetes remission and > 10% weight loss can ameliorate obesity related diseases
- AHA/TOS – advise > 6 months in comprehensive program, VLCD with medical monitoring

Benefits of Modest Weight Loss in Improving Cardiovascular Risk Factors in Overweight and Obese Individuals with Type 2 Diabetes



Long-Term Weight Loss and Metabolic Health in Adults Concerned With Maintaining or Losing Weight: Findings From NHANES

LONG-TERM WEIGHT LOSS CATEGORIES (%)

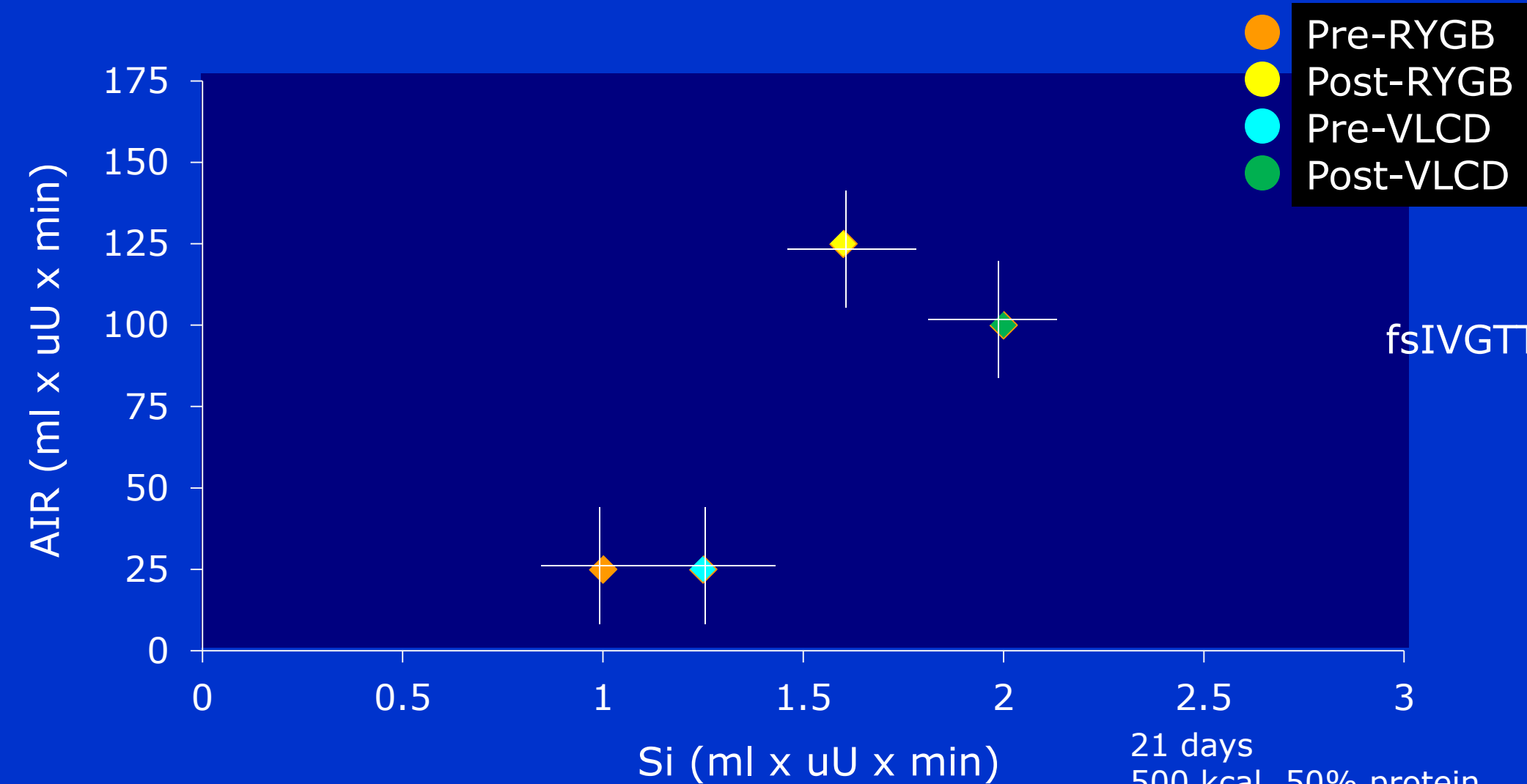


VLCD Structure

Day Zero WLM

- Initial evaluation
 - Physical exam, labs, EKG
 - Behavioral and dietary assessments
- Follow-up
 - Labs, exams, medication adjustments
 - Weekly assessments and strategies
- Individualized duration
- Transition to LCD to meal-based plan
- Weight Loss Maintenance

Very Low Calorie Diet Mimics the Early Beneficial Effect of Roux-en-Y Gastric Bypass on Insulin Sensitivity and Beta-cell Function in Type 2 Diabetic Patients



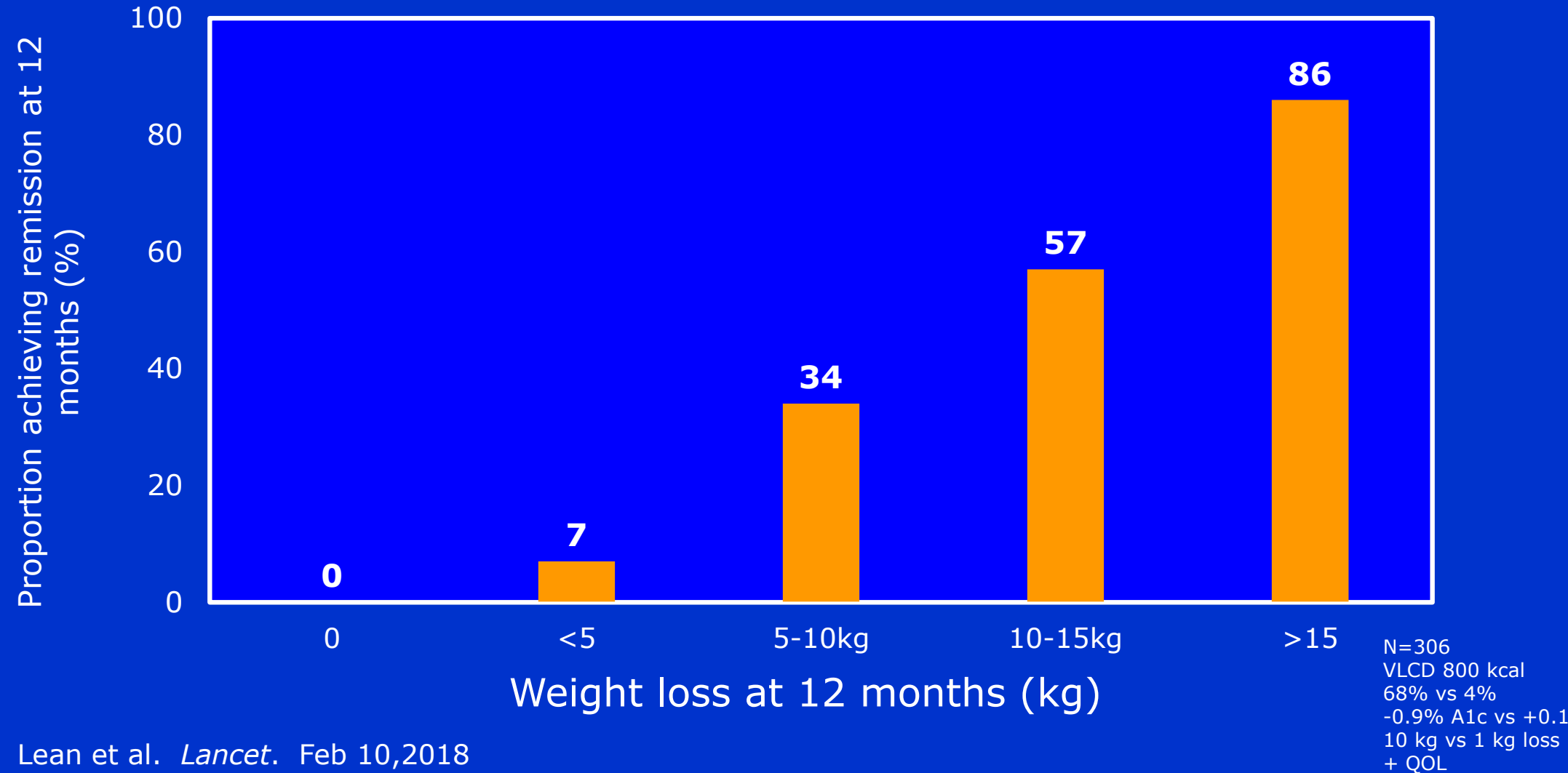
21 days
500 kcal, 50% protein
Glucose, hormones similar

Effect of Diet versus Gastric Bypass on Metabolic Function in Diabetes

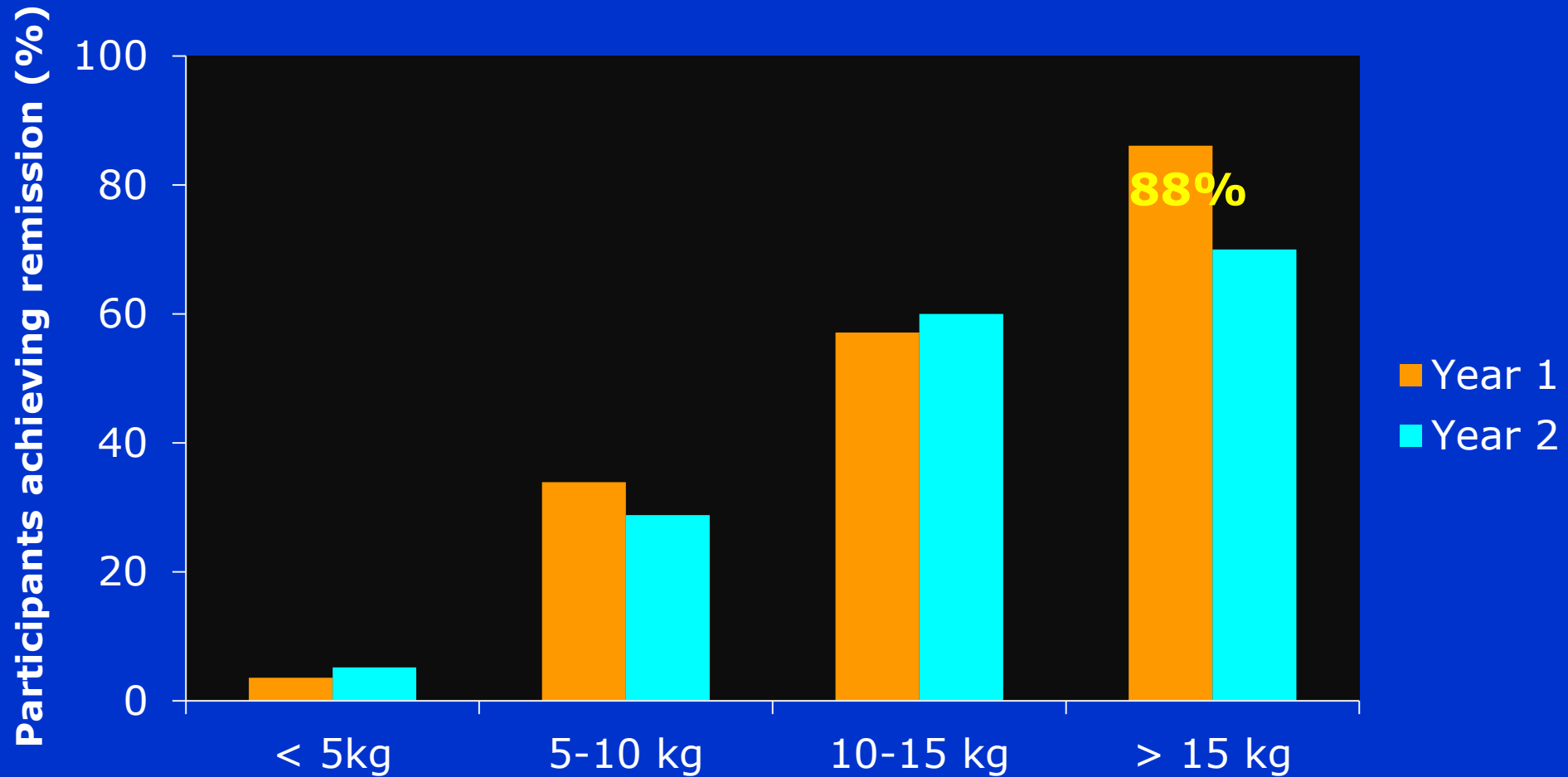
- n= 22
- 18% weight loss
- Weight loss was associated with increases in suppression of glucose, increases in insulin-stimulated glucose disposal and increased beta-cell function.
- No differences between groups

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

Local staff/ 8h



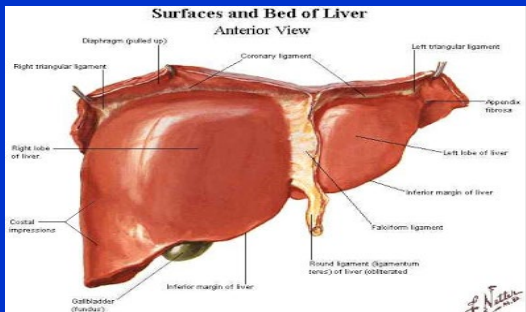
Durability of a primary care-led weight-management intervention for remission of type 2 diabetes: 2-year results of the DIRECT open-label, cluster-randomized trial



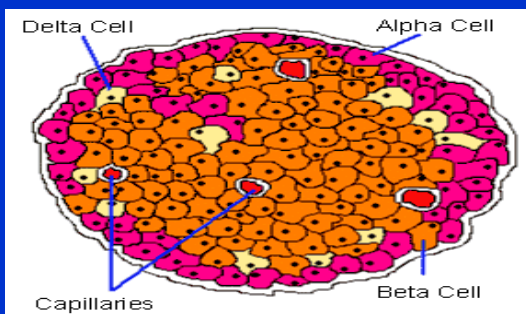
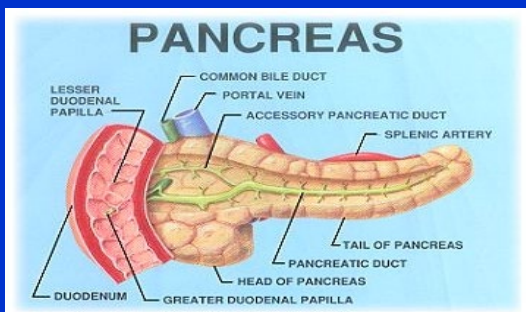
Sustained remission in 36% at 24 months
Linked to extent of weight loss
9 vs 22 AE

Remission of Human Type 2 Diabetes Requires Decrease in Liver and Pancreas Fat Content but Is Dependent upon Capacity for B Cell Recovery

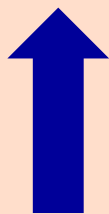
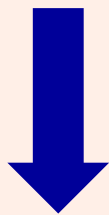
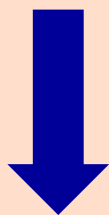
FAT



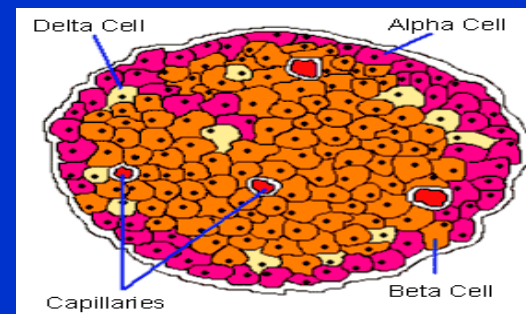
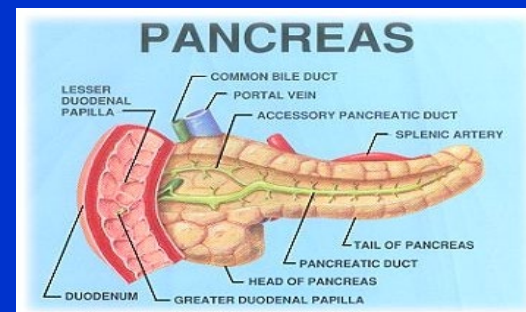
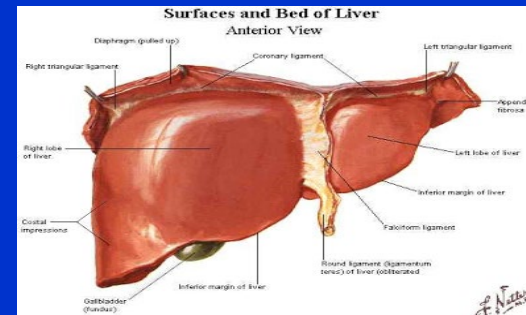
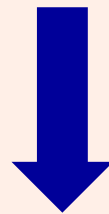
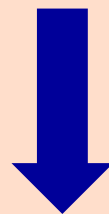
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Responder

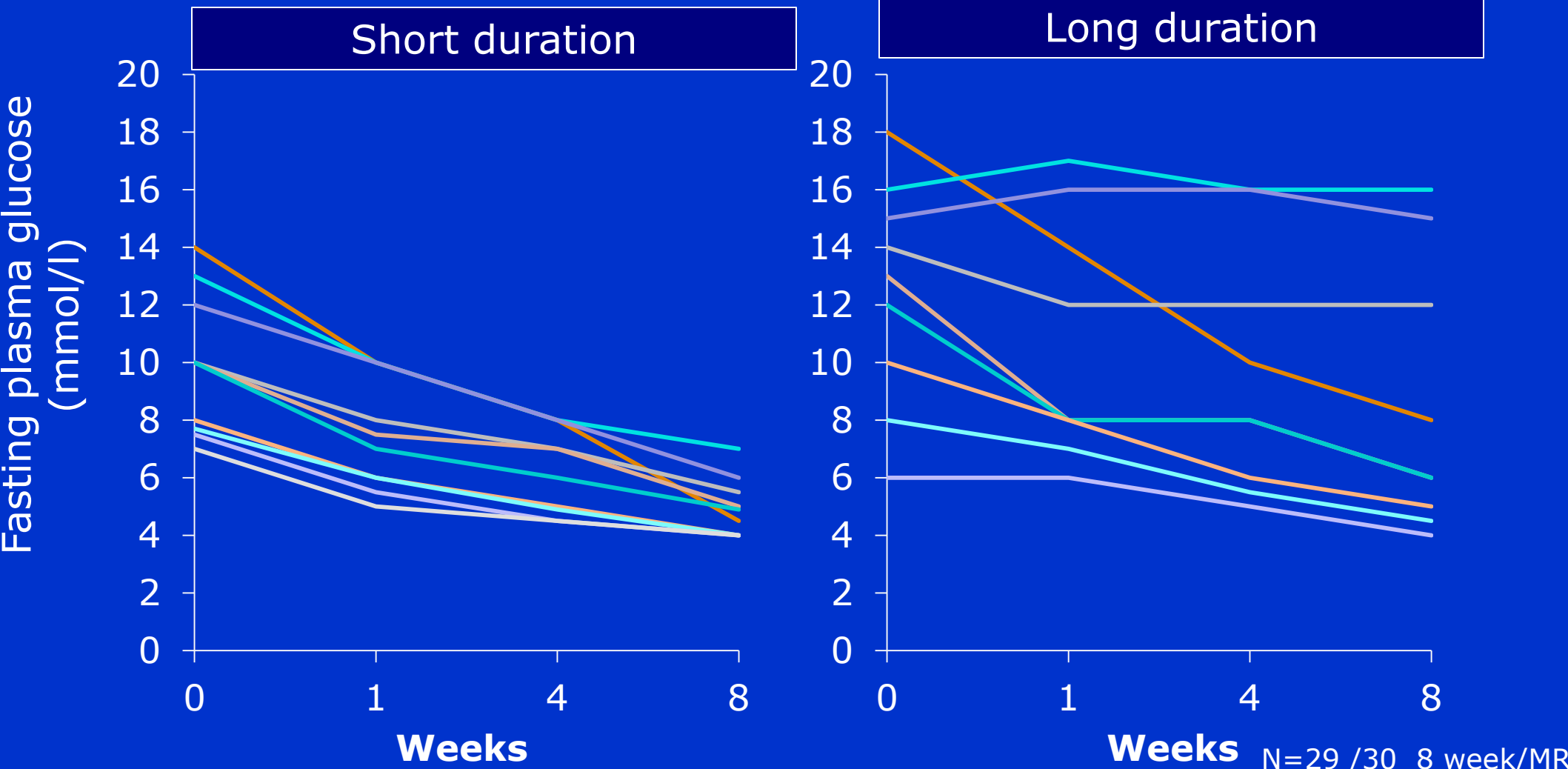


Non-responder

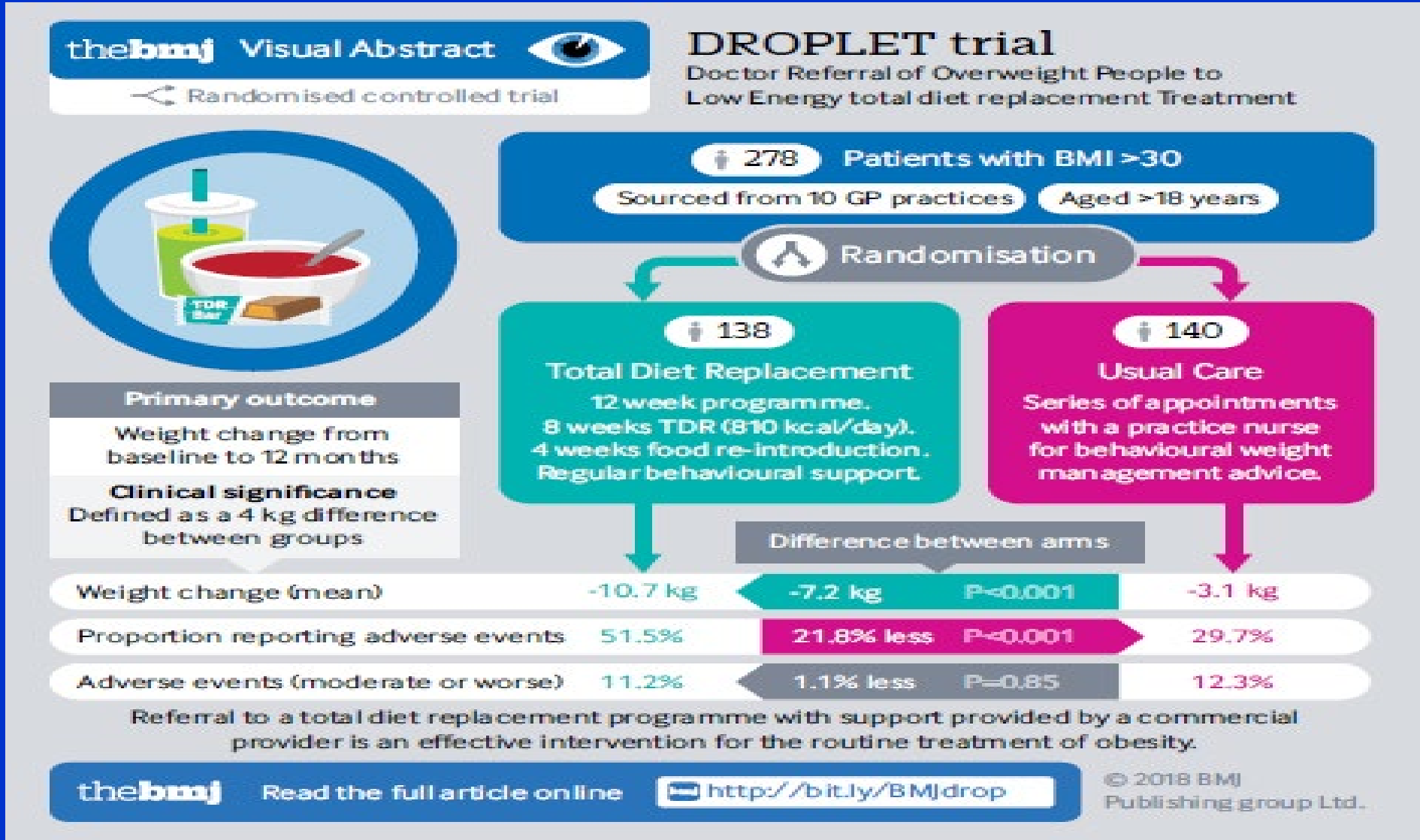


Restoring normoglycemia by use of very low calorie diet in long and short term duration type 2 diabetes

87% vs 50% achieved normal fasting glucose



Doctor Referral of Overweight People to Low-Energy Treatment (DROPLET) pragmatic randomized controlled trial



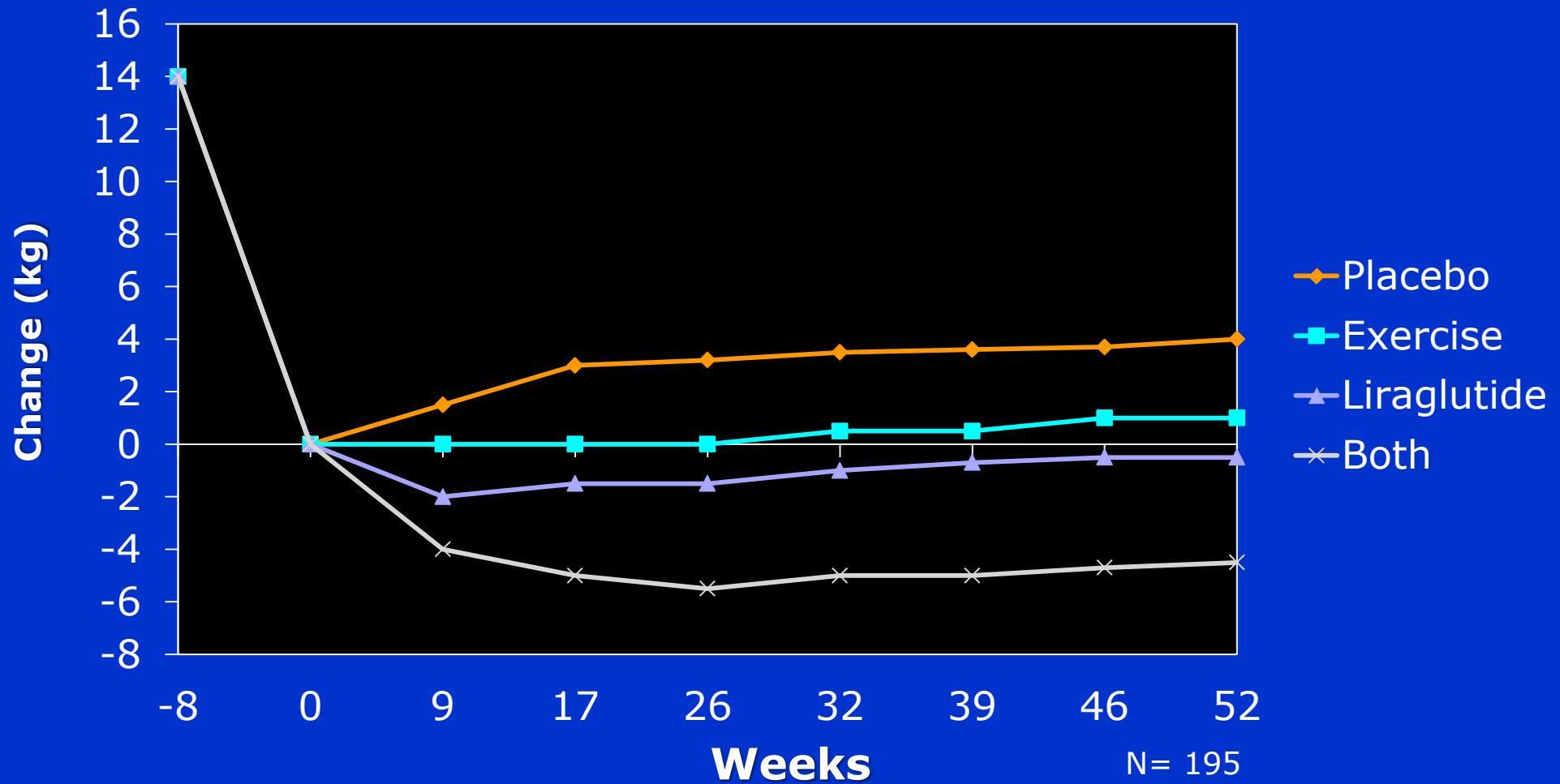
Clinical effectiveness of very-low-energy diets in the management of weight loss: a systematic review and meta-analysis of randomized controlled trials

- Compared with a behavior program alone, VLEDs combined with a behavior program achieved -3.9 kg at 1 year. The difference at 24 months -1.4 kg and -1.3 kg at 36-60 months
- 19% drop out VLED vs 20% comparator
- “Very-low energy diets with behavioural programmes achieve greater long-term weight loss than behavioural programmes alone, appear tolerable and lead to few adverse events suggesting they could be more widely used than current guidelines suggest.

Association Between Ketosis and Changes in Appetite Markers with Weight Loss Following a Very Low-Energy Diet

- N=87, BMI 36.5
- VLCD 8 weeks mean weight loss 17.7 kg
- Beta-hydroxybutyrate concentration was negatively associated with ghrelin and positively associated with satiety hormones GLP-1 and CCK.

Healthy Weight Loss Maintenance with Exercise, Liraglutide, or Both Combined



N= 195
VLCD 8 weeks 13 kg
BMI 37 age 40

Healthy Weight Loss Maintenance with Exercise, Liraglutide, or Both Combined

	Before	After
Weight (kg)	109.7	96.7
CR fitness (ml/min/kg)	22.9	24.9
Systolic BP (mm/Hg)	132	122
Diastolic BP	86	79
HOMA-IR	3.9	1.7
Cholesterol (mg/dl)	193	158
LDL-C	120	97
Triglycerides	132	97

Improvement in SF-36 physical and emotional well-being

Benefits of Weight Loss/VLCD

- Type 2 diabetes/prediabetes
- Metabolic syndrome/lipids
- Fatty liver/NASH
- Sleep apnea
- Atrial fibrillation
- Osteoarthritis knee
- Pre-operative

Safety and Contraindications

Medical Supervision

- Exercise, medications and surgery
- Cholelithiasis, diarrhea, constipation, hair loss, hypotension
- Prolongation of QT interval with suboptimal protein quality, failure to supplement vitamins/minerals
- Pregnancy, metastatic cancer, lithium treatment, unstable peptic ulcer disease are contraindications
- MEDICATIONS NEED ADJUSTMENTS!

Bariatric Endocrinology and Very-Low-Calorie Meal Plans

- 2013 AACE guidelines phase out “diet”
- Very Low Calorie Meal Plans (VLCMP)
- 800 kcal
- Average 12 weeks
- 3-5 lbs/week

Contraindication
MI within 6 months
CVA
Diabetes with DKA
Glucocorticoid use
Active peptic ulcer disease
History of suicide attempt
Active thrombophlebitis
Decreased blood volume
Pregnancy
Occupation requiring alertness
Active Eating disorder
Liver disease
Kidney disease
Hypercoagulable state
Lithium
Age < 13 or > 80
Electrolyte disorders

A qualitative study exploring patient and dietitian experiences with, and perceptions of, a multi-component dietary weight loss program for knee osteoarthritis

- N=24 patients and 5 dietitians
- Ease and convenience (not feeling hungry)
- Social and professional support crucial for success
- Program was engaging and motivating (rapid weight loss)
- Educational resources
- Rewarding experience (less knee pain)

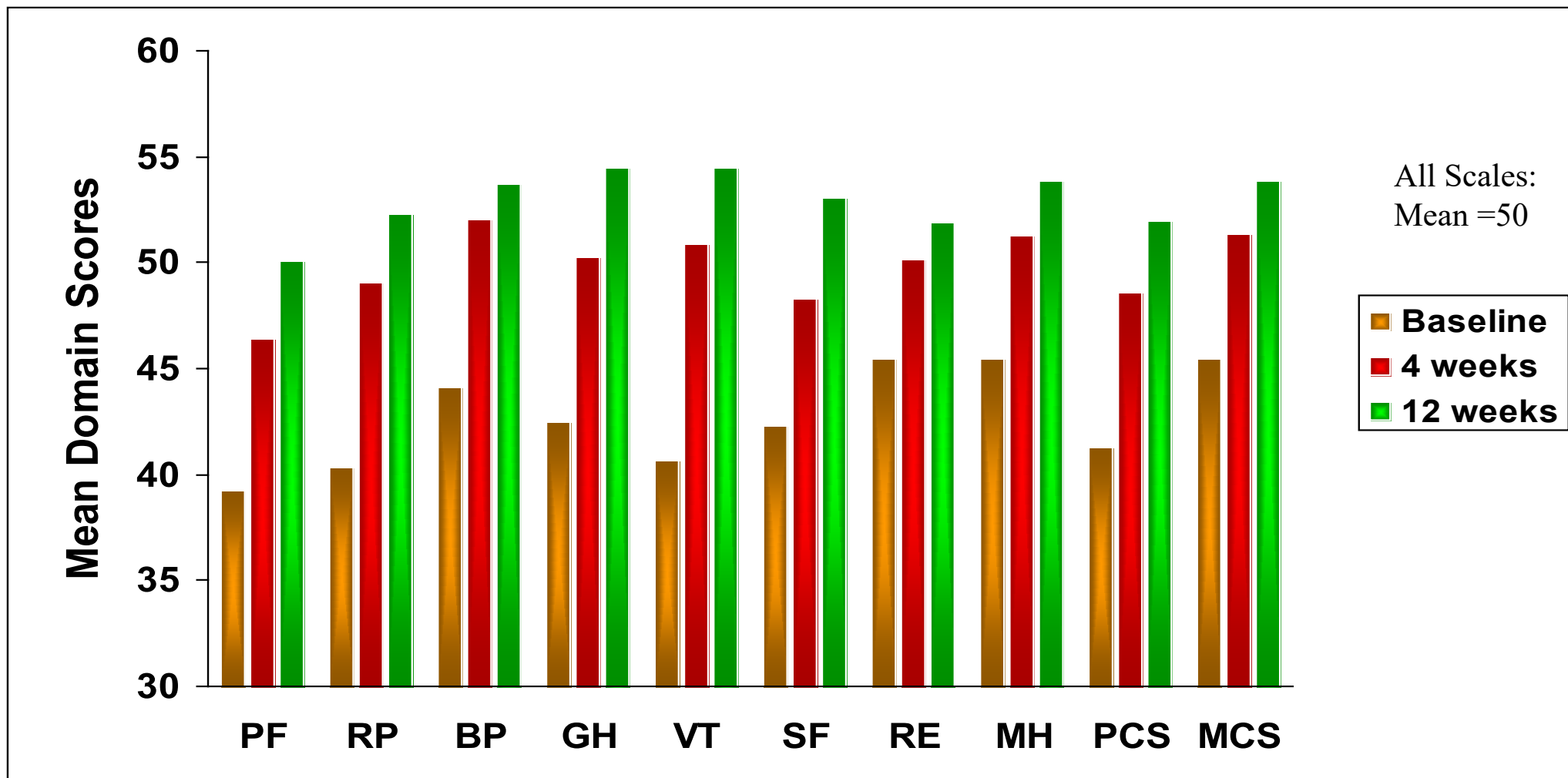
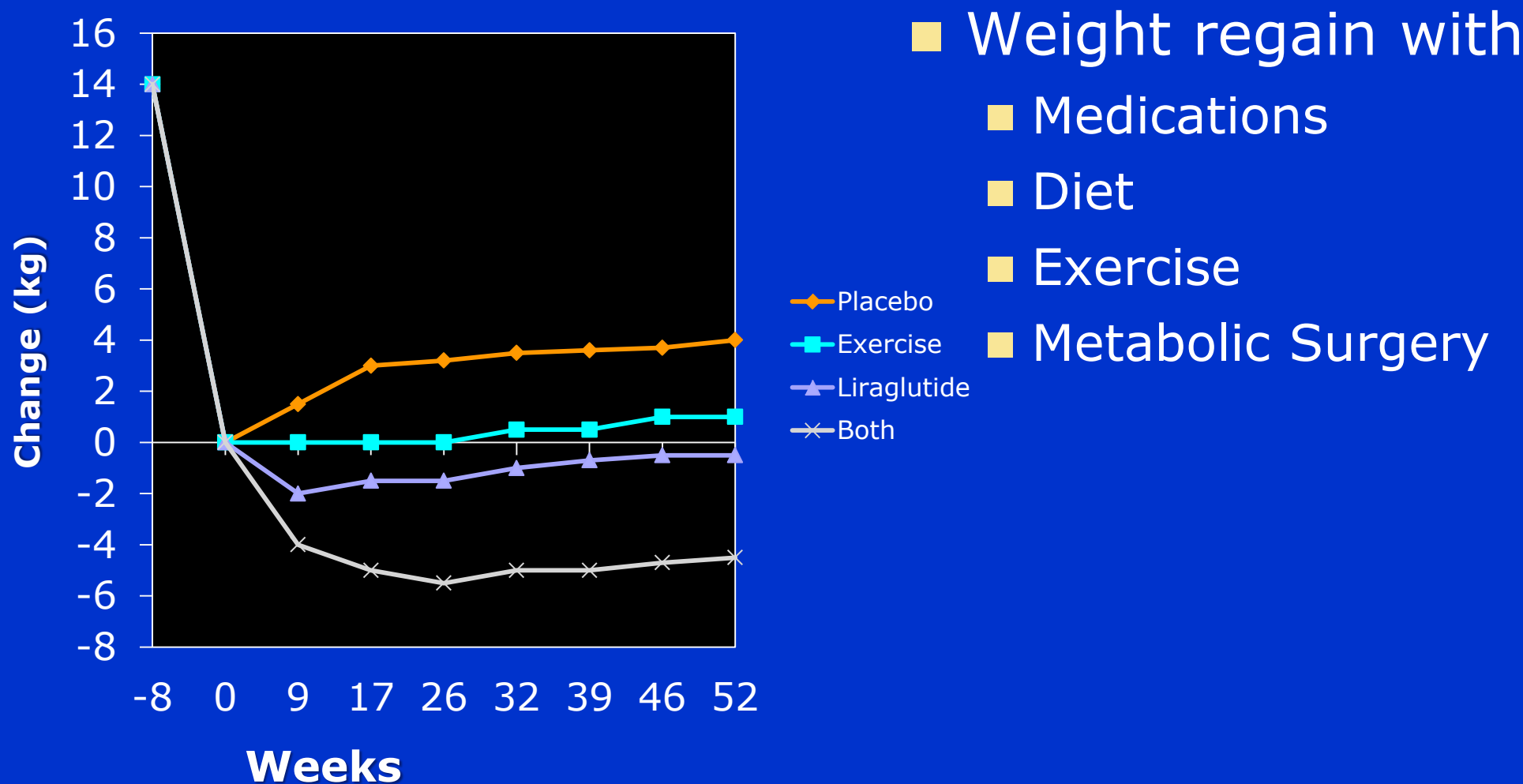


FIGURE. Changes in health-related quality of life as measured by the SF-36 from baseline to 4 and 12 weeks. PF indicates physical function; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social function; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary.

LCD

Weight Loss Maintenance

Physiology and the Homer Simpson Couch



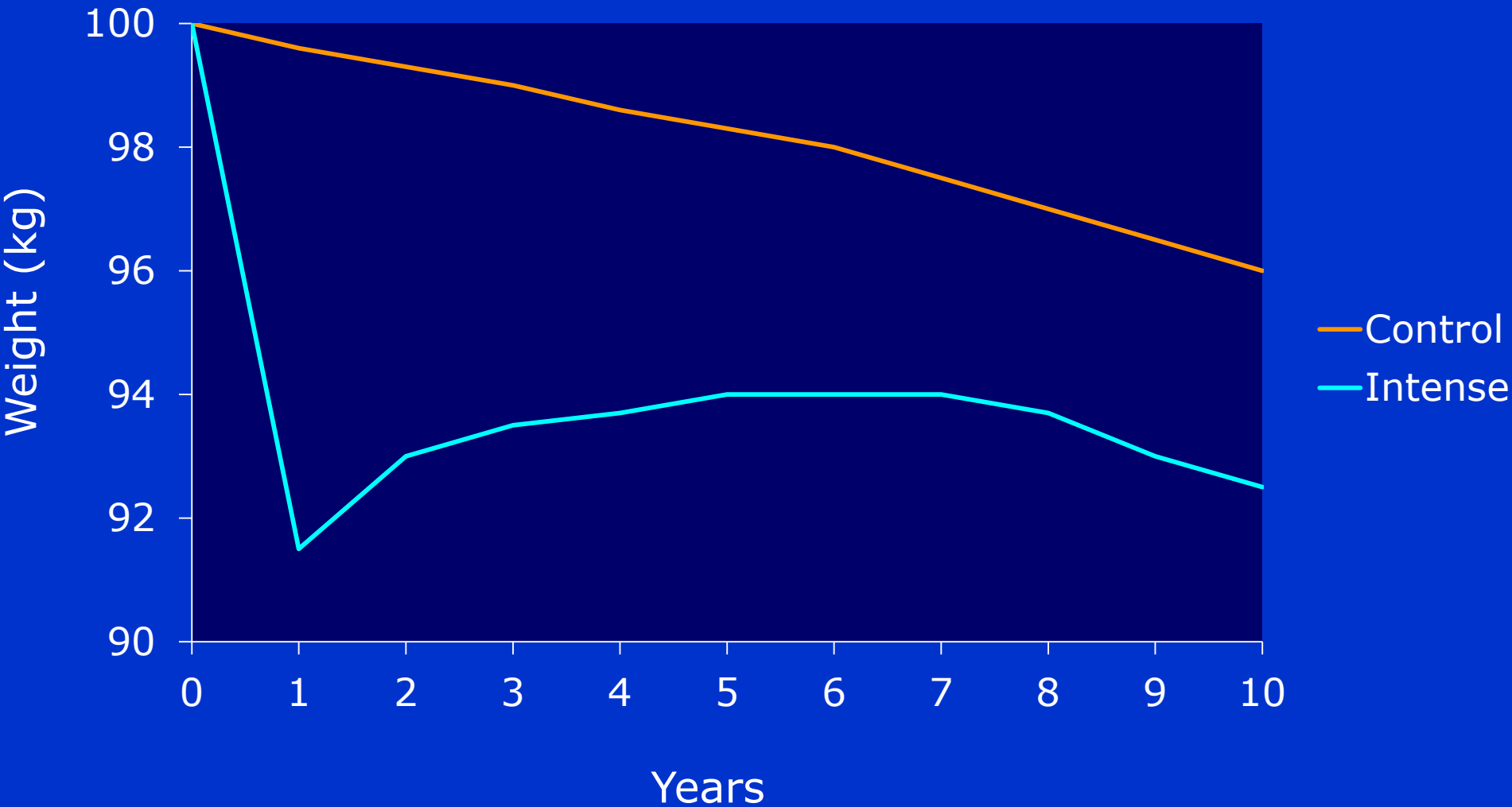
A systematic review and meta-analysis of the effectiveness of meal replacements for weight loss

LCD

- Diets incorporating meal replacements with behavior support had 6.3 kg greater weight loss compared to regular support without meal replacements at 1 year
- Meal replacement diets 1.44 kg greater weight loss than regular diet
- N=7884, 23 studies

Cardiovascular Effects of Intensive Lifestyle Intervention in Type 2 Diabetes

The Look AHEAD Study



Meal Replacements

- Provide structure improving adherence
- Reduces food choices/decisions
- Portion control
- Greater weight loss and less drop outs with meal replacements compared to conventional diets

Role of the VLCD

- Medical supervised plan with team of multispecialities to provide the foundation
- Rapid weight loss with metabolic improvements similar to bariatric surgery
- Safety with quality meal replacement products
- Improvement in obesity related disease states and beyond such as quality of life
- Lifelong tool of meal replacements