Together2Goal®

AMGA Foundation
National Diabetes Campaign

Monthly Campaign Webinar

August 16, 2018

Today's Webinar

- Together 2 Goal® Updates
  - Webinar Reminders
  - 2019 Acclaim Award Application
  - National Day of Action
  - 2018 Institute for Quality Leadership (IQL)
- Diabetes and Obesity
  - Timothy Garvey, M.D. of University of Alabama Birmingham
- Q&A
  - Use Q&A or chat feature

Webinar Reminders

- Webinar will be recorded today and available the week of August 20th
  - www.Together2Goal.org
- Participants are encouraged to ask questions using the “Chat” and “Q&A” functions on the right side of your screen

2019 Acclaim Award Application

Applications Due September 21

Honors the nation's premier healthcare delivery organizations that are high performing:

- Measurably improving the quality and value of care
- Improving patient experience and outcomes
- Continuously learning and innovating
- Improving population health

Contact Sunny Temesgen at stemesgen@amga.org for more information.

National Day of Action

November 8, 2018

T2G Talk & Taste

- Watch and discuss our two-minute provider video over breakfast or lunch and your meal is on us!
- In mid-September, we'll provide downloadable kits with all the materials you'll need.
- Let us know if your team plans to participate—**email your name, organization name, and *T2G Talk & Taste* date to** together2goal@amga.org.

2018 Institute for Quality Leadership

November 13-15, 2018

San Antonio, Texas

- Together 2 Goal® Peer-to-Peer Breakout Session: Taking Diabetes to Heart: Finding Value in the Medicare Population
- Registration now open at amga.org/IQL18

Today's Featured Presenter

W. Timothy Garvey, M.D., FACE

Professor
Department of Nutrition Sciences
University of Alabama at Birmingham
Director, UAB Diabetes Research Center

Diabetes and Obesity

Together 2 Goal® Webinar
August, 2018

W. Timothy Garvey, MD, FACE

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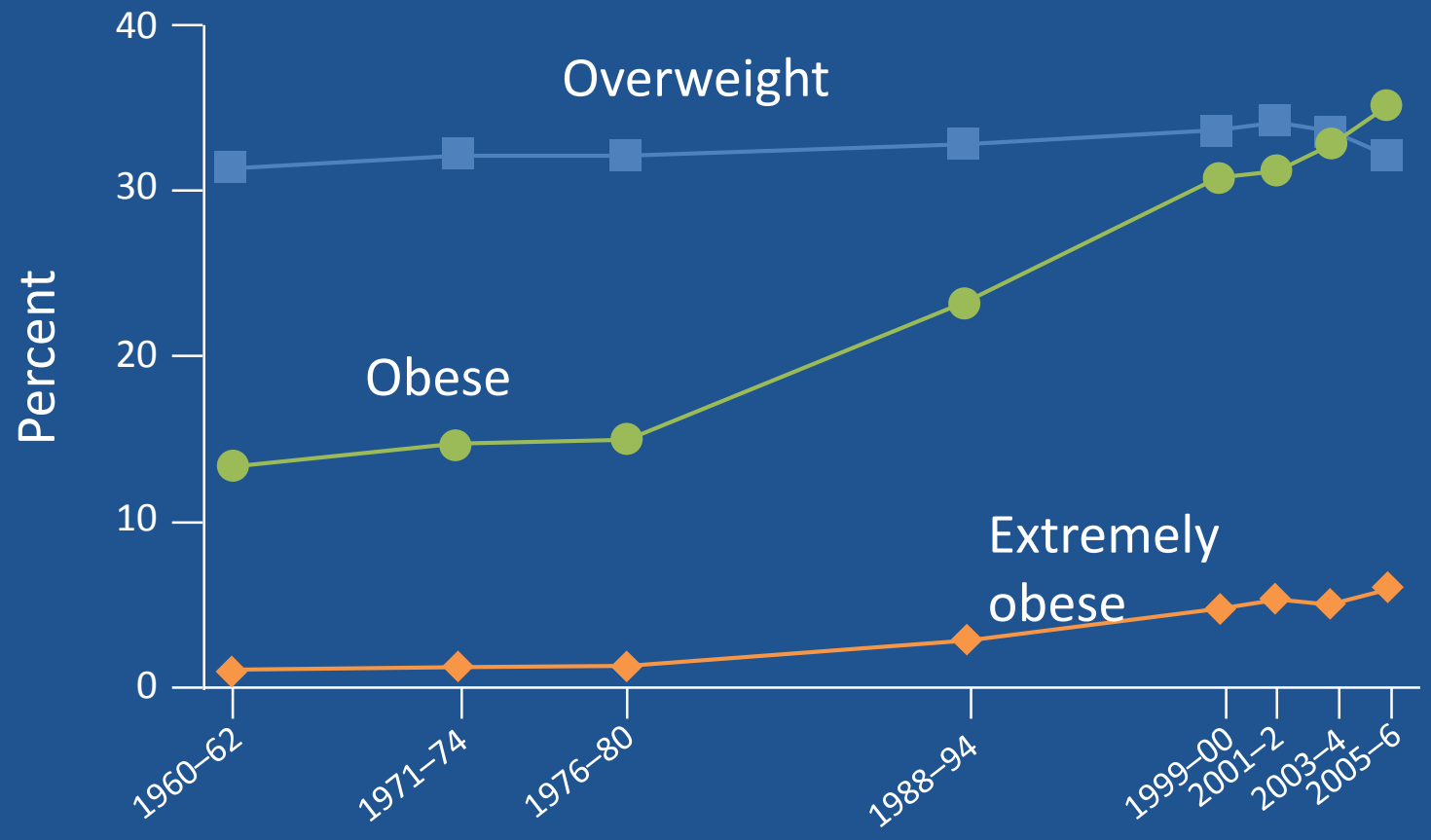
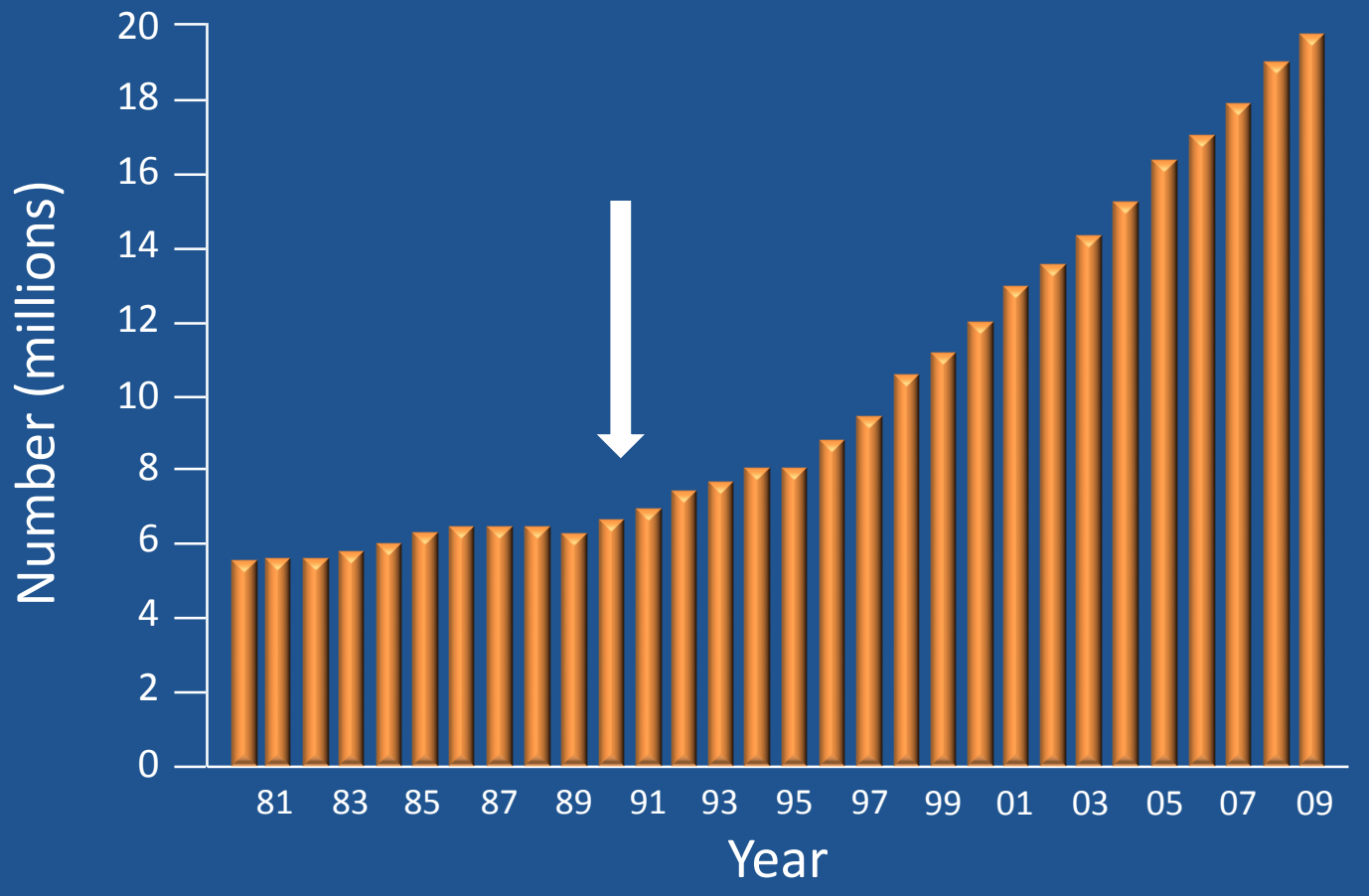
Rising Rates of Obesity but Not Overweight in US Adults



Note: Age-adjusted by the direct method to the year 2000 US Bureau of the Census using age groups 20–39, 40–59, and 60–74 years. Pregnant females excluded. Overweight defined as 25 ≤ BMI < 30; obesity defines BMI ≥30; extreme obesity defines as BMI ≥40.

Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey (NHANES) data.

Number (in Millions) With Diagnosed Diabetes, United States, 1980–2009



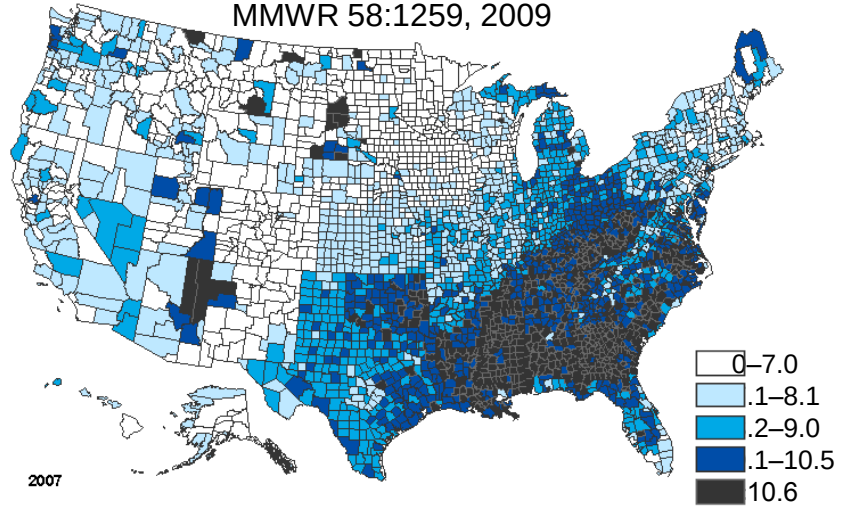
Civilian, Non-Institutionalized Persons

Centers for Disease Control and Prevention. NHANES Data. Updated April, 2011.

Co-Localization of Diabetes, Obesity, Heart Disease, and Stroke

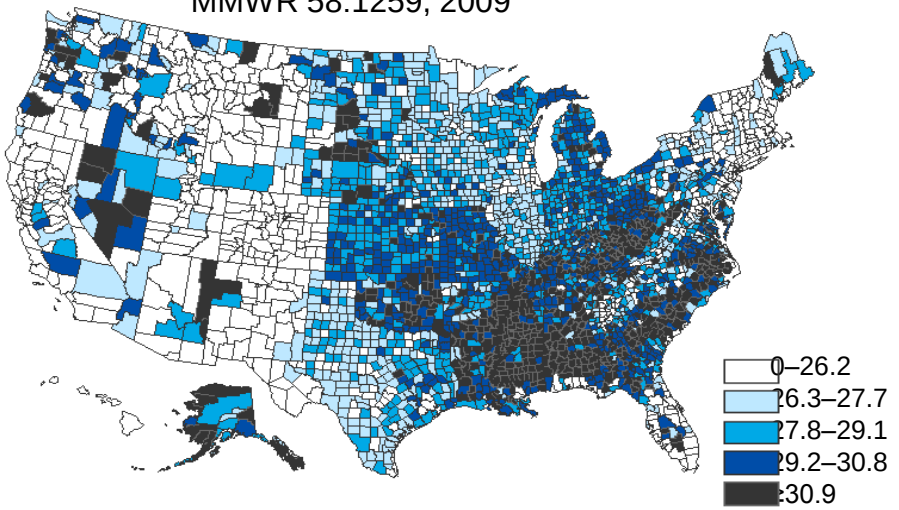
Prevalence Rates for Diabetes, 2007

MMWR 58:1259, 2009



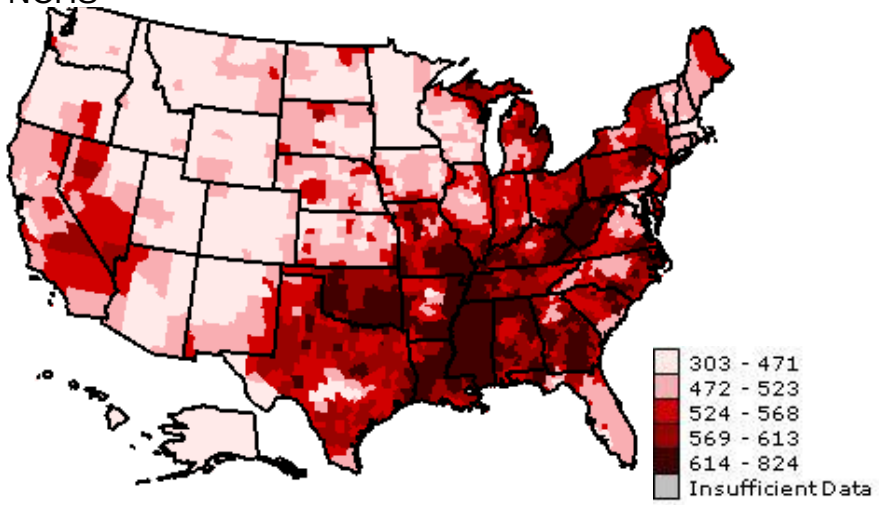
Prevalence Rates for Obesity, 2007

MMWR 58:1259, 2009



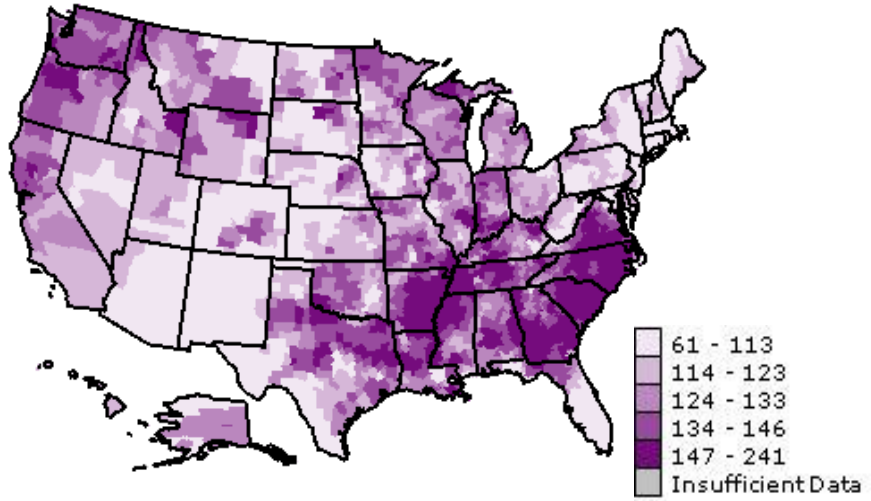
Prevalence Rates for Heart Disease 1997-2003

CDC NCHS

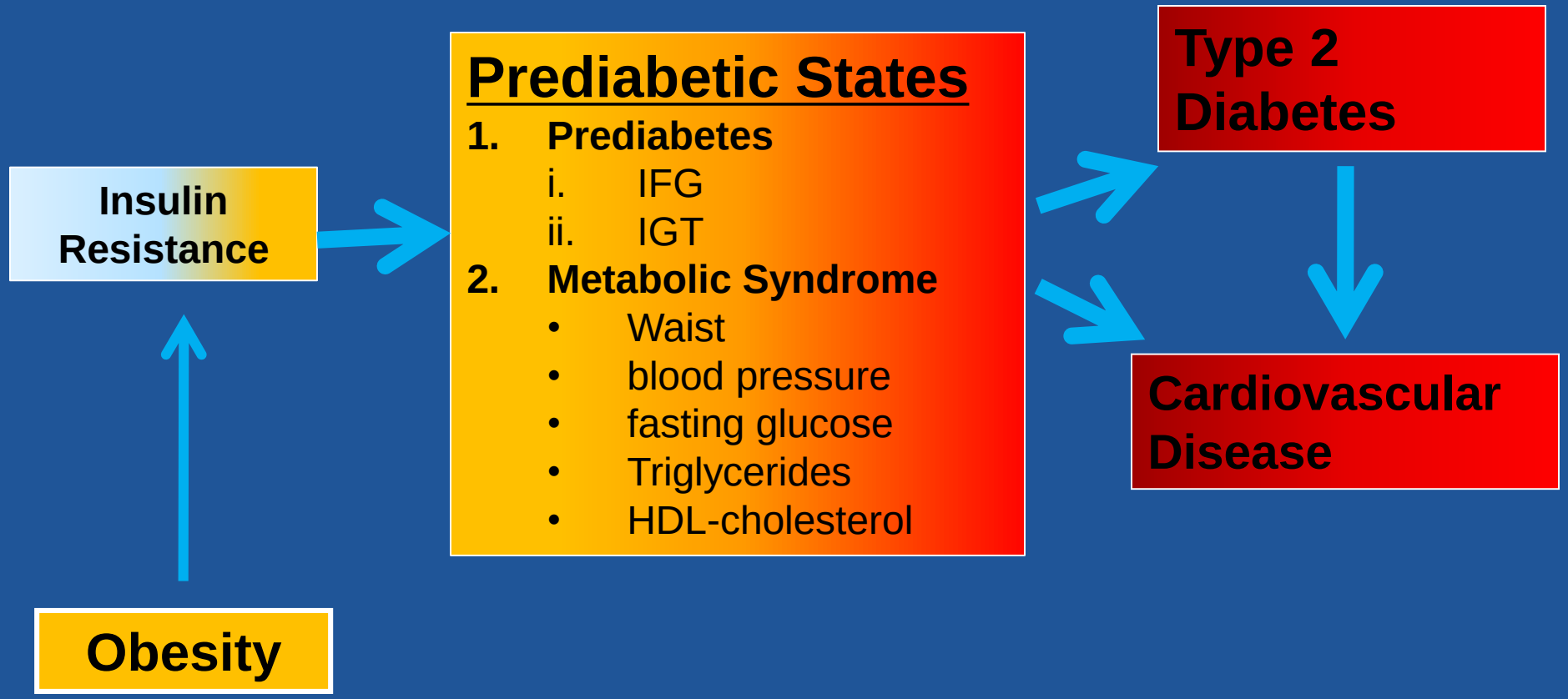


Prevalence rates for Stroke 1997-2003

CDC NCHS



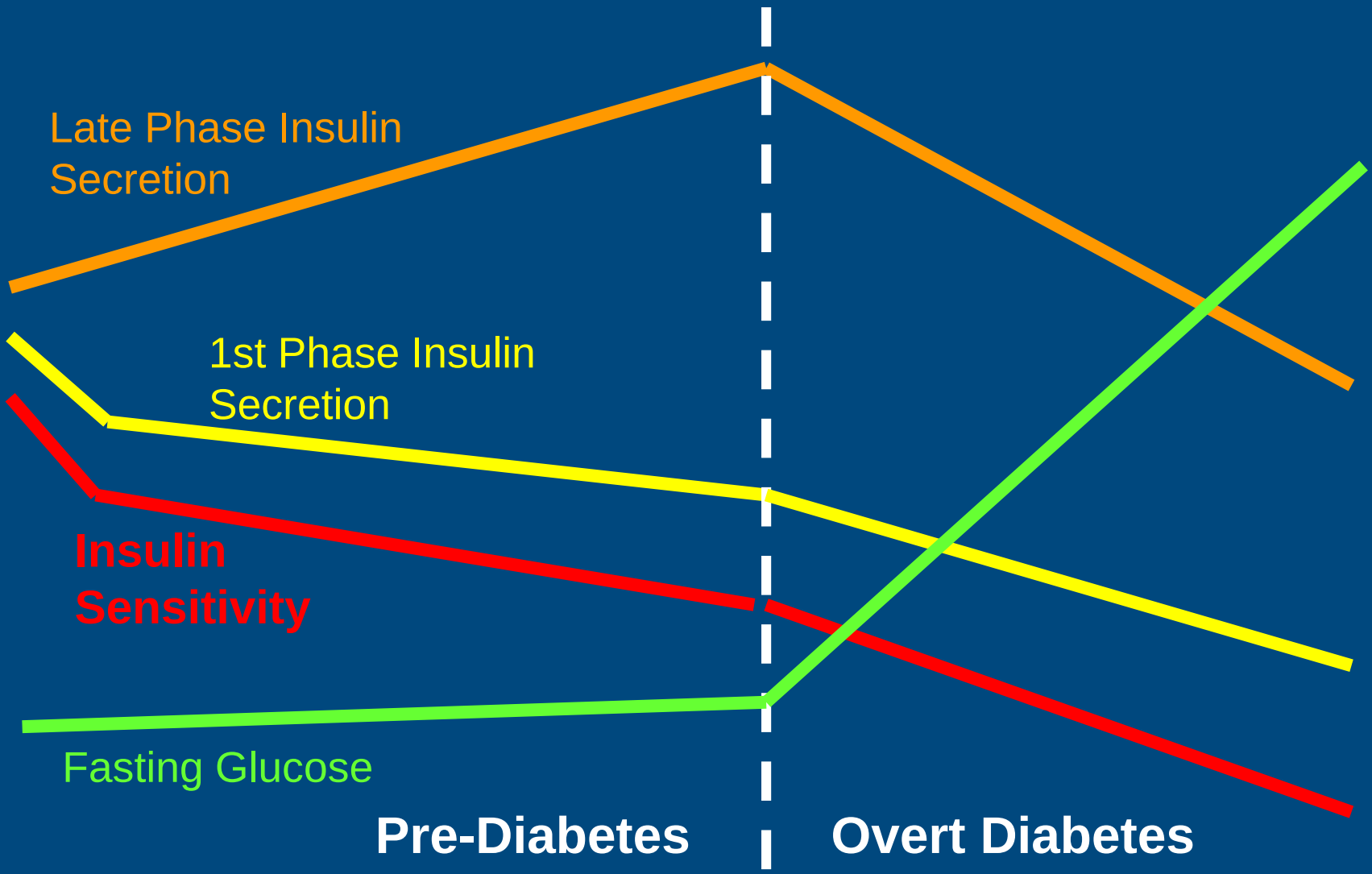
The Spectrum of Cardiometabolic Disease



IFG, impaired fasting glucose; IGT, impaired glucose tolerance

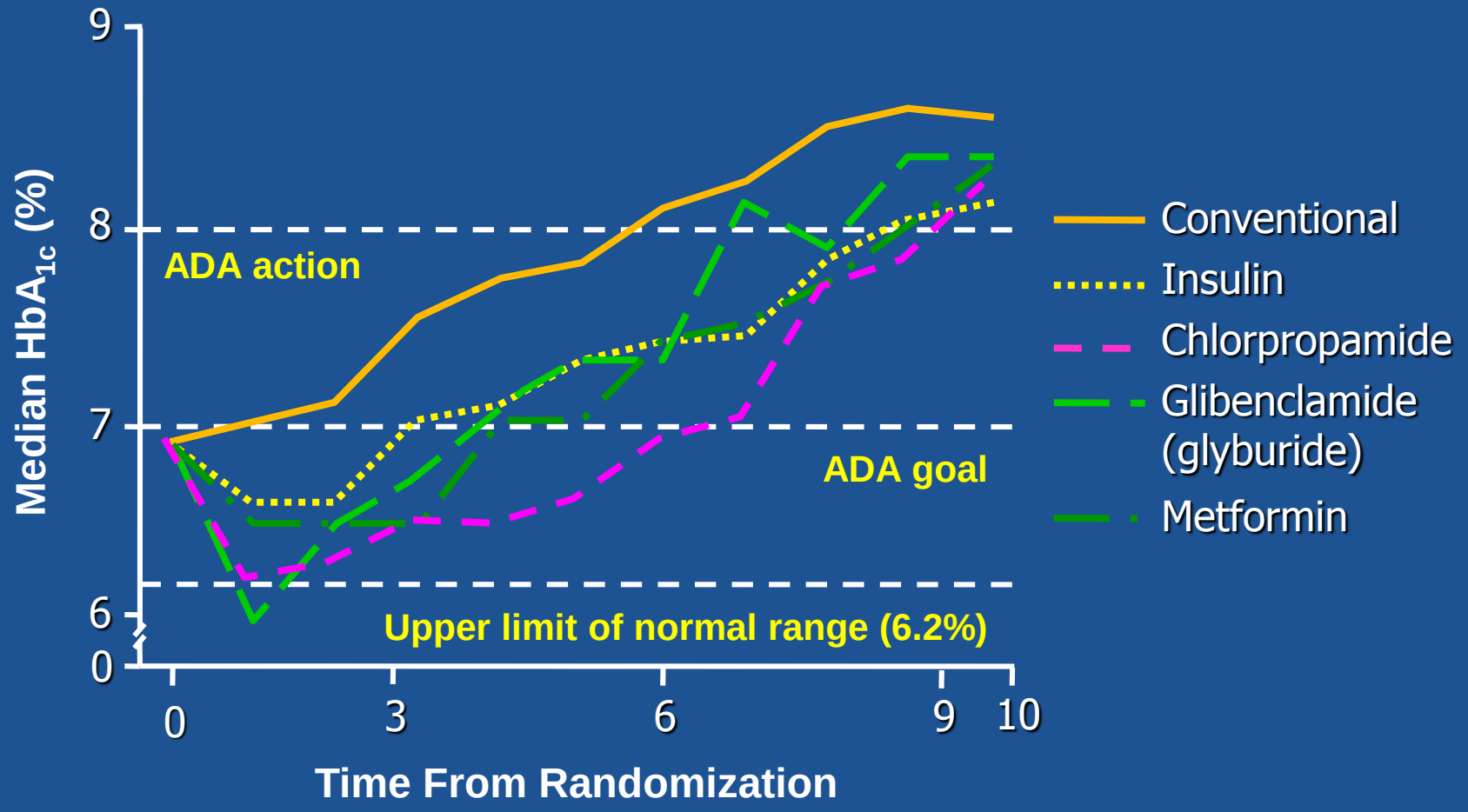
Garvey WT, 2013

Metabolic Evolution of Type 2 Diabetes



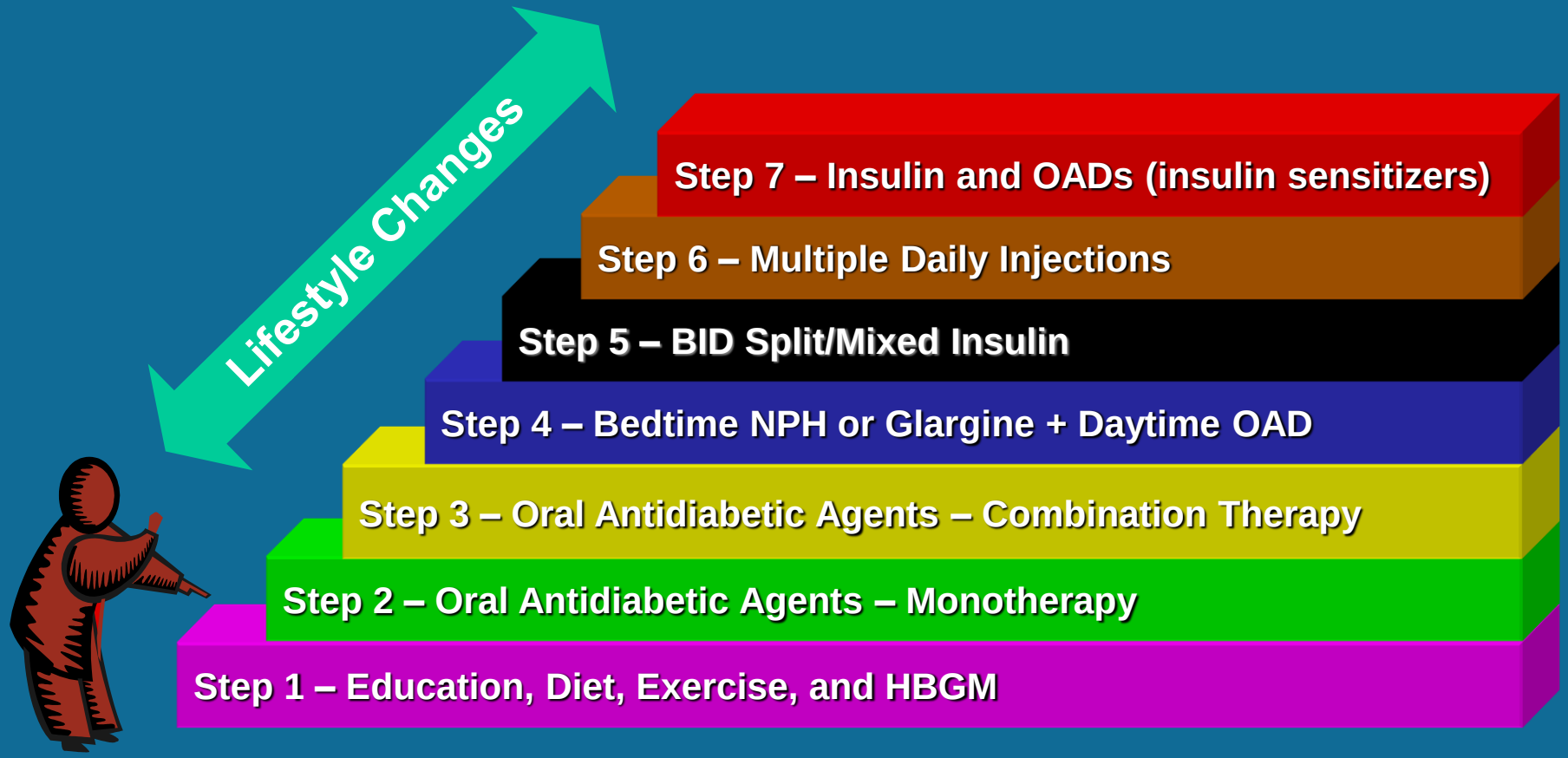
Intensive Treatments and Increase in HbA_{1c} Over Time

United Kingdom Prospective Diabetes Study (UKPDS)



UK Prospective Diabetes Study (UKPDS 34) Group. *Lancet*. 1998;352:854-65.

Type 2 Diabetes: Standard "Stepped" Approach to Treatment



Pharmacological Actions of Diabetes Drugs

- Sulfonylureas
- Meglitinides
- GLP-1 agonists
- DPP-4 inhibitors

BETA CELL

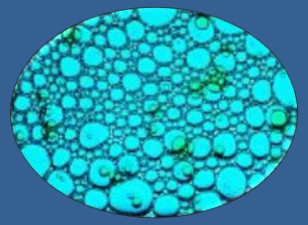
- GLP-1 agonists
- Amylin analogs
- Colesevelam
- Alpha-glucosidase inhibitors

INTESTINE

FAT

Thiazolidinediones

- GLP-1 agonists
- DPP-4 inhibitors



ALPHA CELL

KIDNEY

SGLT2 inhibitors

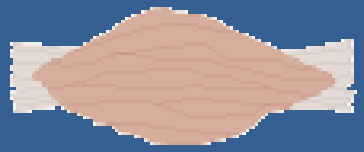
LIVER

- Metformin
- Insulin

BRAIN

- GLP-1 agonists
- Bromocryptine
- Weight Loss Medications

MUSCLE



Thiazolidinediones

DeFronzo RA. *Diabetes*. 2009;58:773-795.

Differential Effects of T2DM Treatments

Treatment	Effect on Weight	Risk of Hypoglycemia
Lifestyle Therapy	↓	→
Lifestyle + Weight Loss Medication	↓↓↓	→
Insulin	↑↑	↑↑↑
Sulfonylureas	↑↑	↑↑↑
Thiazolidinediones	↑↑	→
Glinides	↑	↑
DPPIV Inhibitors	→	→
Colesevelam	→	→
Bromocriptine	→	→
α-glucosidase Inhibitor	→	→
Metformin	↓	→
GLP-1 Agonists	↓↓	→
SGLT2 Inhibitors	↓↓	↑→

Evolution of Diabetes Therapy

'The Old Days'	*'Ray of Light'*	*'New Dawn'*	*'The Future is now'*
GOALS Control Glycemia	**GOALS** Reduced risk of hypoglycemia	**GOALS** Minimal hypoglycemia; Weight neutral or modest loss	**GOALS** Prevent CVD events Renal protection
Medications • Sulfonylurea • Meglitinides • Insulin (NPH, Regular)	**Medications** • Metformin • TZDs • Improved basal and rapid acting insulins	**Medications** • Metformin • DPPIV inhib • GLP-1 RA • SGLT2 inhib • Weight loss medications	**Medications** • GLP-1 Agonists • SGLT2 Inhibitors • TZDs • ? Weight loss medications

Glycemic Control Algorithm

INDIVIDUALIZE GOALS

A1C ≤ 6.5% For patients without concurrent serious illness and at low hypoglycemic risk

A1C > 6.5% For patients with concurrent serious illness and at risk for hypoglycemia

LIFESTYLE THERAPY (Including Medically Assisted Weight Loss)

Entry A1C < 7.5%

MONOTHERAPY*

- ✓ Metformin
- ✓ GLP-1 RA
- ✓ SGLT-2i
- ✓ DPP-4i
- ! TZD
- ✓ AGi
- ! SU/GLN

If not at goal in 3 months proceed to Dual Therapy

Entry A1C ≥ 7.5%

DUAL THERAPY*

MET or other 1st-line agent +

- ✓ GLP-1 RA
- ✓ SGLT-2i
- ✓ DPP-4i
- ! TZD
- ! Basal Insulin
- ✓ Colesevelam
- ✓ Bromocriptine QR
- ✓ AGi
- ! SU/GLN

If not at goal in 3 months proceed to Triple Therapy

TRIPLE THERAPY*

MET or other 1st-line agent + 2nd-line agent +

- ✓ GLP-1 RA
- ✓ SGLT-2i
- ! TZD
- ! Basal insulin
- ✓ DPP-4i
- ✓ Colesevelam
- ✓ Bromocriptine QR
- ✓ AGi
- ! SU/GLN

If not at goal in 3 months proceed to or intensify insulin therapy

Entry A1C > 9.0%

SYMPTOMS

NO	YES
DUAL Therapy OR TRIPLE Therapy	INSULIN ± Other Agents

ADD OR INTENSIFY INSULIN

Refer to Insulin Algorithm

LEGEND

- ✓ Few adverse events and/or possible benefits
- ! Use with caution

* Order of medications represents a suggested hierarchy of usage; length of line reflects strength of recommendation

PROGRESSION OF DISEASE

 DOI 10.4158/CS-2017-0153

What if there was a pill for T2DM that:

1. Reduced HbA1c by 1-1.6% while other diabetes medications were reduced in dosage or eliminated
2. Led to a 10% decrease in body weight
3. Reduced blood pressure by 6 mmHg systolic and 4 mmHg diastolic
4. Lowered triglycerides and raised HDL-c
5. Was renal protective – decreasing albuminuria
6. Improved sleep apnea
7. Improved mobility and decreased pain
8. Improved quality of life

This is the therapeutic profile of of weight loss therapy in T2DM

Treatment Modalities for Patients with Overweight and Obesity

Nutrition Management Summary

ADA Recommendations ***CURRENT - 2013***

- Patients preferences are paramount
- Promote 'health eating' within the context of 'meal patterns': – Mediterranean, vegetarian, low fat, low CHO, DASH,
- Reduced energy intake while maintaining healthful eating pattern; "modest weight loss may provide clinical benefit'
- Saturated fats < 10%

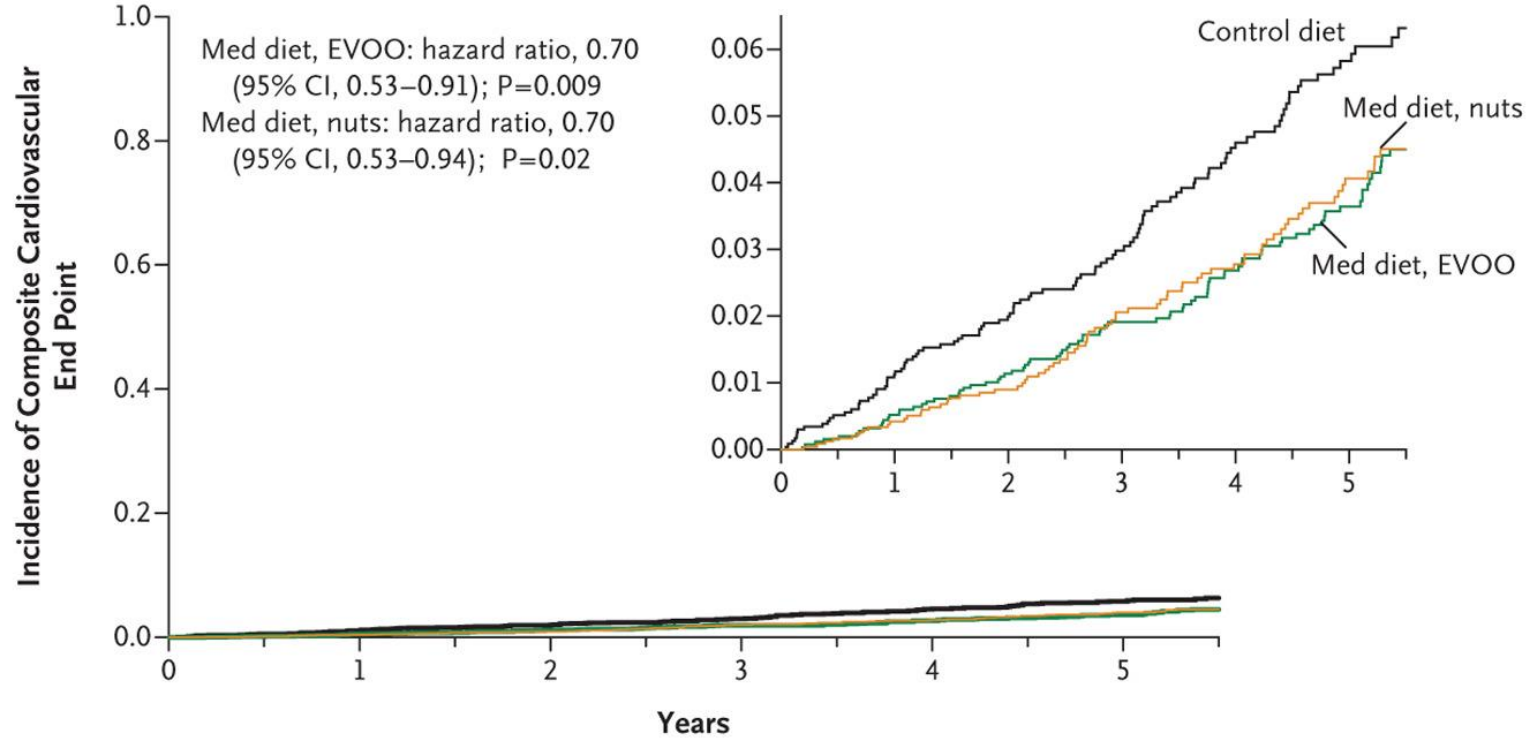
Recommendations are being revisited in 2018:

Based on accumulating data, the expert panel will need to address the importance of weight loss in patients with obesity, and MNT& DSE programs emphasizing reduced caloric intake; 'healthy eating' meal patterns can include low carbohydrate diets.

The PREDIMED Study

Estruch R, Ros E, Salas-Salvadó J, et al and PREDIMED Study Investigators. **N Engl J Med**. 2013 Apr 4;368(14):1279-90.

A Primary End Point (acute myocardial infarction, stroke, or death from cardiovascular causes)



No. at Risk

Control diet	2450	2268	2020	1583	1268	946
Med diet, EVOO	2543	2486	2320	1987	1687	1310
Med diet, nuts	2454	2343	2093	1657	1389	1031

- 7,447 people in Spain with high CVD risk randomized to Med Diet + olive oil; Med diet + nuts; control diet
- Decreased MACE outcome and all-cause mortality

Comprehensive Lifestyle Management Is the Foundation of Obesity Treatment

Garvey WT et al. Endocrine Practice 22(Suppl 3):1-203, 2016

Meal Plan

- Reduced-calorie healthy meal plan
- ≈ 500-750 kcal daily deficit
- Many healthy meal plan options[a]
- Meal replacements
- Very-low–calorie diet is an option for selected patients—requires supervision

Team member/expertise: dietitian, health educator

Physical Activity

- Aerobic activity
  - —Goal: > 150 min/wk
  - —3-5 days/wk
- Resistance exercise
  - —Major muscle groups
  - —2-3 times/wk
- Reduce sedentary behavior
- Individualized (e.g., preferences, limitations)

Team member/expertise: exercise trainer, physical activity coach, physical/ occupational therapist

Behavior

- Interventional package of behavioral methods
- Self-monitoring; goal setting; education; problem-solving; stimulus control; stress reduction; psychological evaluation and treatment; cognitive restructuring; motivational interviewing; social support structures

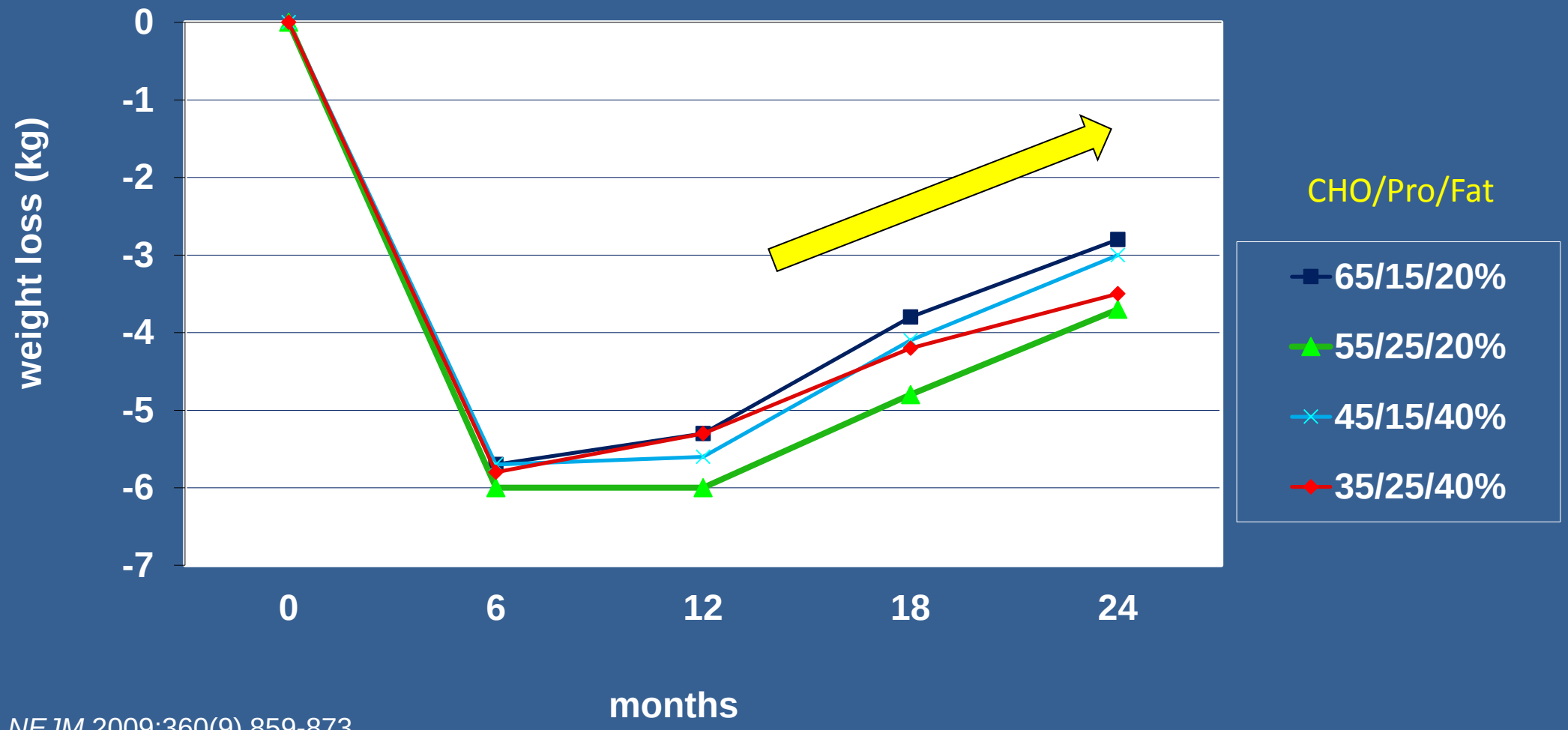
Team member/expertise: health educator, behaviorist, clinical psychologist, psychiatrist

[a] AACE/ACE guideline lists: Mediterranean, DASH, low-carb, low-fat, volumetric, high protein, vegetarian.

AACE/ACE algorithm for the medical care of patients with obesity. https://www.aace.com/files/guidelines/ObesityAlgorithm.pdf.

Remember the Pathophysiology of Obesity: mechanisms protecting against weight loss

It is difficult for patients to maintain their weight loss over time.



Sacks FS. et al. *NEJM* 2009;360(9) 859-873.

Regulation of Energy Intake

Peripheral Signals

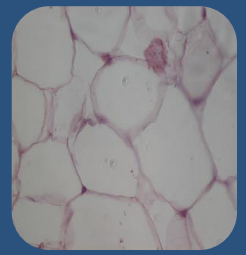
Hypothalamic Pathways

Arcuate Nucleus

PVN, LHA, DMN

Higher Cortical Centers

GHRELIN

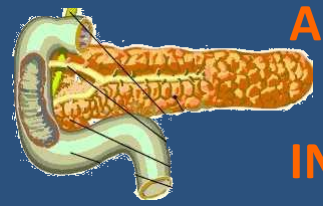


LEPTIN

CCK

GLP-1

PEPTIDE YY



AMYLIN

INSULIN

GSHR

LepR

NPY

AgRP

Orexigenic Pathway

NPY

AGRP

Y1R

Y5R

MCH1R

MCH

BDNF

NTRK2

LepR

GLPR1

Y2R

POMC/ CART

αMSH

5HT2c

μ-OR

MC4R

Anorexigenic Pathway

Garvey WT, 2016.

In Obesity, biology protects against weight loss and maintains a high body weight

- ✓ ↑ Ghrelin
- ✓ ↓ Leptin, PYY, CCK, Amylin
- ✓ ↓ Resting energy expenditure
- ✓ ↑ Hunger
- ✓ ↑ Calorie-dense food preferences

Increased Appetite

Decreased Energy Out

Increased Energy In

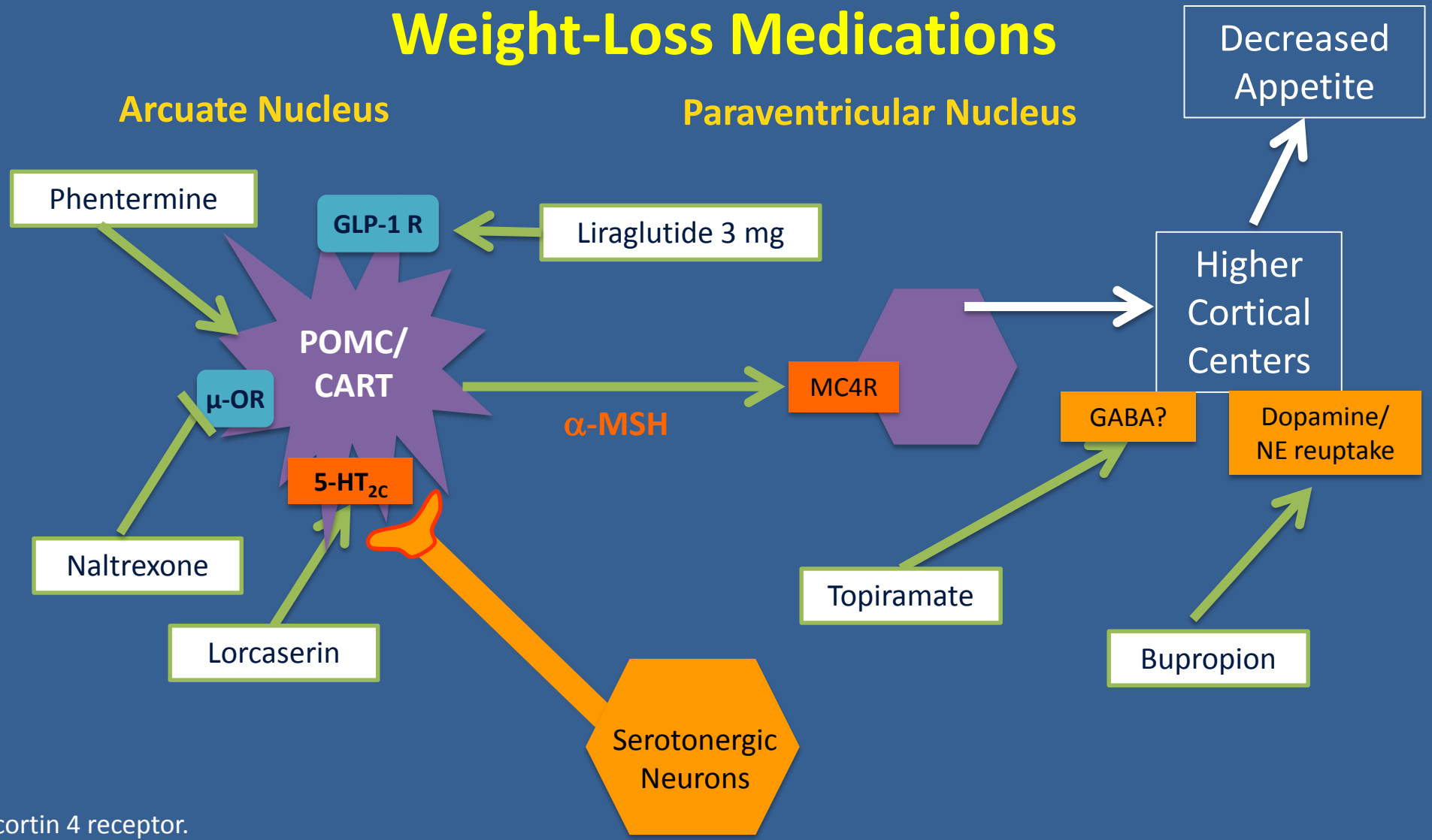
Garvey WT, 2014

Obesity Pharmacotherapy

Agents	Action	Approval
	Previously available	
Phentermine	• Sympathomimetic	• 1959
Orlistat	• GI lipase inhibitor	• 1997
	Recently Approved	
Phentermine/ Topiramate ER	• Sympathomimetic/Anticonvulsant (GABA receptor modulation?)	• Approved, Summer 2012
Lorcaserin	• 5-HT_{2C} serotonin receptor agonist	• Approved, Summer 2012
Naltrexone ER/ Bupropion ER	• Dopamine/noradrenaline reuptake inhibitor/Opioid receptor antagonist	• Approved, September 2014
Liraglutide 3 mg	• GLP-1 receptor agonist	• Approved December 2014

US FDA. Drugs@FDA. http://www.accessdata.fda.gov/Scripts/cder/DrugsatFDA.

Actions of Recently Approved Weight-Loss Medications



MC4R, melanocortin 4 receptor.
GABA, gamma-aminobutyric acid.
POMC/CART, pro-opiomelanocortin/cocaine- and-amphetamine-regulated transcript.

Courtesy of Dr. W. Timothy Garvey, 2014.

AACE Comprehensive Clinical Practice Guidelines for the Medical Care of Patients with Obesity

DIAGNOSIS		COMPLICATION-SPECIFIC STAGING AND TREATMENT		
Anthropometric Component (BMI kg/m²)	Clinical Component	Disease Stage	Chronic Disease Phase of Prevention	Suggested Therapy (based on clinical judgment)
<25 <23 in certain ethnicties waist circumference below regional/ ethnic cutoffs		Normal weight (no obesity)	Primary	• **Healthy lifestyle:** healthy meal plan/ physical activity
25–29.9 23–24.9 in certain ethnicities	Evaluate for presence or absence of adiposity-related complications and severity of complications • Metabolic syndrome • Prediabetes • Type 2 diabetes • Dyslipidemia • Hypertension • Cardiovascular disease • Nonalcoholic fatty liver disease • Polycystic ovary syndrome • Female infertility • Male hypogonadism • Obstructive sleep apnea • Asthma/reactive airway disease • Osteoarthritis • Urinary stress incontinence • Gastroesophageal reflux disease • Depression	Overweight stage 0 (no complications)	Secondary	• **Lifestyle therapy:** Reduced-calorie healthy meal plan/physical activity/ behavioral interventions
≥30 ≥25 in certain ethnicities		Obesity stage 0 (no complications)	Secondary	• **Lifestyle therapy:** Reduced-calorie healthy meal plan/physical activity/ behavioral interventions • **Weight-loss medications:** Consider after lifestyle therapy fails to prevent progressive weight gain. (BMI ≥27)
≥25 ≥23 in certain ethnicties		Obesity stage 1 (1 or more mild-moderate complications)	Tertiary	• **Lifestyle therapy:** Reduced-calorie healthy meal plan/physical activity/ behavioral interventions • **Weight-loss medications:** Consider after lifestyle therapy fails to achieve therapeutic target or initiate concurrent with lifestyle therapy. (BMI ≥27)
≥25 ≥23 in certain ethnicties		Obesity stage 2 (at least 1 severe complication)	Tertiary	• **Lifestyle therapy:** Reduced-calorie healthy meal plan/physical activity/ behavioral interventions • **Add weight-loss medication:** Initiate concurrent with lifestyle therapy. (BMI ≥27) • **Consider bariatric surgery:** (BMI ≥35)

Garvey WT et al. Endocrine Practice 22(Suppl 3):1-203, 2016

3. Treatment Based on Clinical Judgment

WHEN TO INITIATE WEIGHT-LOSS MEDICATIONS IN PATIENTS WITH OVERWEIGHT/ OBESITY

INITIATE LIFESTYLE THERAPY

1. **No Complications.**
   Patients with overweight or obesity who have no clinically significant weight-related complications (secondary prevention)

2. **Mild to Moderate Complications.**
   - Patients with mild to moderate weight-related complications when lifestyle therapy is anticipated to achieve sufficient weight loss to ameliorate the complication (tertiary prevention)
   - Note: weight loss medications may also be indicated based on clinical judgment

INITIATE WEIGHT LOSS MEDICATION AS AN ADJUNCT TO LIFESTYLE THERAPY

1. **Failure on Lifestyle Therapy.**
   Add medication for patients who have progressive weight gain or who have not achieved clinical improvement in weight-related complications on lifestyle therapy alone.

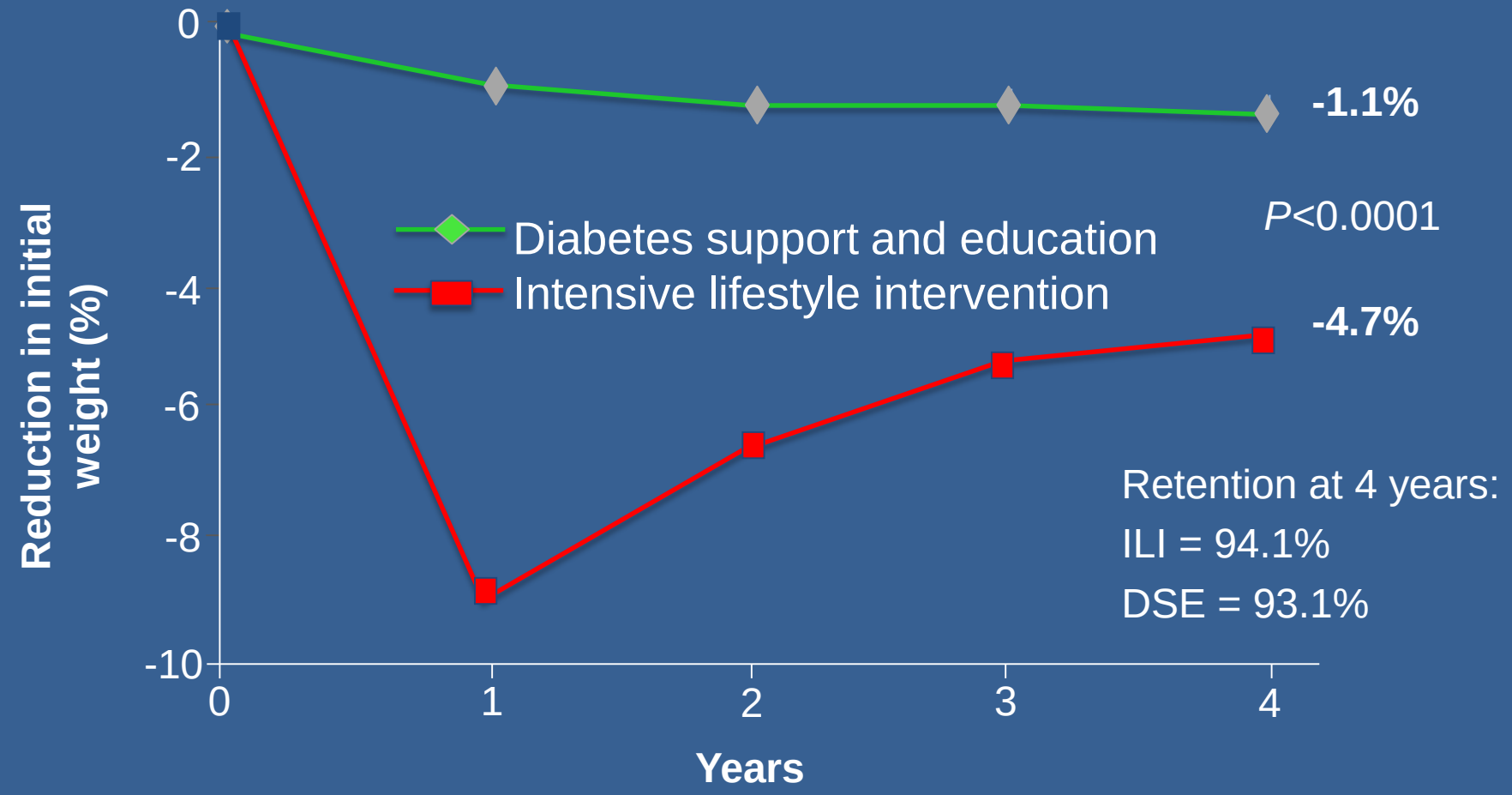
2. **Weight Regain on Lifestyle Therapy.**
   Add medication for patients with overweight (BMI 27–29.9 kg/m^2) or obesity who are experiencing weight regain following initial success on lifestyle therapy alone.

3. **Presence of Weight-Related Complications.**
   Initiate medication concurrent with lifestyle therapy for patients with overweight (BMI 27–29.9 kg/m^2) or obesity who have weight-related complications, particularly if severe, in order to achieve sufficient weight loss to ameliorate the complication (tertiary prevention).

Garvey WT et al. Endocrine Practice 22(Suppl 3):1-203, 2016

Intensive Intervention in T2DM: Weight Regain over 4 Years in Look AHEAD

Look AHEAD Trial (N=5145)



ILI, intensive lifestyle intervention; DSE, diabetes support and education.

Look AHEAD Research Group. *Arch Intern Med*. 2010;170:1566-1575.

Effect of Weight Loss in T2DM on CV Risk Factors and Diabetes Measures

Look AHEAD Trial (N=5145)

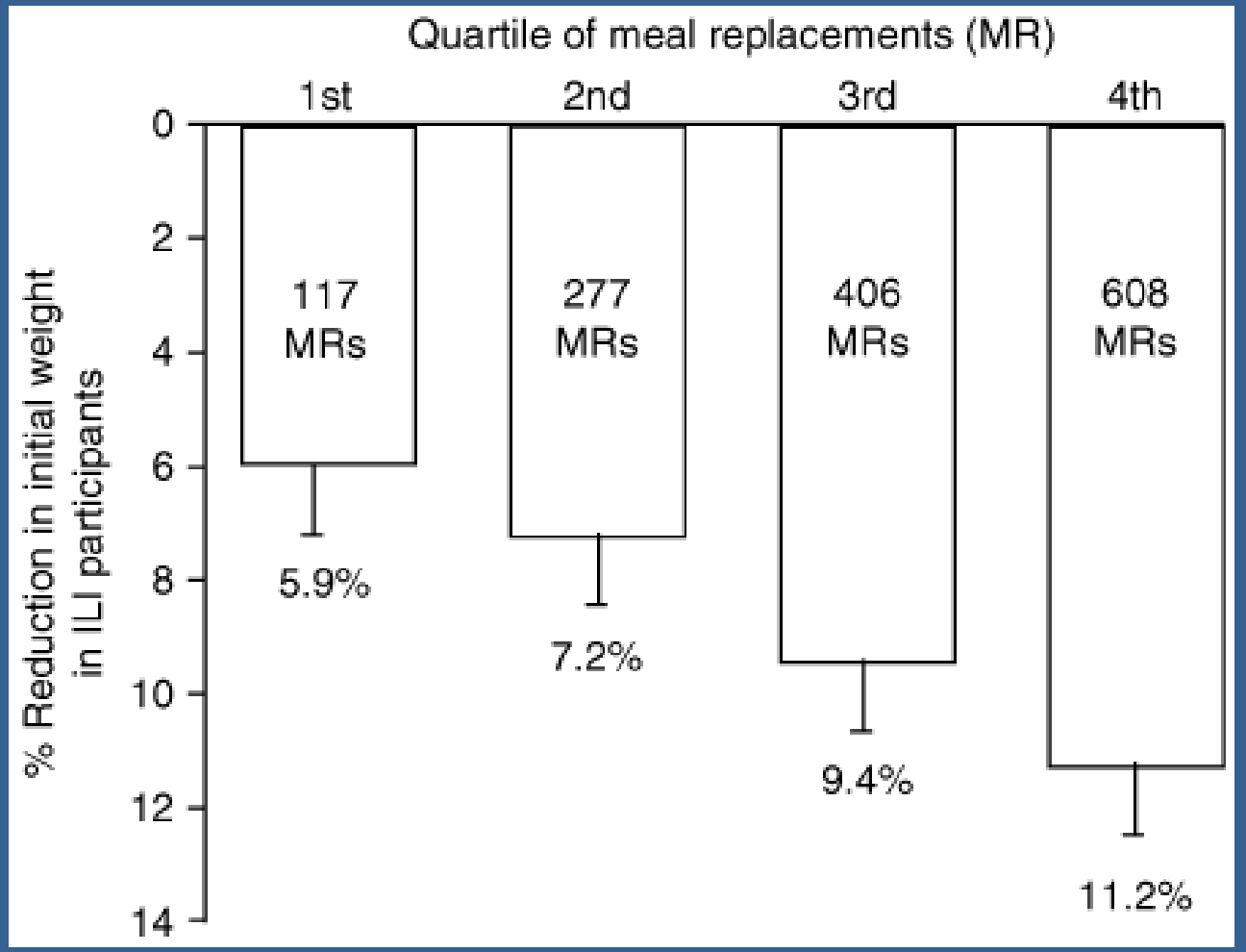
At 1 year	DSE	ILI
Weight loss (%)	-0.7	-8.6
A1C (%)	-0.14	-0.64*
FPG (mg/dL)	-7.2	-21.5*
% on diabetes medications	2.2	-7.8*
Systolic BP (mm Hg)	-2.8	-6.8*
Diastolic BP (mm Hg)	-1.8	-3.0*
LDL-C (mg/dL)	-5.7	-5.2
HDL-C (mg/dL)	1.4	3.4*
TG (mg/dL)	-14.6	-30.3*

*$P \leq 0.001$, †$P = 0.01$ vs customary support.

BP, blood pressure; CV, cardiovascular; DSE, diabetes support and education; ILI, intensive lifestyle intervention; T2DM, type 2 diabetes mellitus.

Look AHEAD Research Group. *Diabetes Care*. 2007;30:1374-1383. Look AHEAD Research Group. *Arch Intern Med*. 2010;170:1566-1575.

One-year Weight Losses in the Look AHEAD Study: Factors Associated With Success



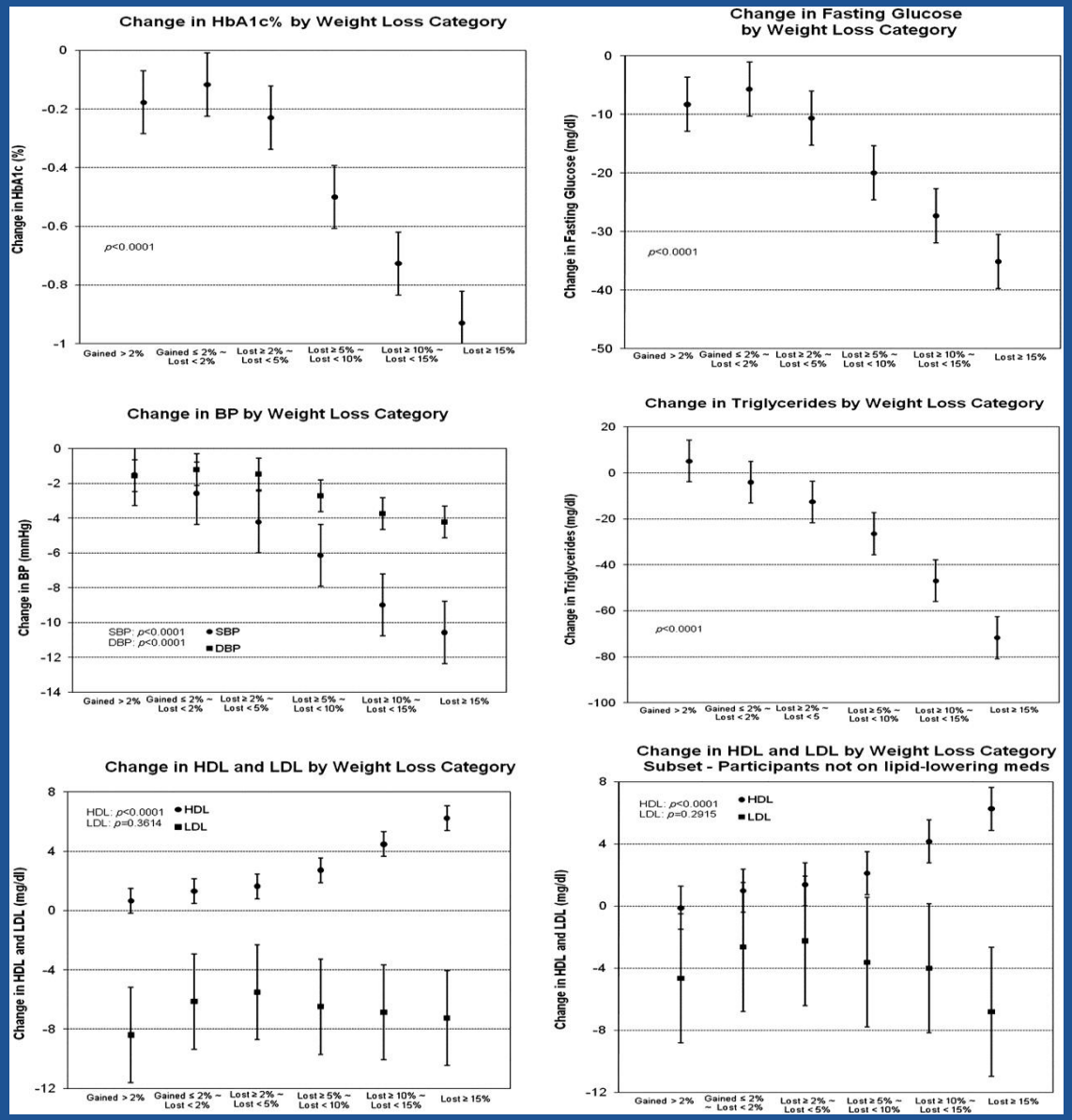
Wadden TA et al. One-year Weight Losses in the Look AHEAD Study: Factors Associated With Success. 17(4):713-722, 2012

Change in risk factors by weight loss categories for the Look AHEAD cohort.

HbA1c (Δ%)

DBP and SBP (Δ mmHg)

HDL and LDL (Δ mg/dl)



Fasting Glucose (Δ mg/dl)

Triglycerides (Δ mg/dl)

HDL and LDL no lipid meds (Δ mg/dl)

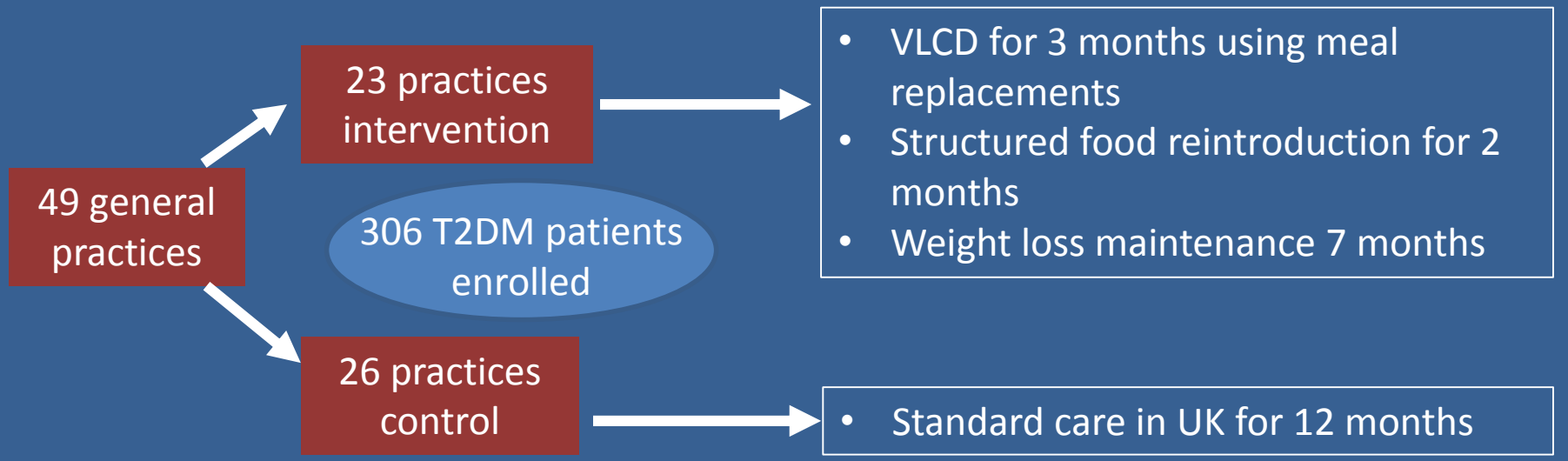
Weight Loss Categories
+>2%
+2% to -2%
-2% to -5%
-5% to -10%
-10% to -15%
->15%

Wing R R et al. Diabetes Care 2011;34:1481-1486

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

Lean ME, Leslie WS, Barnes AC, Brosnahan N, Thom G, McCombie L, Peters C, Zhyzhneuskaya S, Al-Mrabeh A, Hollingsworth KG, Rodrigues AM, Rehackova L, Adamson AJ, Sniehotta FF, Mathers JC, Ross HM, McIlvenna Y, Stefanetti R, Trenell M, Welsh P, Kean S, Ford I, McConnachie A, Sattar N, Taylor R.

Lancet 391(10120):541-551, 2018



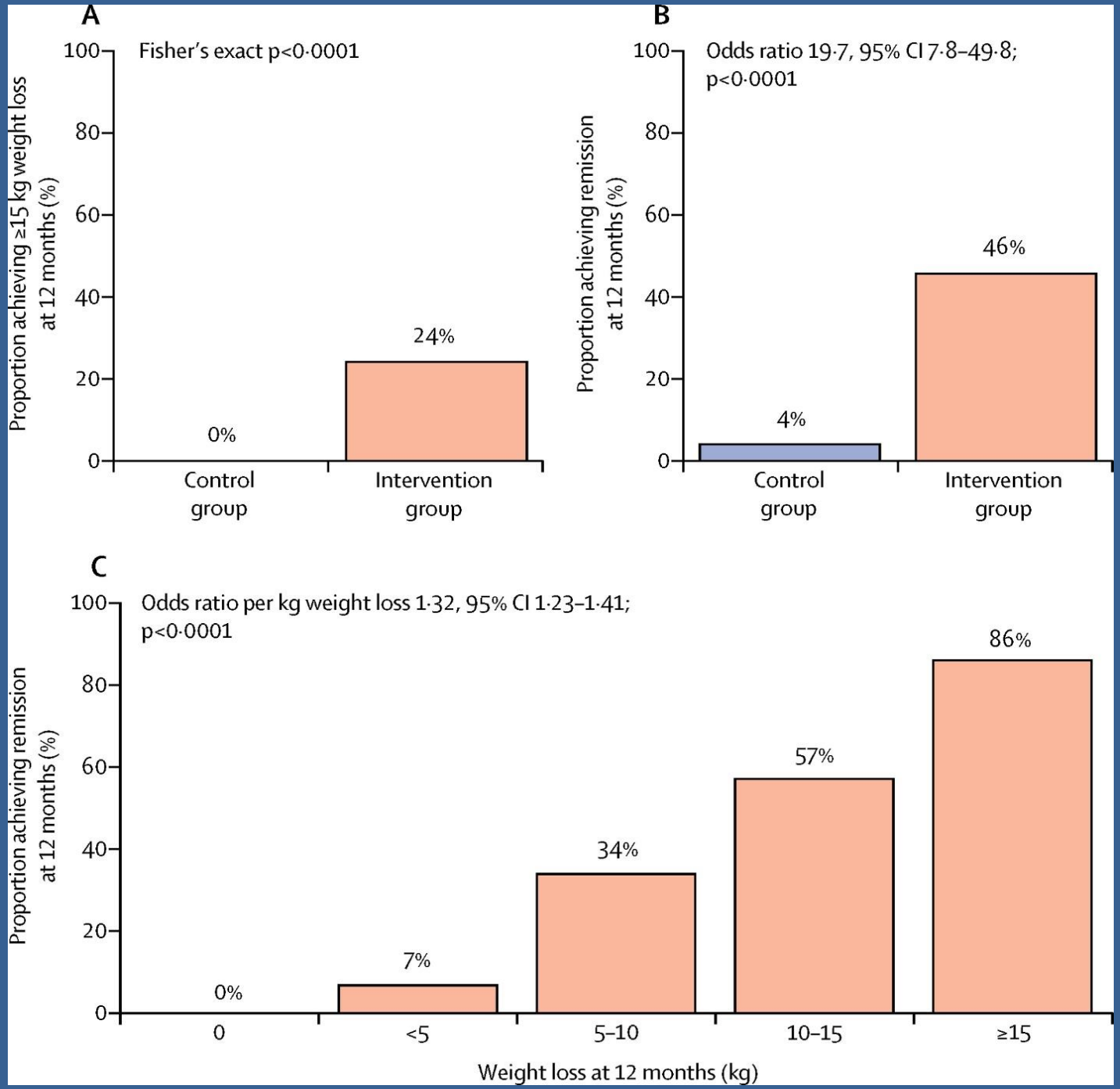
DIRECT Study: Results

Parameter/Outcome	Intervention Group	Control Group
Weight	↓ 10.0 kg	↓ 1.0 kg
HbA1c	↓ 0.9%	↑ 0.1%
Number Diabetes Medications	↓ 0.8	↑ 0.2
Number Blood Pressure Medications	↓ 0.6	↑ 0.1
Triglycerides	↓ 0.31 mmol/L	↑ 0.09 mmol/L
Quality of Life	↑ 7.2	↓ 2.9

Lean ME et al. Lancet 391(10120):541-551, 2018

DIRECT Study:

Weight loss and diabetes remission in primary care practices



Lean ME et al. Lancet 391(10120):541-551, 2018

How to Manage a Very Low Calorie Diet

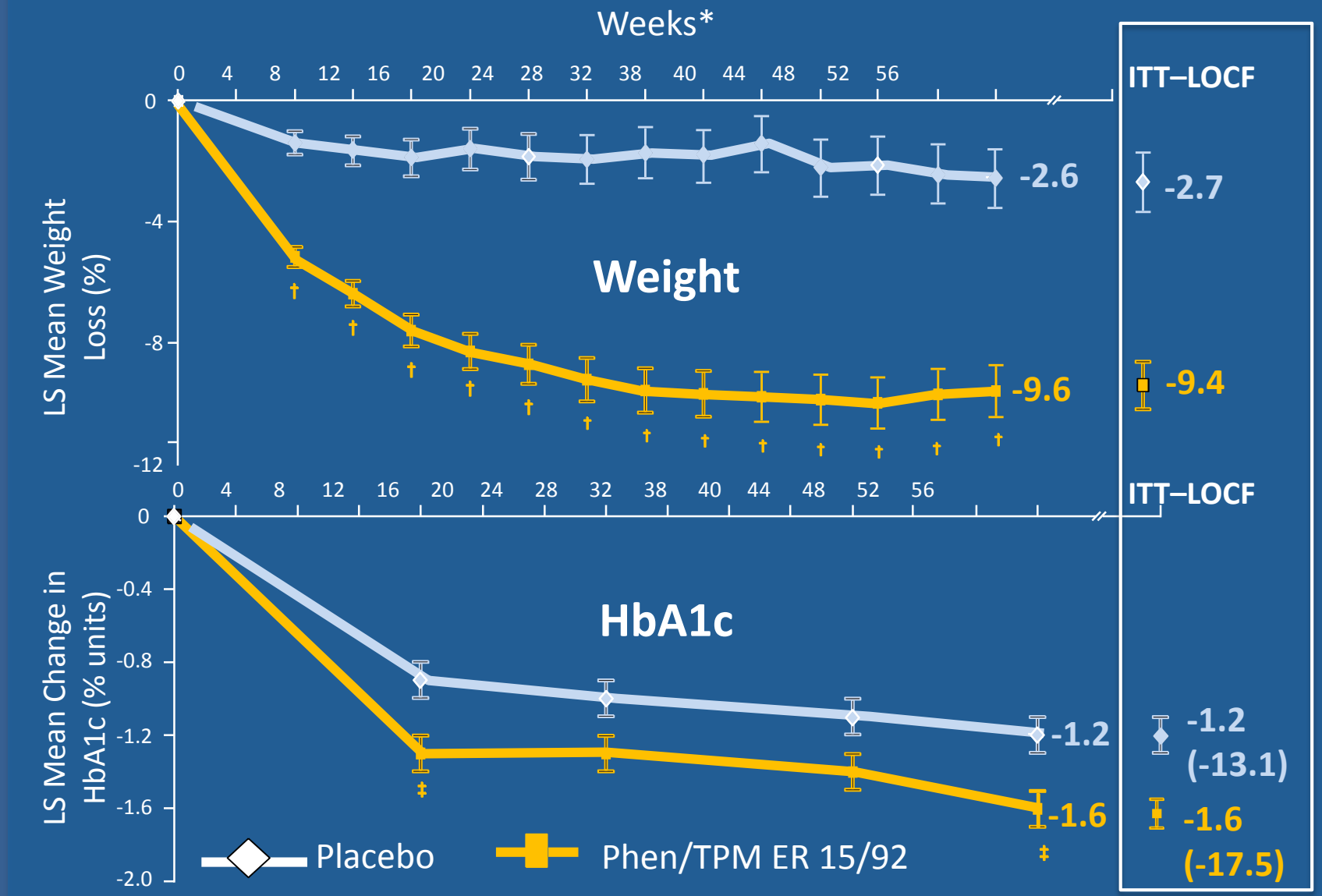
- 800=1,000 kcal/day to begin
- Begin with meal replacements 3-5 X/day for 1-3 months
- Transition to one regular-food, portion-controlled meal plus 2 meals/day consisting of replacements
- Requires support, coaching, group sessions
- Education and behavioral interventions to promote persisting long-term changes in eating behavior
- medical monitoring especially in patients with diabetes: e.g., stop insulin secretagogs and reduce basal insulin in half, monitor for hypoglycemia
- Avoid in patients with renal insufficiency, advance liver disease, pregnancy, breast feeding, active malignancy, recent CVD event, psychiatric disorders

Treatment of Diabetes Using Weight Loss Medications

Agents	Action	Diabetes RCT
Orlistat	• GI lipase inhibitor	✓
Phentermine/ Topiramate ER	• Sympathomimetic/Anticonvulsant (GABA receptor modulation?)	✓
Lorcaserin	• 5-HT_{2C} serotonin receptor agonist	✓
NaltrexoneSR/ Bupropion SR	• Dopamine/noradrenaline reuptake inhibitor/Opioid receptor antagonist	✓
Liraglutide high dose (3 mg/day)	• GLP-1 receptor agonist	✓

ER, extended release; GABA, gamma-aminobutyric acid; GI, gastrointestinal; GLP, glucagon-like peptide.

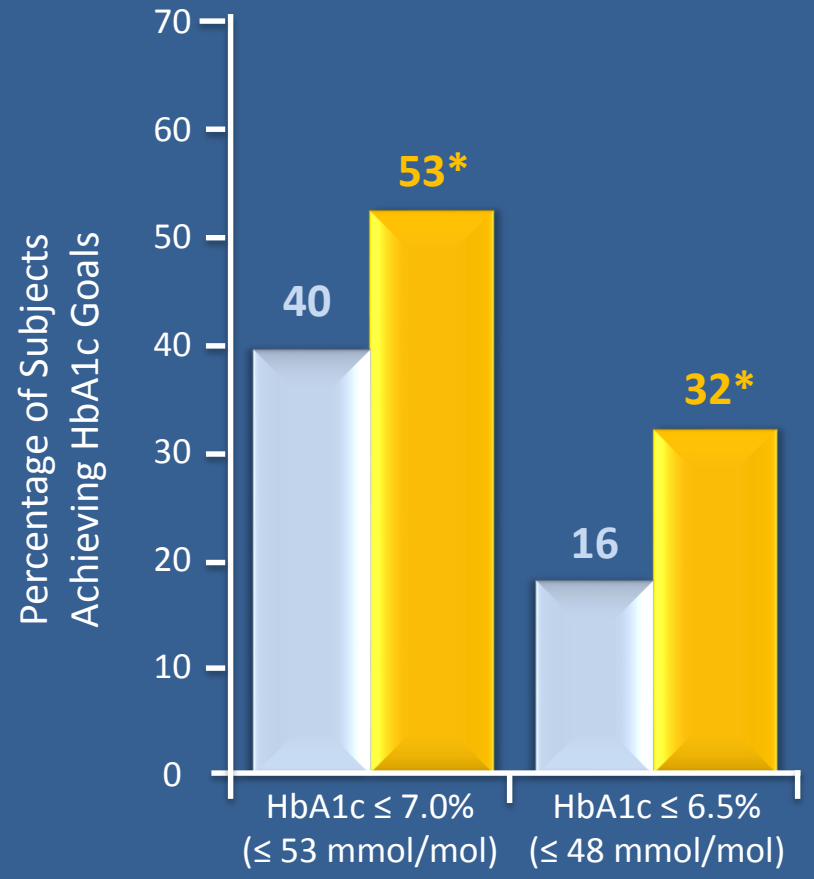
Effects of Phentermine/Topiramate ER in T2DM

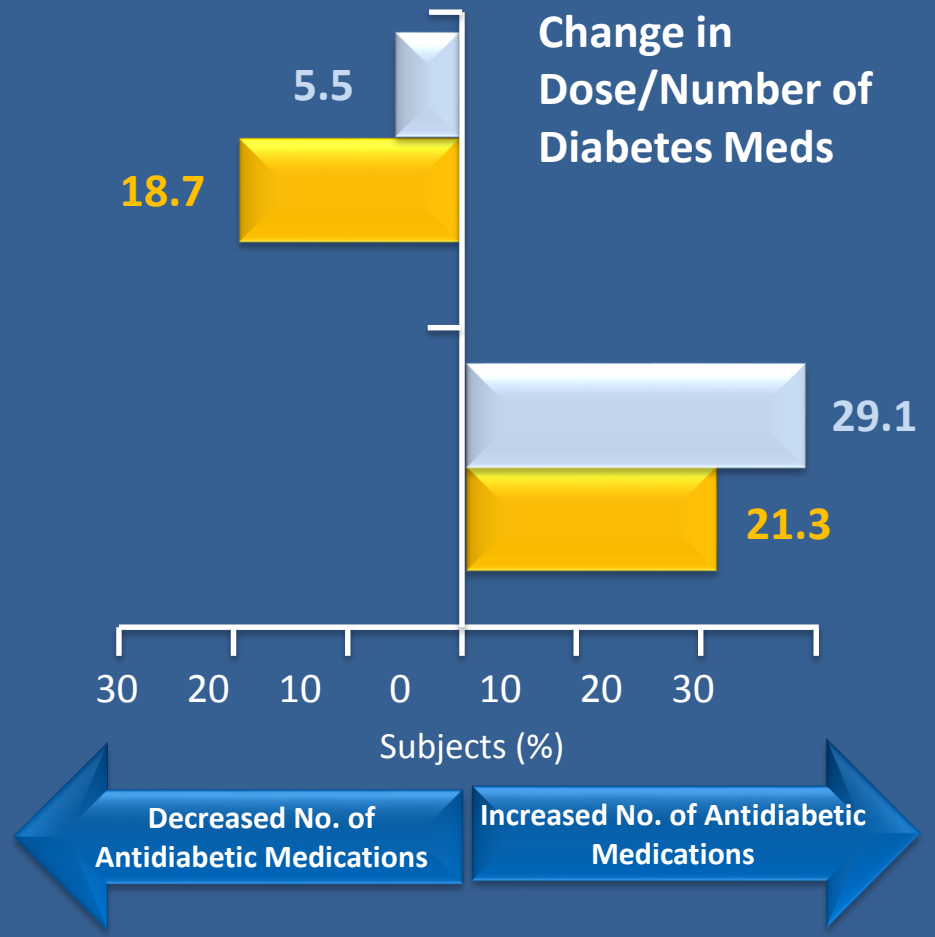


†P , 0.0001 for PHEN/TPM ER groups vs. placebo at all time points except week 0. ‡P , 0.05 vs. placebo.

Garvey WT et al, Diabetes Care, ePub Sept 23, 2014

Effects of Phentermine/Topiramate ER in T2DM





Placebo (n=55)

PHEN/TPM ER 15/92 (n=75)

*P , 0.05 vs. placebo

Garvey WT et al, Diabetes Care, ePub Sept 23, 2014

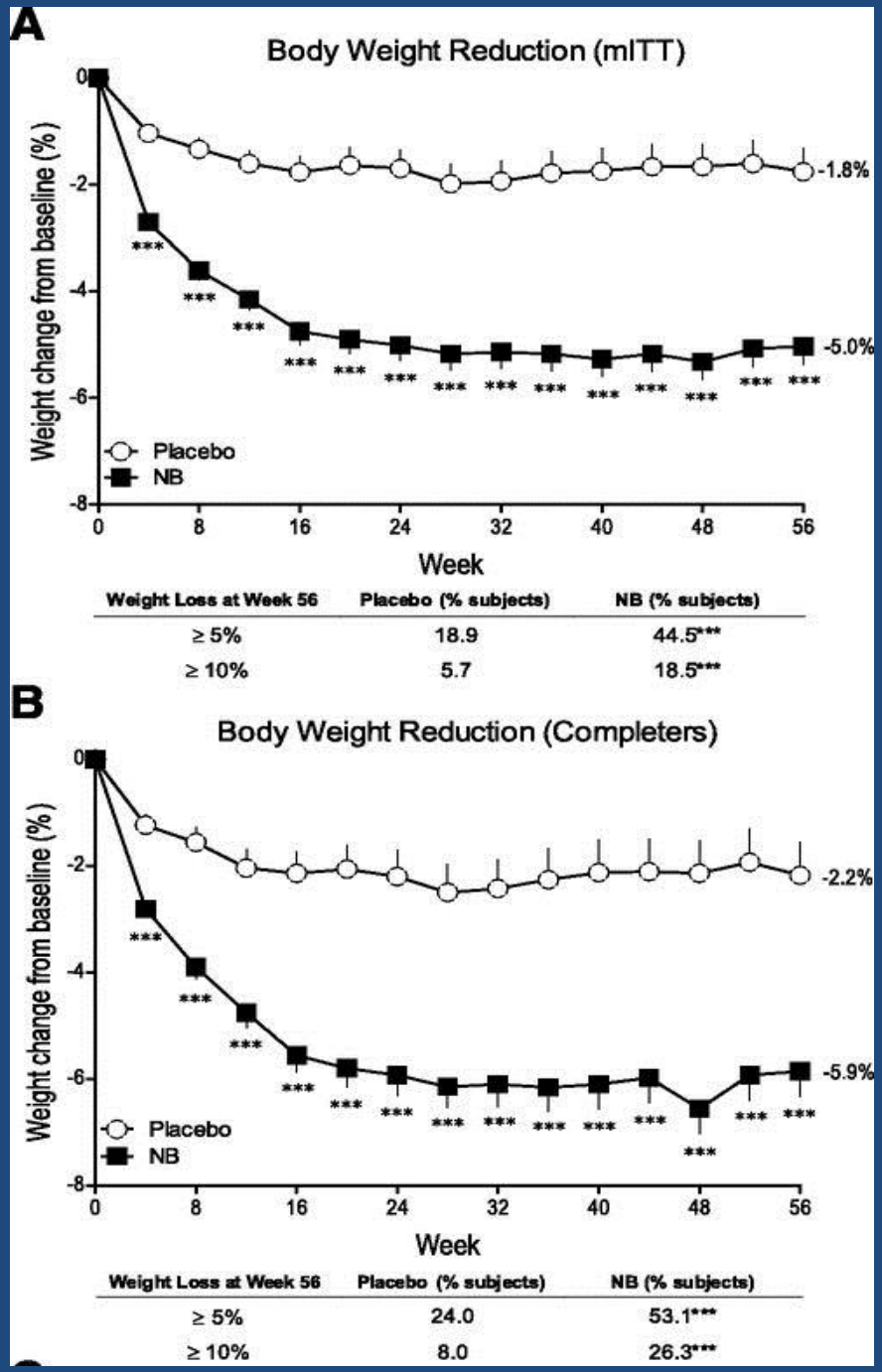
Phentermine/Topiramate ER Effect on Risk Factors: CONQUER Study

Variable		Phentermine/ Topiramate ER 7.5/46 mg	Placebo	*P* value
Waist (cm)	↓	-7.6	-2.4	<0.0001
Systolic BP (mm Hg)	↓	-4.7	-2.4	0.0008
Diastolic BP (mm Hg)		-3.4	-2.7	0.1281
Triglycerides (%)	↓	-8.6	4.7	<0.0001
LDL–C (%)		-3.7	-4.1	0.7391
HDL–C (%)	↑	5.2	1.2	<0.0001
CRP (mg/L)	↓	-2.49	-0.79	<0.0001
Adiponectin (µg/mL)	↑	1.40	0.33	<0.0001

Changes from baseline to week 56 in secondary endpoints

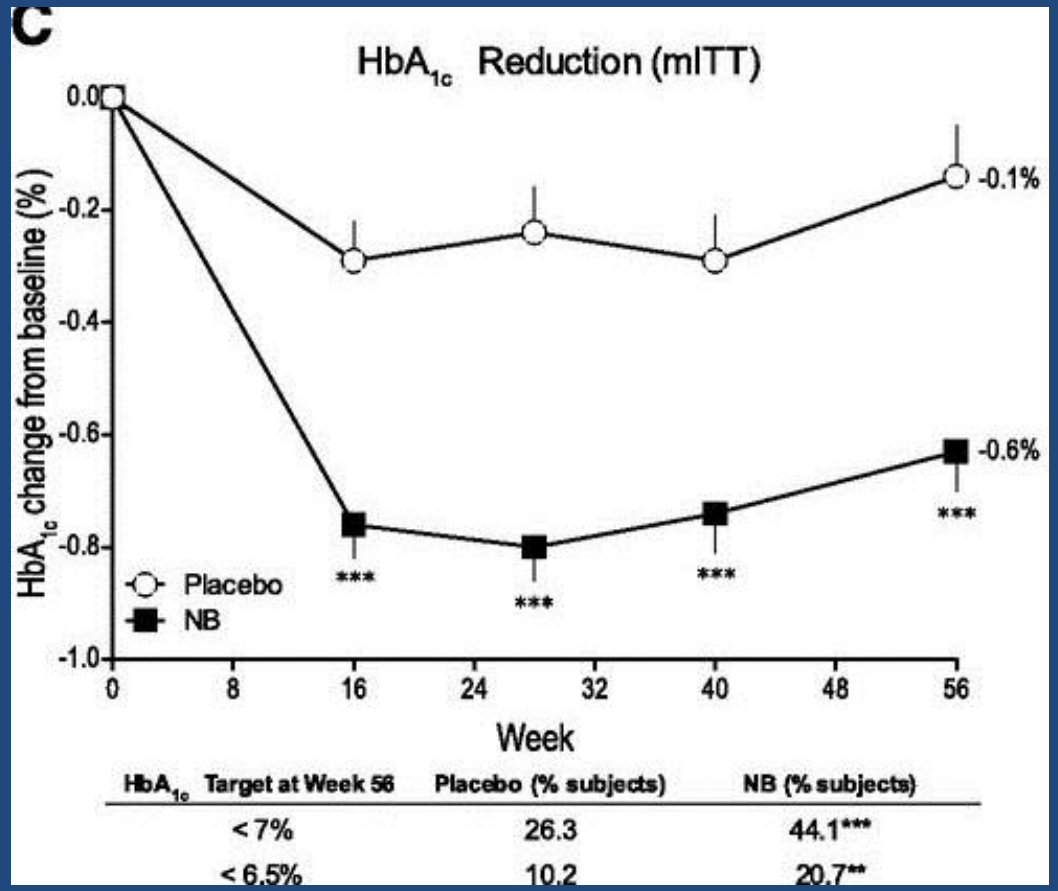
Garvey WT et al. *Am J Clin Nutr*. 2012;95(2):297-308.

Effects of Naltrexone/Bupropion ER of weight and HbA1c in Patients with Type 2 Diabetes



Weight Loss at Week 56	Placebo (% subjects)	NB (% subjects)
≥ 5%	18.9	44.5***
≥ 10%	5.7	18.5***

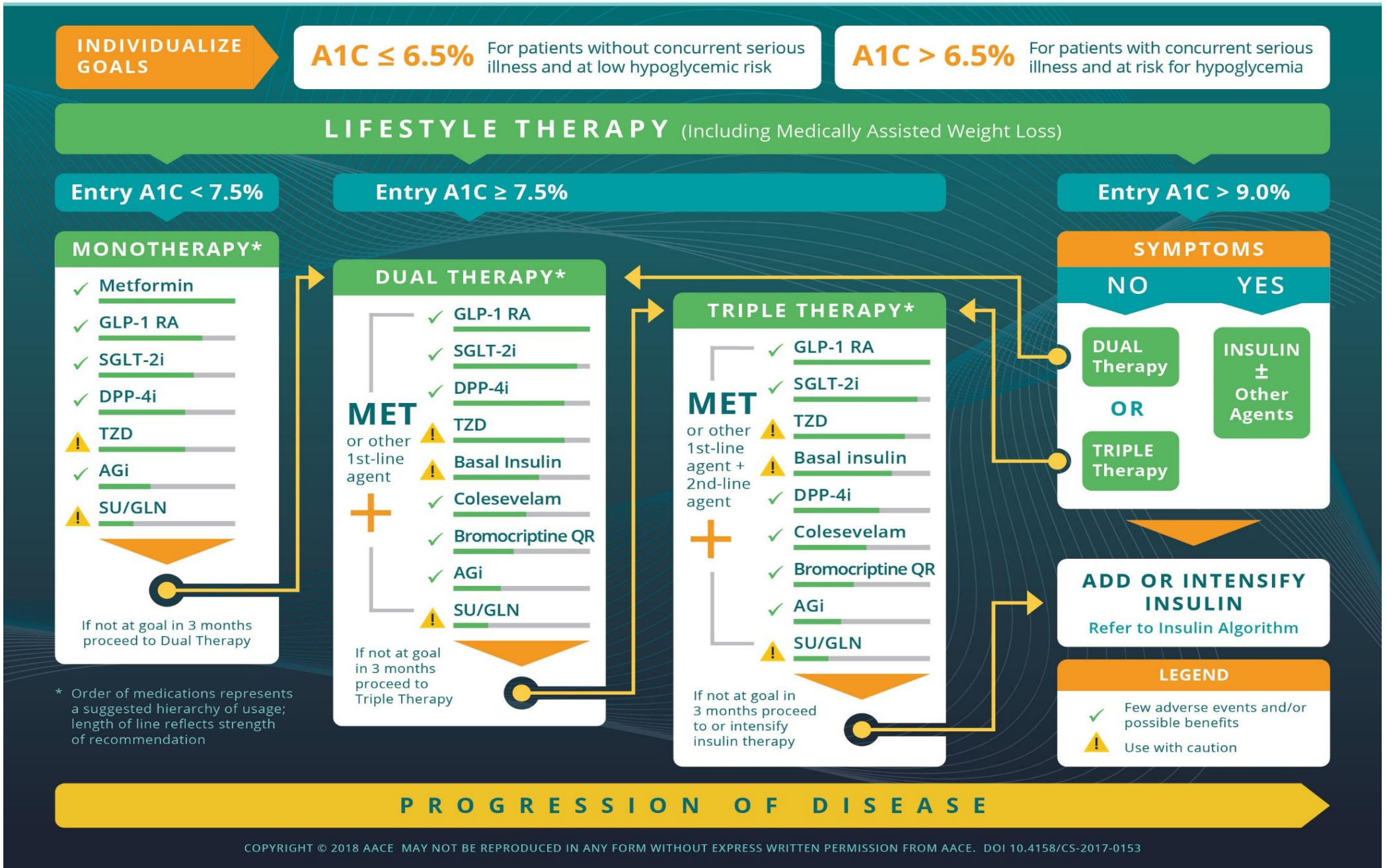
Weight Loss at Week 56	Placebo (% subjects)	NB (% subjects)
≥ 5%	24.0	53.1***
≥ 10%	8.0	26.3***



HbA_{1c} Target at Week 56	Placebo (% subjects)	NB (% subjects)
< 7%	26.3	44.1***
< 6.5%	10.2	20.7**

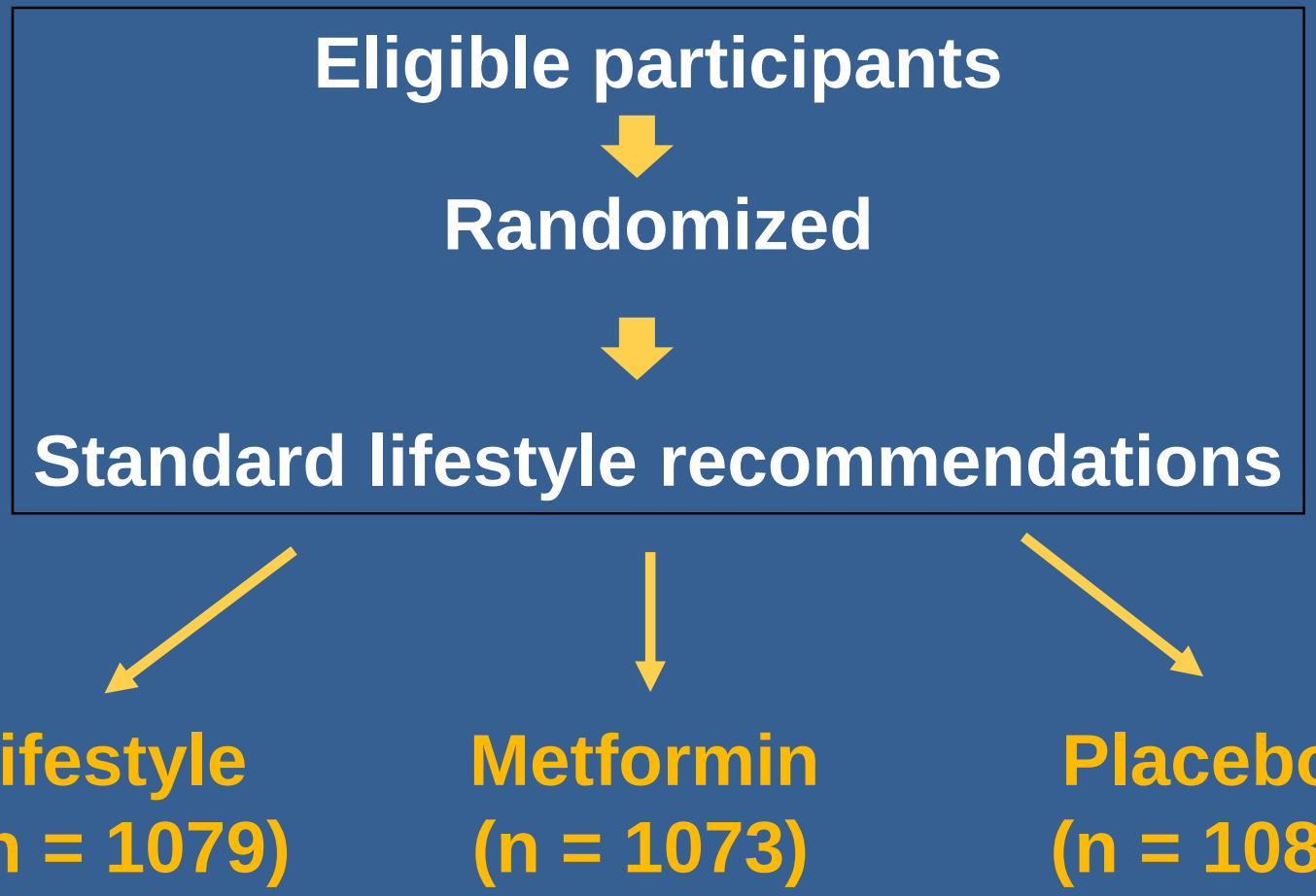
Hollander P et al. Diabetes Care 2013;36:4022-4029

Glycemic Control Algorithm



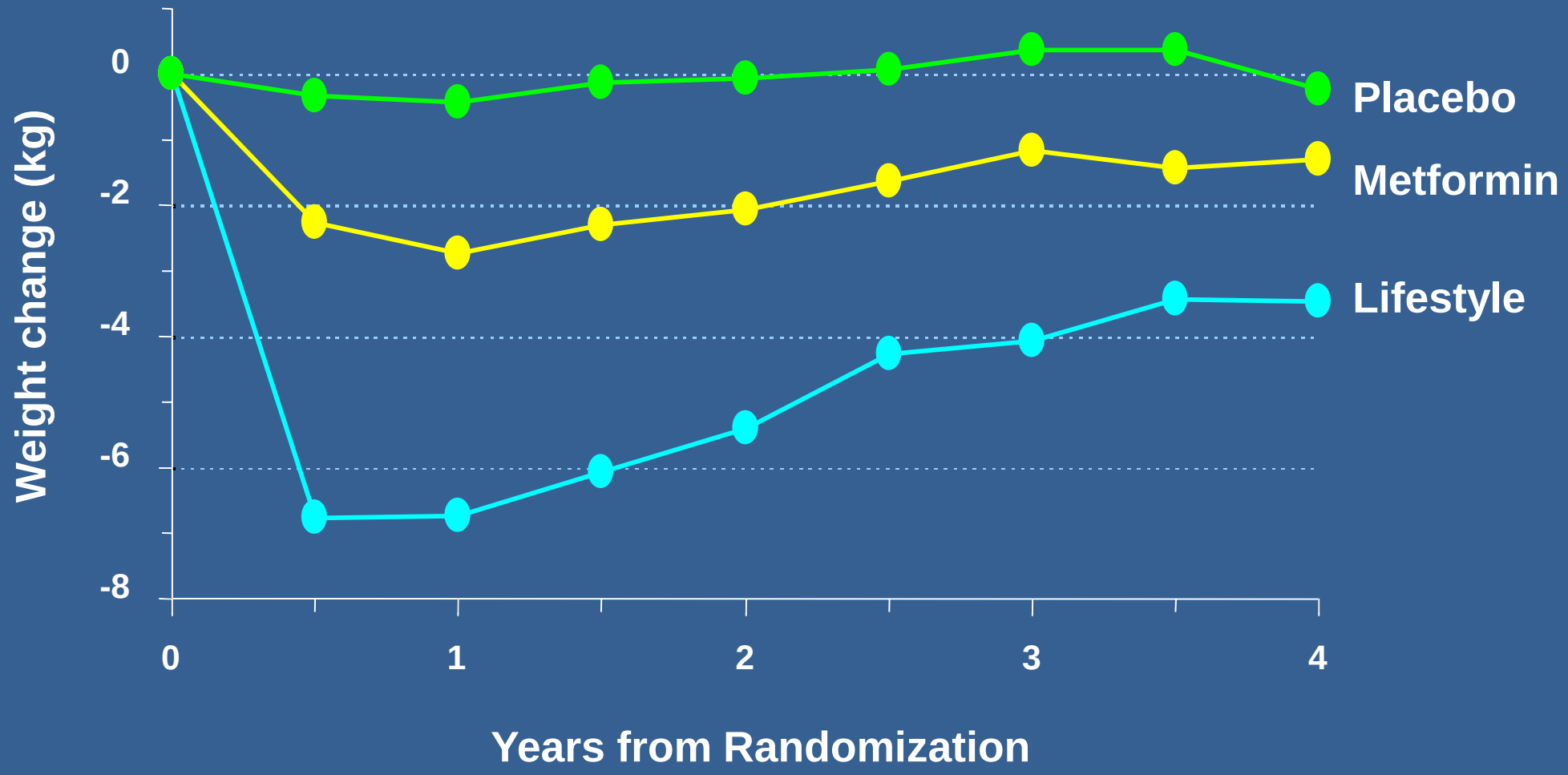
 DOI 10.4158/CS-2017-0153

Diabetes Prevention Program Study Interventions



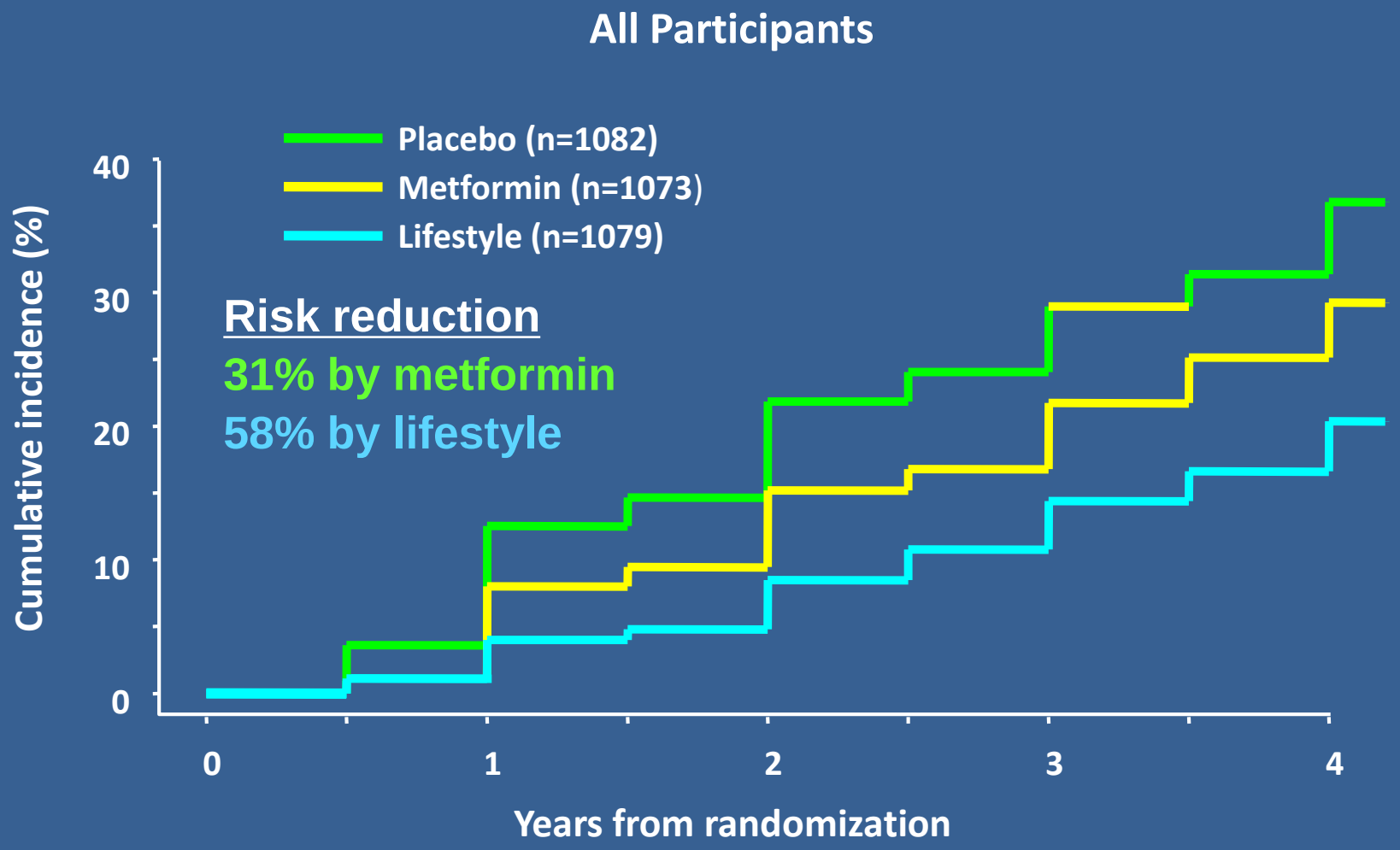
The DPP Research Group. *N Engl J Med*. 2002;346:393-403.

Mean Weight Change during DPP



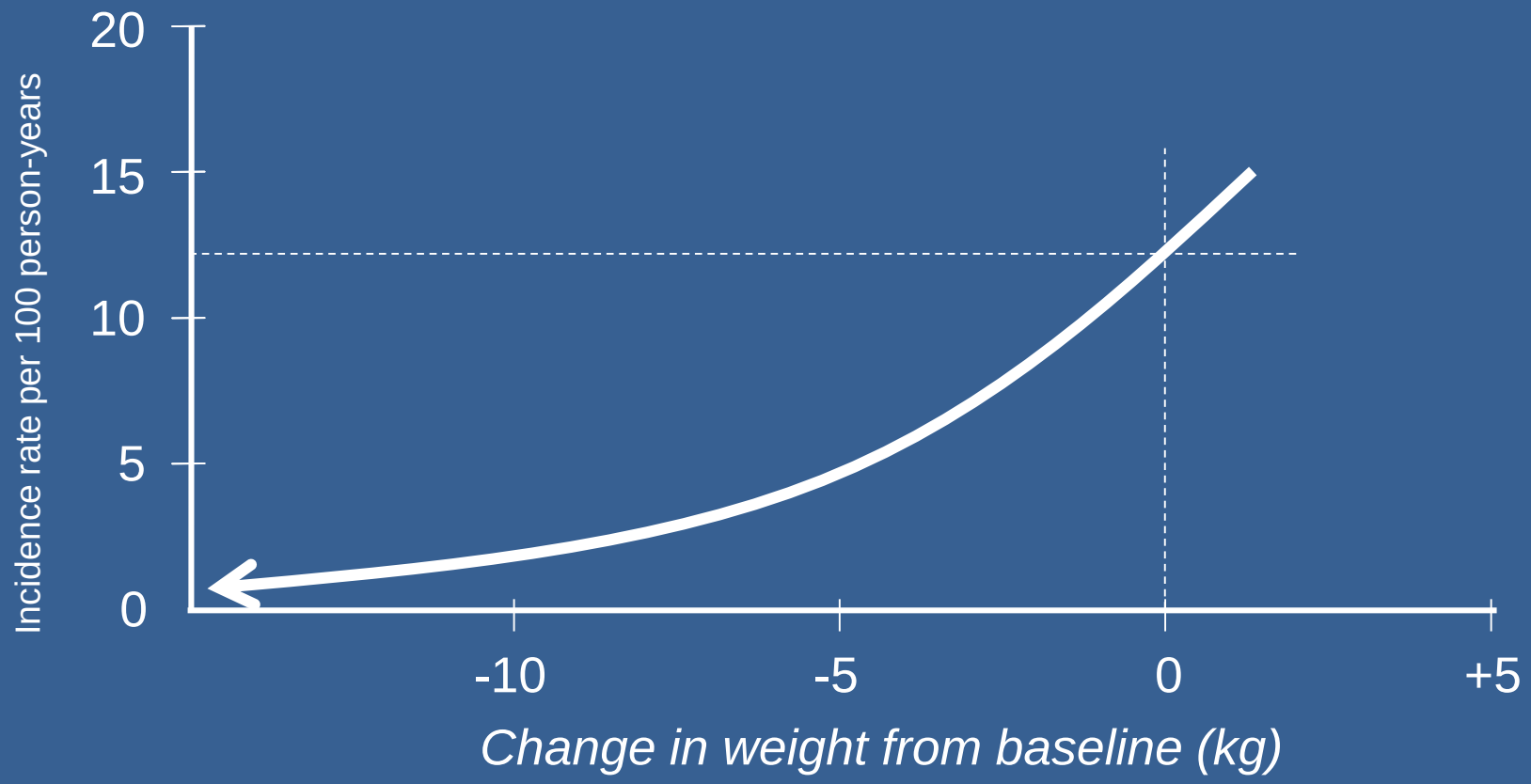
The DPP Research Group. *N Engl J Med*. 2002;346:393-403.

Incidence of Diabetes during DPP



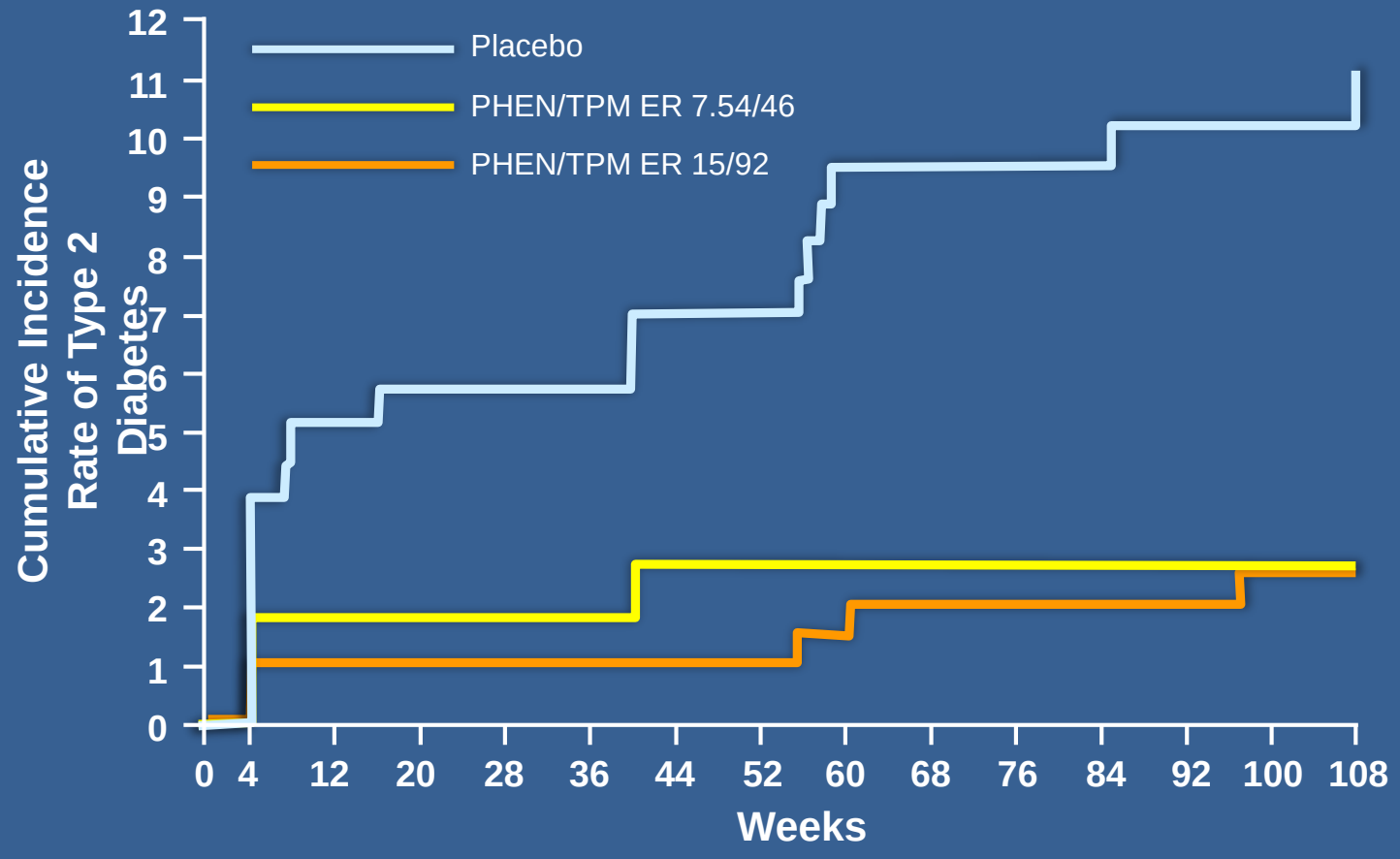
The DPP Research Group. *N Engl J Med*. 2002;346:393-403.

How much weight loss is needed to prevent type 2 diabetes? The DPP experience



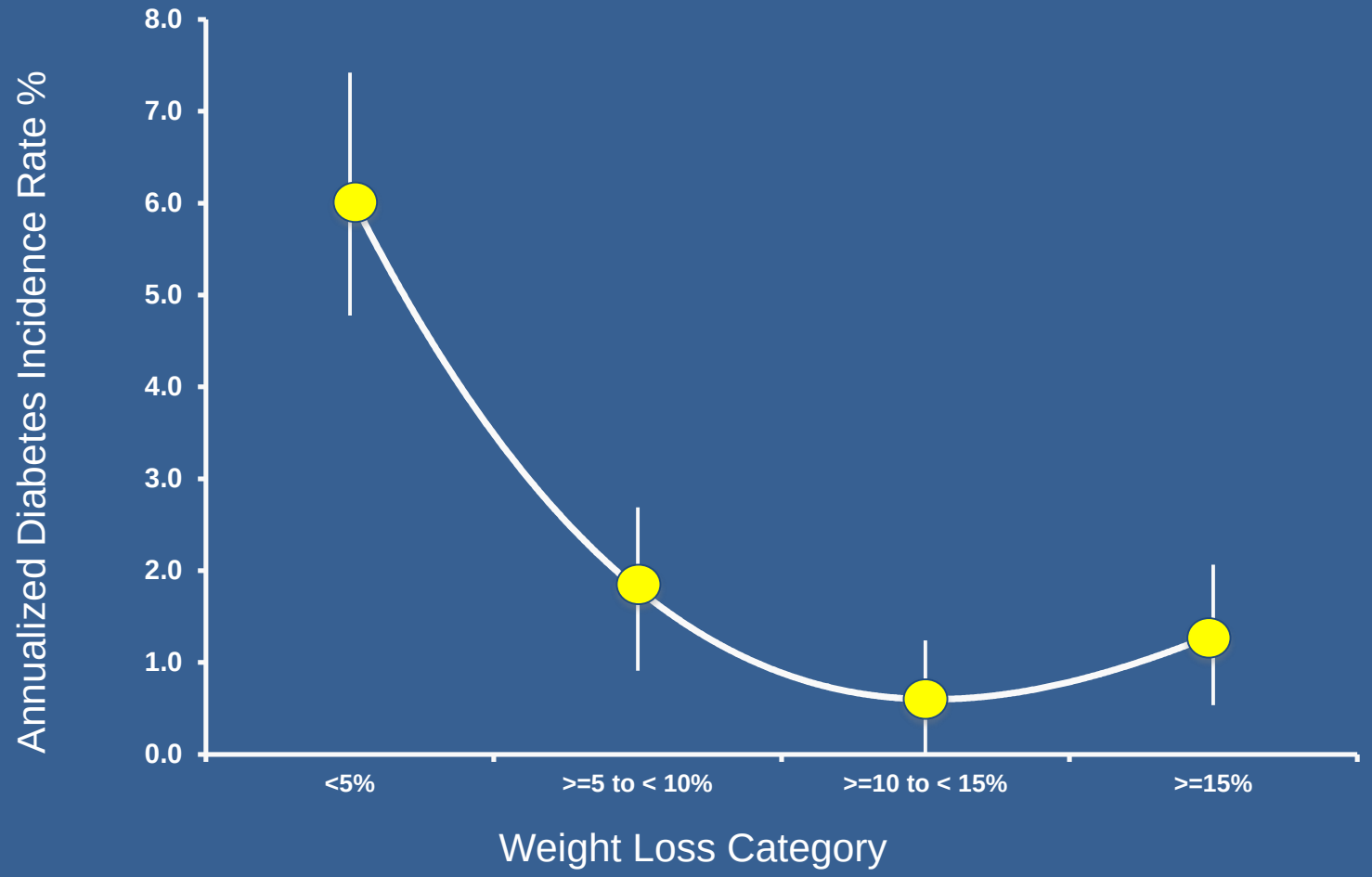
Redrawn from: Hamman, et al Diabetes Care 29:2102-2107, 2006

Phentermine/Topiramate ER and the Prevention of Diabetes in Patients With Metabolic Syndrome and/or Prediabetes: SEQUEL Study



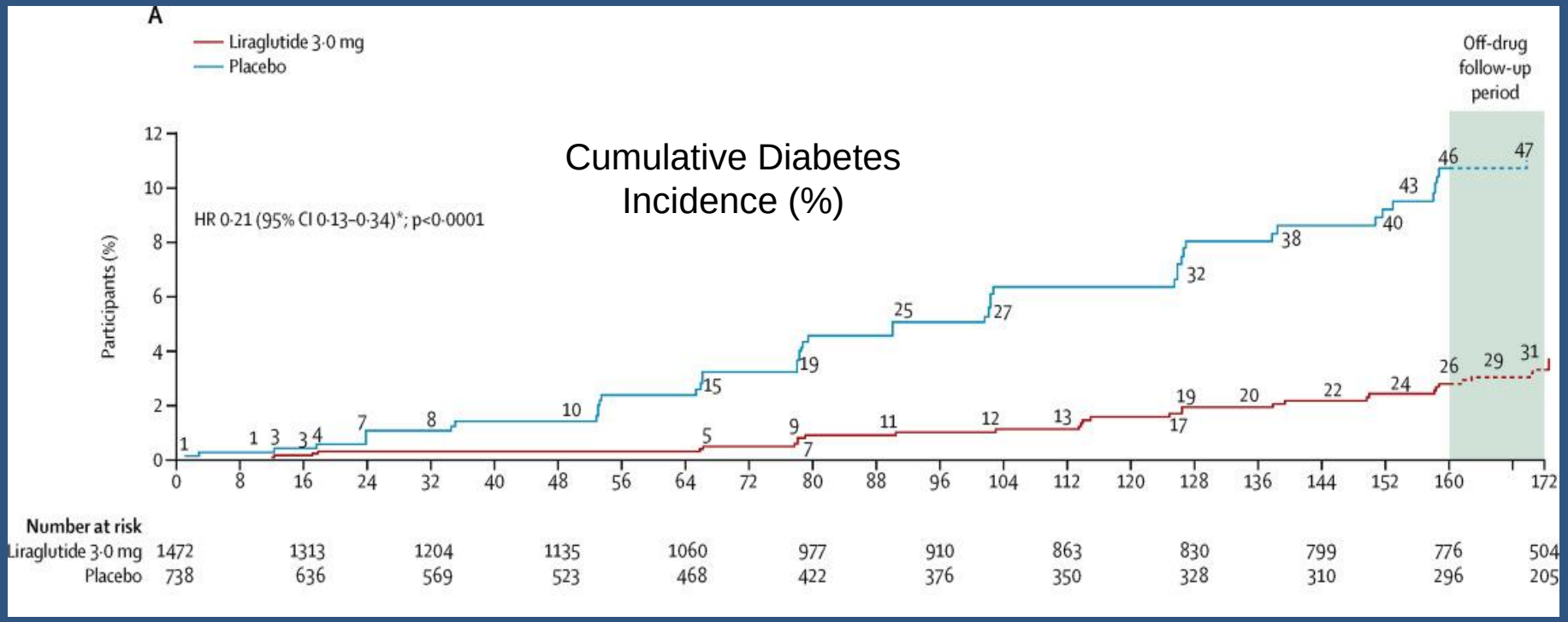
Garvey WT et al. *Diabetes Care*. 2014;37:912-921.

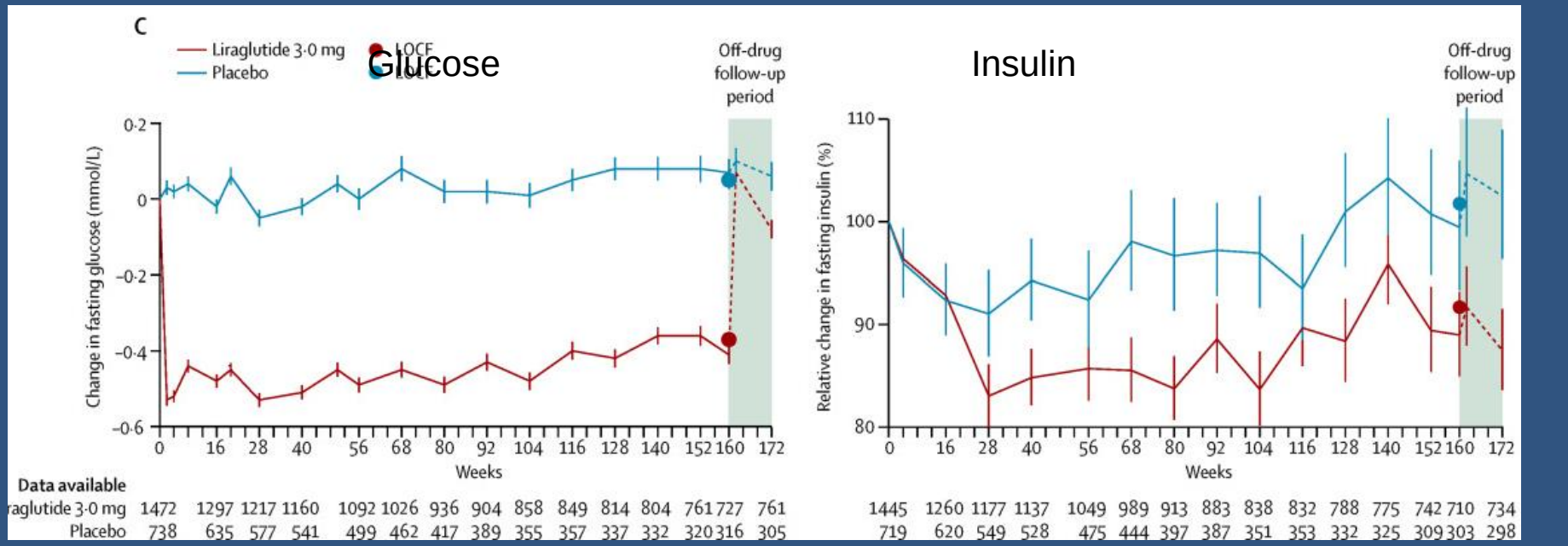
Dose-Response for Weight Loss and Diabetes Prevention due to Phentermine/Topiramate ER Treatment: SEQUEL



Garvey WT et al. *Diabetes Care*. 2014;37:912-921.

Treatment of Patients with Prediabetes with Liraglutide 3 mg/day





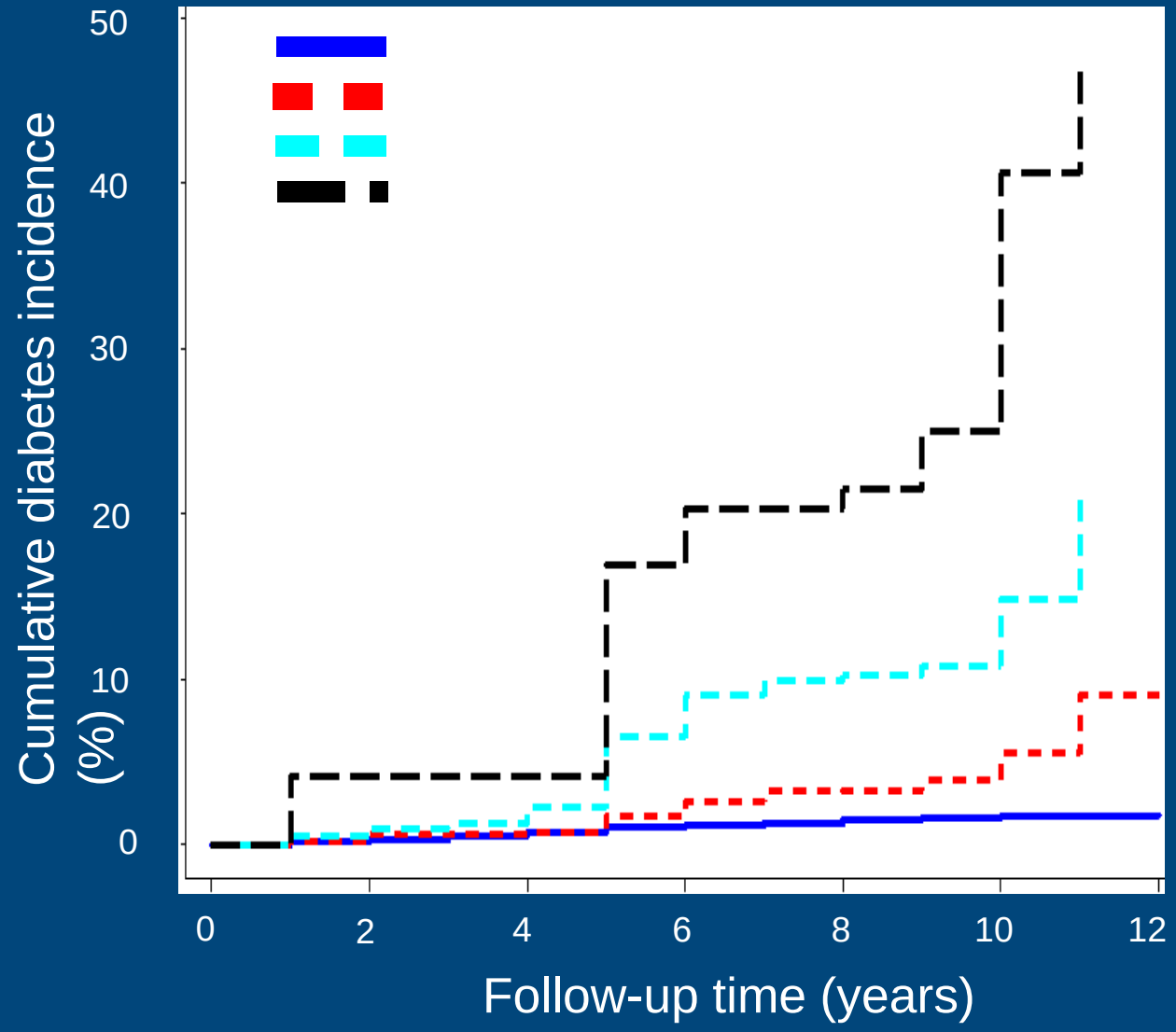
Le Roux CW et al. Lancet 389:1399, 2017

Cardiometabolic Disease Staging (CMDS) [8]

Stage	Criteria	Rationale
0	**No Risk Factors**	Healthy Obese [1]
1	**1 or 2 Risk Factors** (waist, blood pressure, triglycerides, HDL-c)	Metabolic Syndrome has low sensitivity for CMD, and 1 or 2 risk factors elevates risk of future T2DM and CVD [2,3]
2	**Metabolic Syndrome OR Prediabetes** (i) Metabolic Syndrome alone, OR (ii) IFG, OR (iii) IGT	Both Metabolic Syndrome and Prediabetes confer increased risk of T2DM and CVD [3,4]
3	**Metabolic Syndrome PLUS Prediabetes** 2 or more out of 3: Metabolic Syndrome, IFG, IGT	Risk of future T2DM is double in patients with both Metabolic Syndrome and Prediabetes compared with either alone [3-6]
4	**End-Stage Cardiometabolic Disease** Type 2 Diabetes and/or CVD	T2DM is CVD risk equivalent [7]

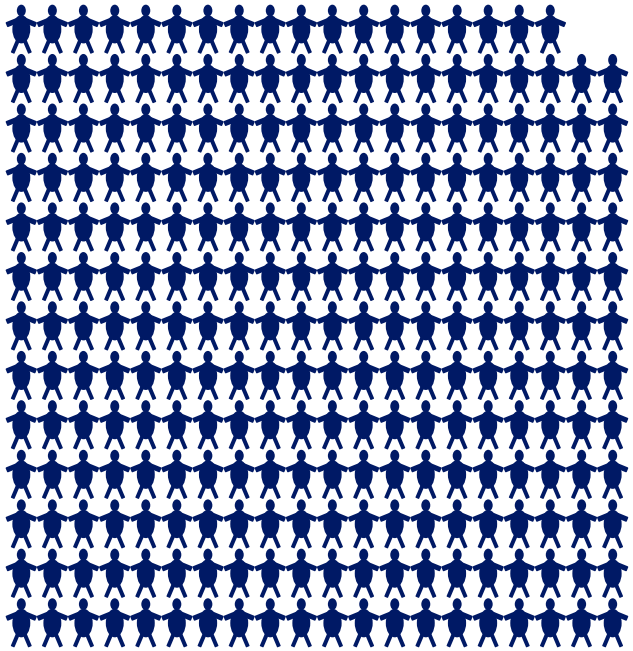
1. Wildman, *Arch Intern Med* 168:1617, 2008. 2. Liao, *Diabetes Care* 27:978, 2004. 3. Wilson, *Circulation* 112: 3066, 2005. 4. Lakka *JAMA*. 2002;288:2709, 2002. 5. Lorenzo, *Diabetes Care* 26:3153, 2003. 6. De Vegt *JAMA* 285:2109, 2001. 7. Haffner, *N Engl J Med* 339:229, 1998. 8. Guo F, Moellering DR, Garvey WT, *Obesity* 22:110, 2014

Cardiometabolic Disease Staging: Cumulative Diabetes Incidence as a Function of Increasing CMDS Risk Stage: CARDIA Study Cohort



Guo F, Moellering DR, Garvey WT.
Obesity 22:110-118, 2014

Number needed to treat to prevent one case of T2D as a function of baseline weighted cardiometabolic disease staging

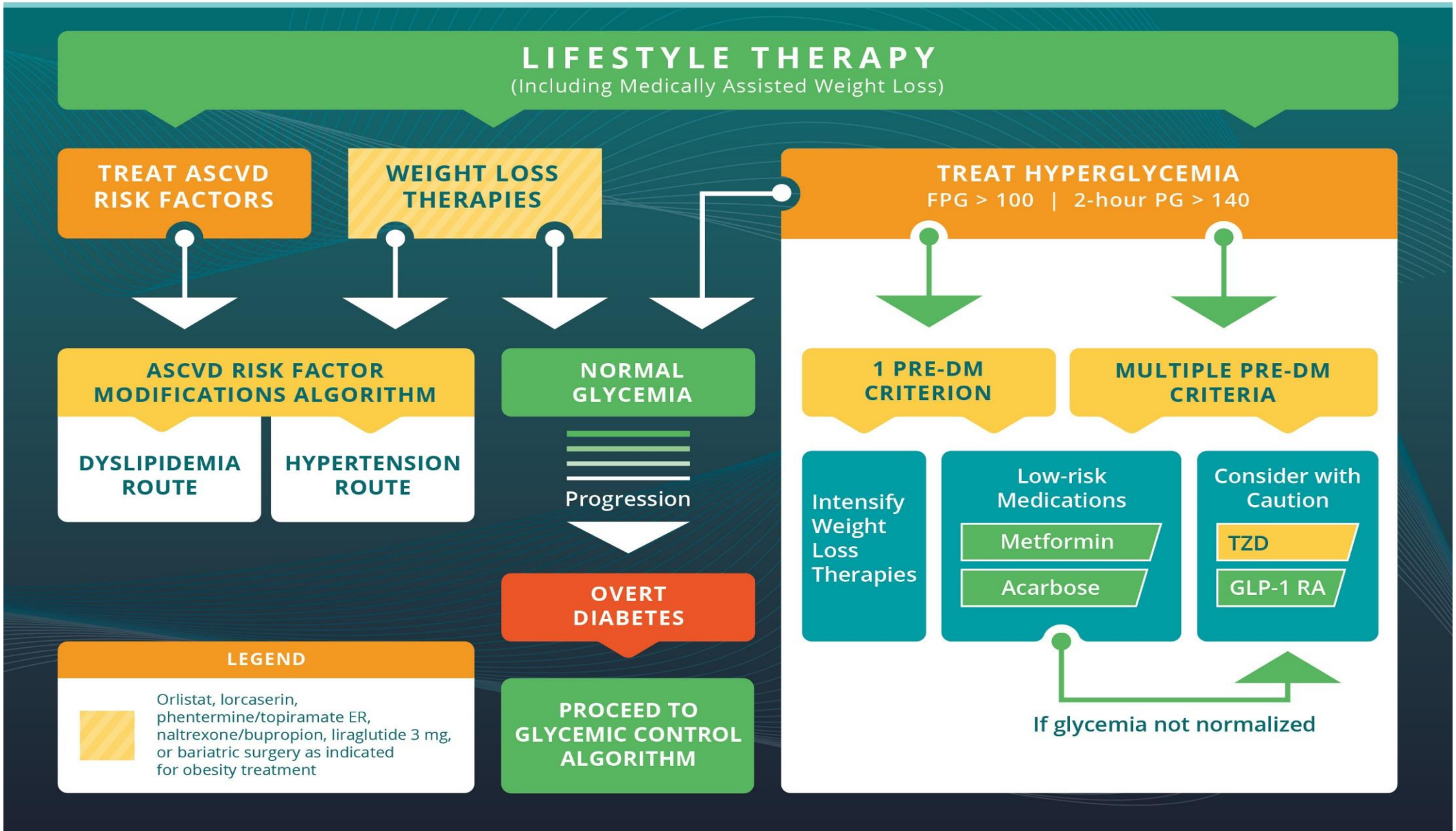
CMDS score	Number needed to treat
0–29	258 
60+	18 

Guo F, Garvey WT. Diabetes Care. 40(7):856-862, 2017

CMDS, Cardiometabolic Disease Staging; T2D, type 2 diabetes

Prediabetes Algorithm

IFG (100–125) | IGT (140–199) | METABOLIC SYNDROME (NCEP 2001)



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Together 2 Goal®

AMGA

Diabetes Focused National Campaign

Data Reporting Measures

1. HbA1c Control
2. Blood Pressure Control
3. Medical Attention for Nephropathy
4. Lipid Management

} Weight Loss Therapy

DSMES and MNT Programs should encompass a concerted plan for reduced calorie meal plans in patients with overweight/obesity for optimal outcomes

Thank You

September 2018 Webinar

Date/Time: September 20, 2018 from 2-3pm Eastern

Topic: Removing Patient Barriers to Medication Adherence

Presenter: Molly Ekstrand, RPh, BCACP, AE-C of Park Nicollet HealthPartners Care Group

Questions