FACULTY OF
MEDICINE & DENTISTRY
UNIVERSITY OF ALBERTA

Obesity Treatment: Drug or Surgery?

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Chair in Obesity Research & Management
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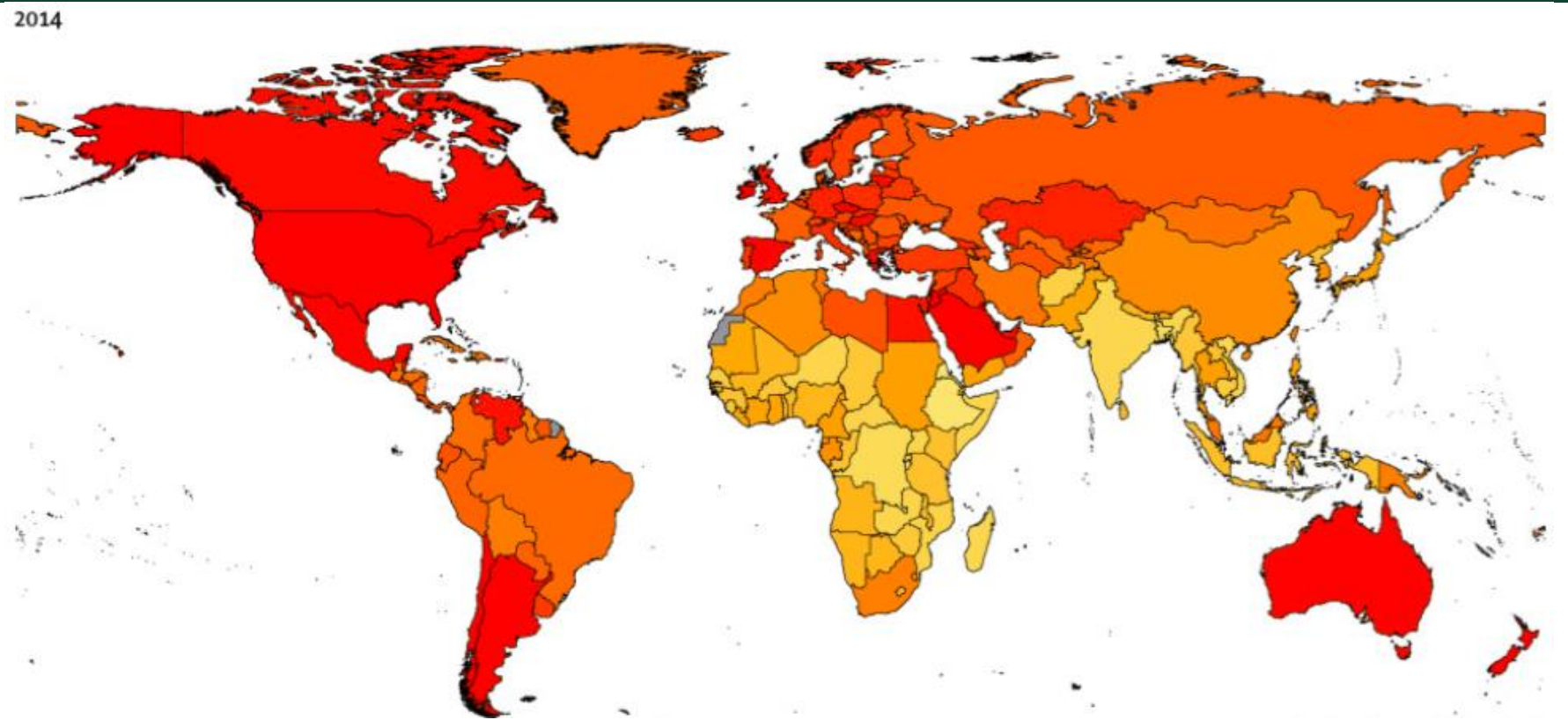
Edmonton, AB, Canada
www.drsharma.ca

Global Obesity Map 2014

Faculty of Medicine & Dentistry
University of Alberta



The Lancet, 2016

CMA recognizes obesity as a disease

by Pat Rich

10/9/2015

The Canadian Medical Association (CMA) has declared obesity to be a chronic medical disease requiring enhanced research, treatment and prevention efforts.

At the recent meeting of the CMA Board of directors, overwhelming support was given to a resolution to this effect that had been referred to the Board for consideration from the August General Council meeting.

"It is important for health care providers to recognize obesity as a disease so preventive measures can be put in place and patients can receive the appropriate treatment," said CMA President Cindy Forbes.

Central Control of Energy Metabolism

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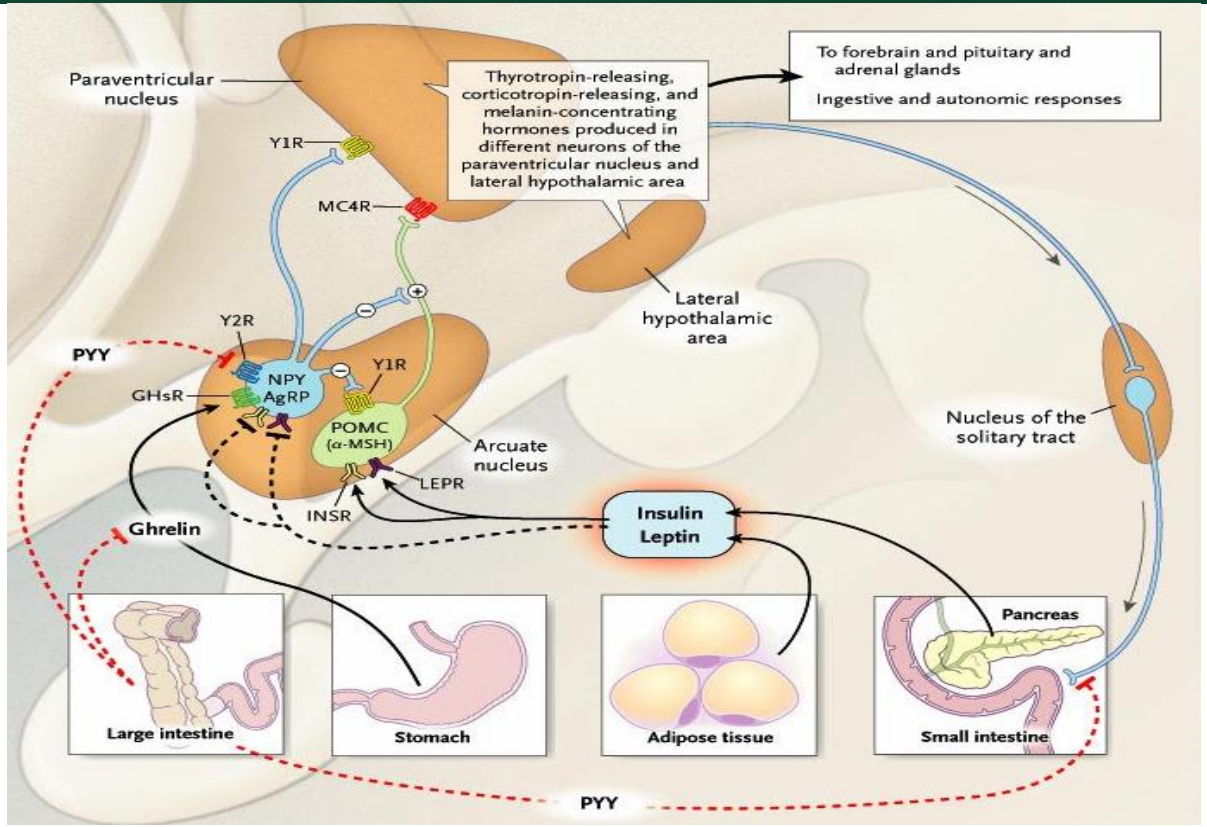
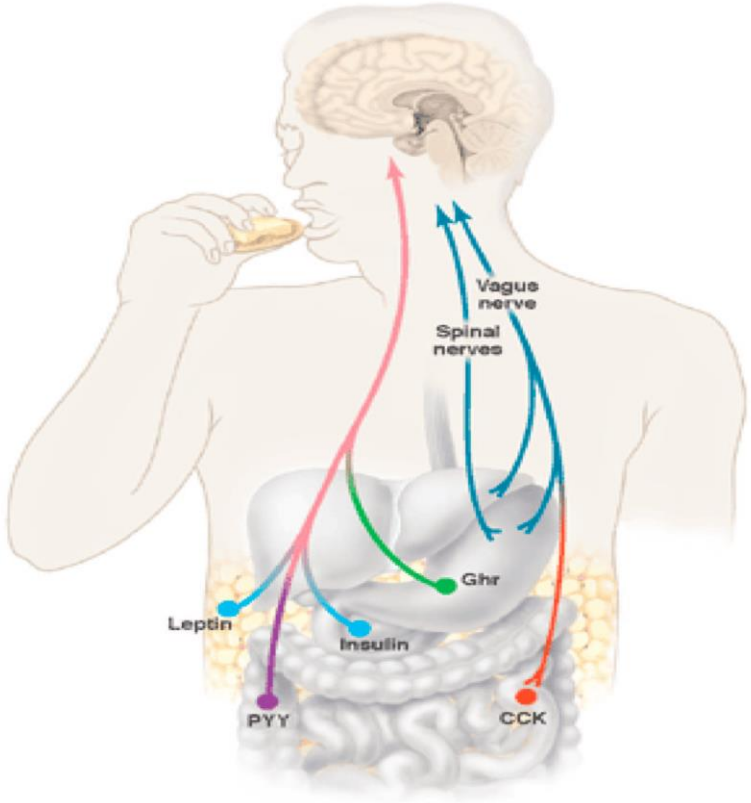


Long-Acting Adiposity Signals and Short-Acting Meal-Related Signals that Contribute to Energy Balance



Marx J: *Science* 2003;299:846

Adipose Tissue Adipokines

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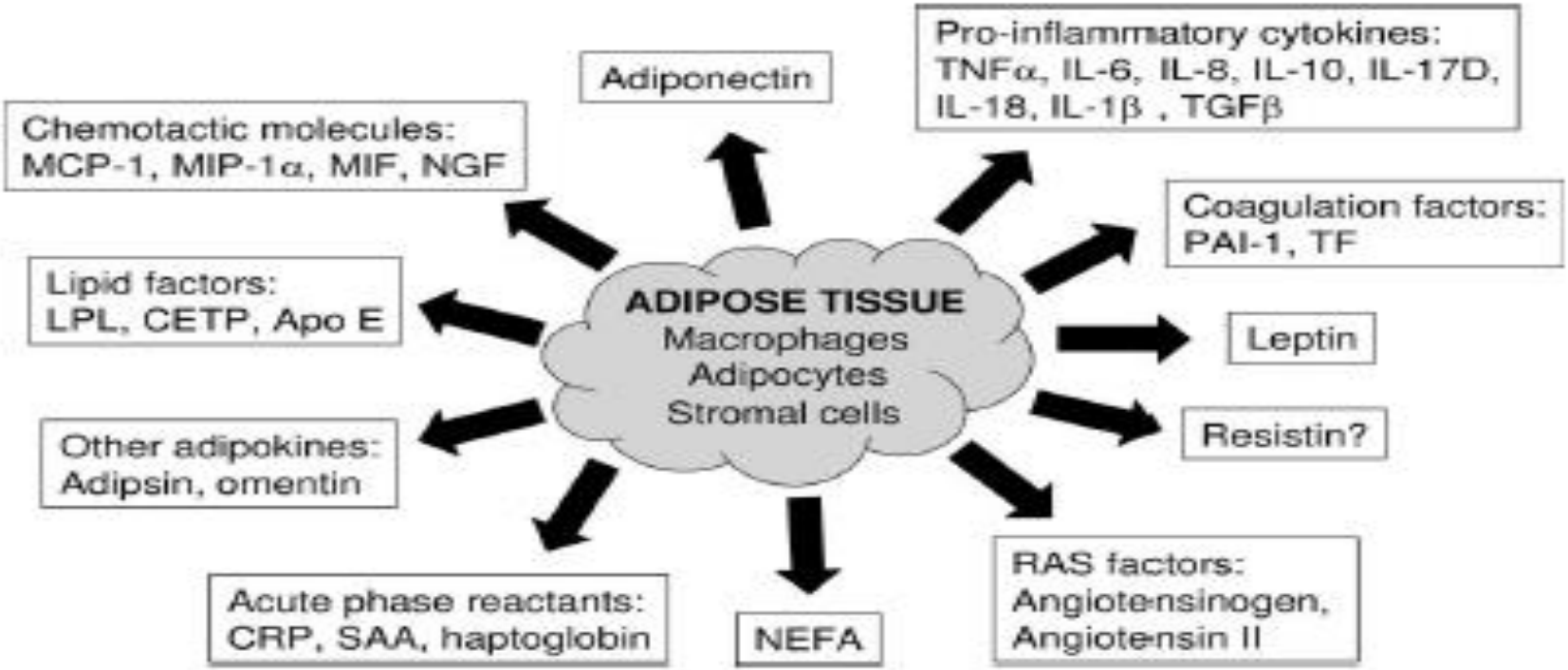
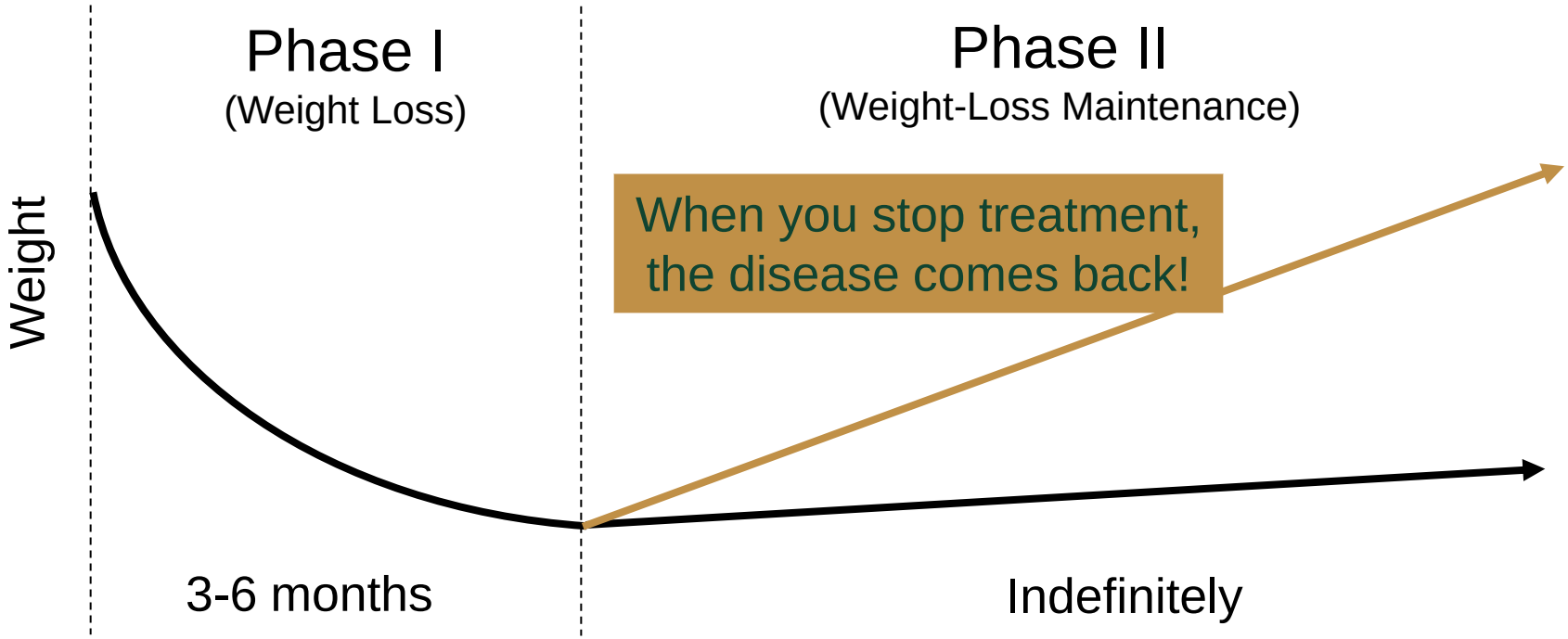


Sharma AM & Staels B. *JCEM* 2007

Phases of Obesity Treatment

Faculty of Medicine & Dentistry
University of Alberta



Typical Treatment Success

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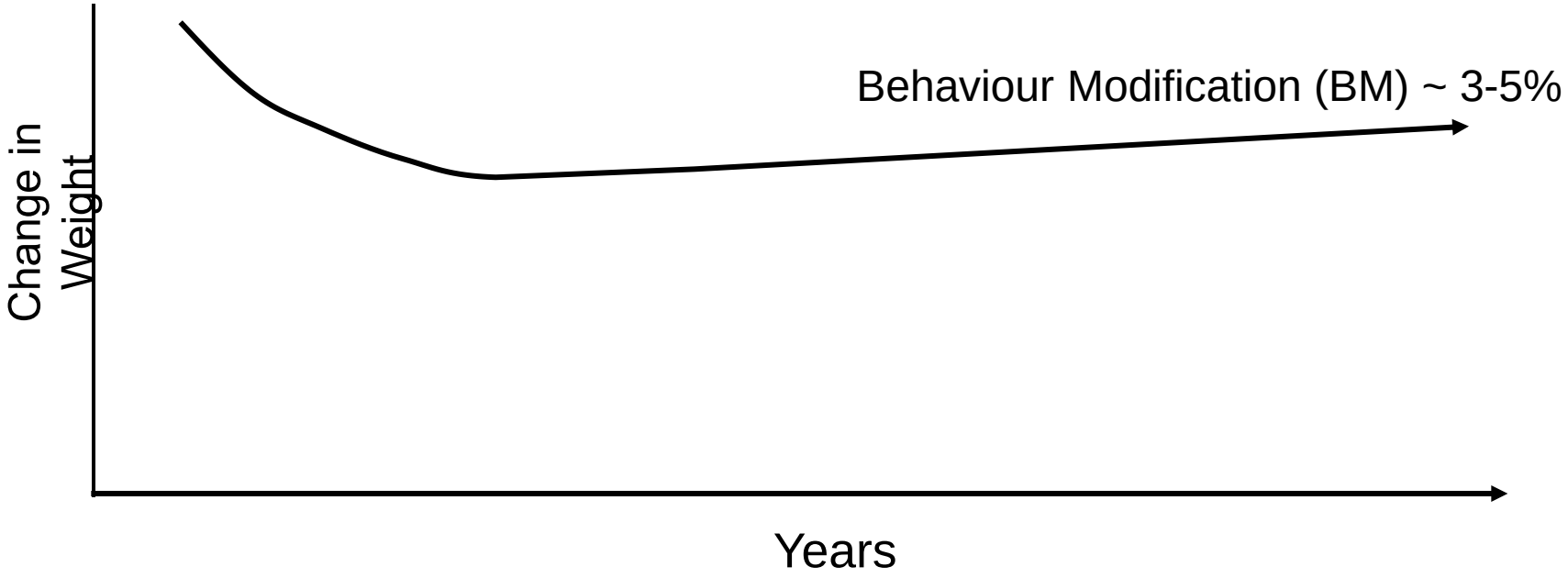

Recovery of Lost Weight After Diet-Induced Weight Loss (16 studies)

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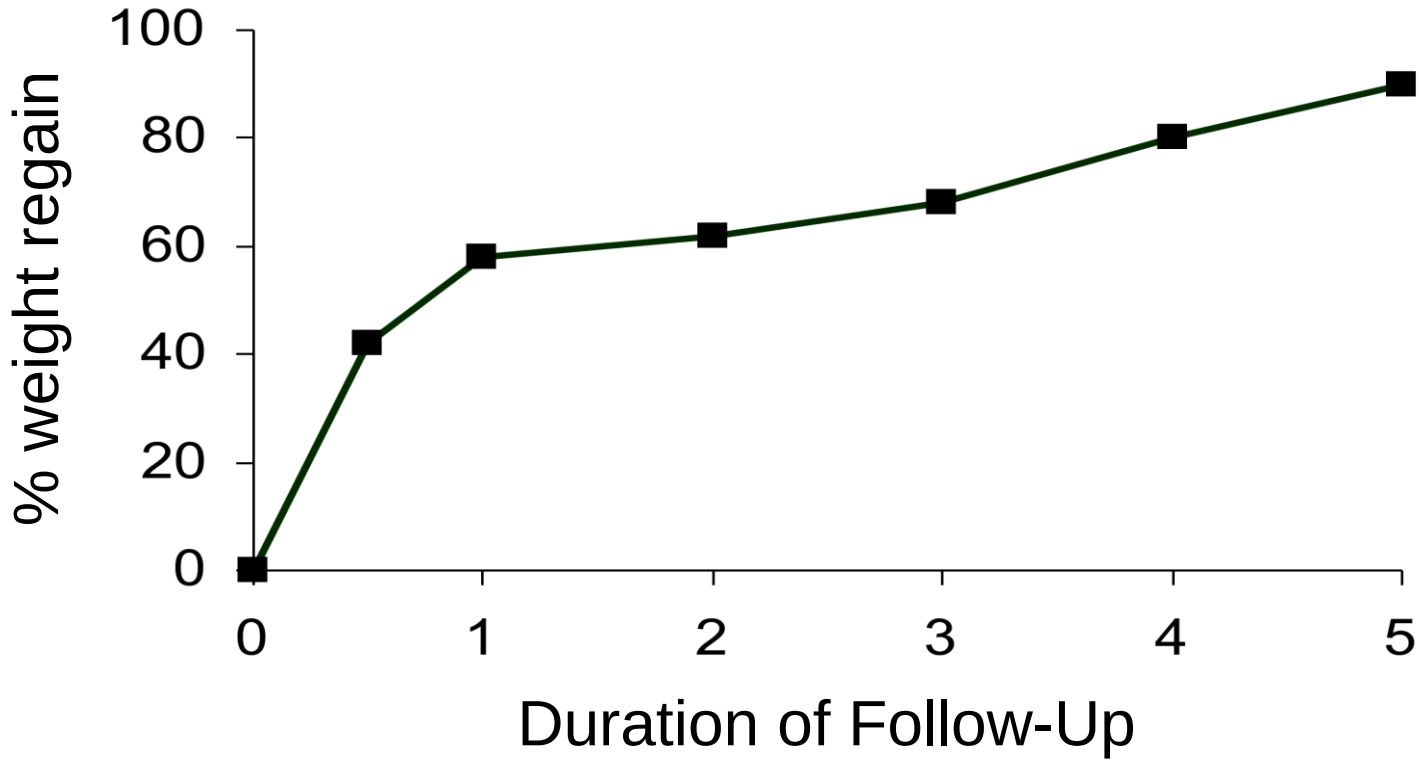

Safer, *So. Med. J.* 84:1470, 1991

Typical Treatment Success

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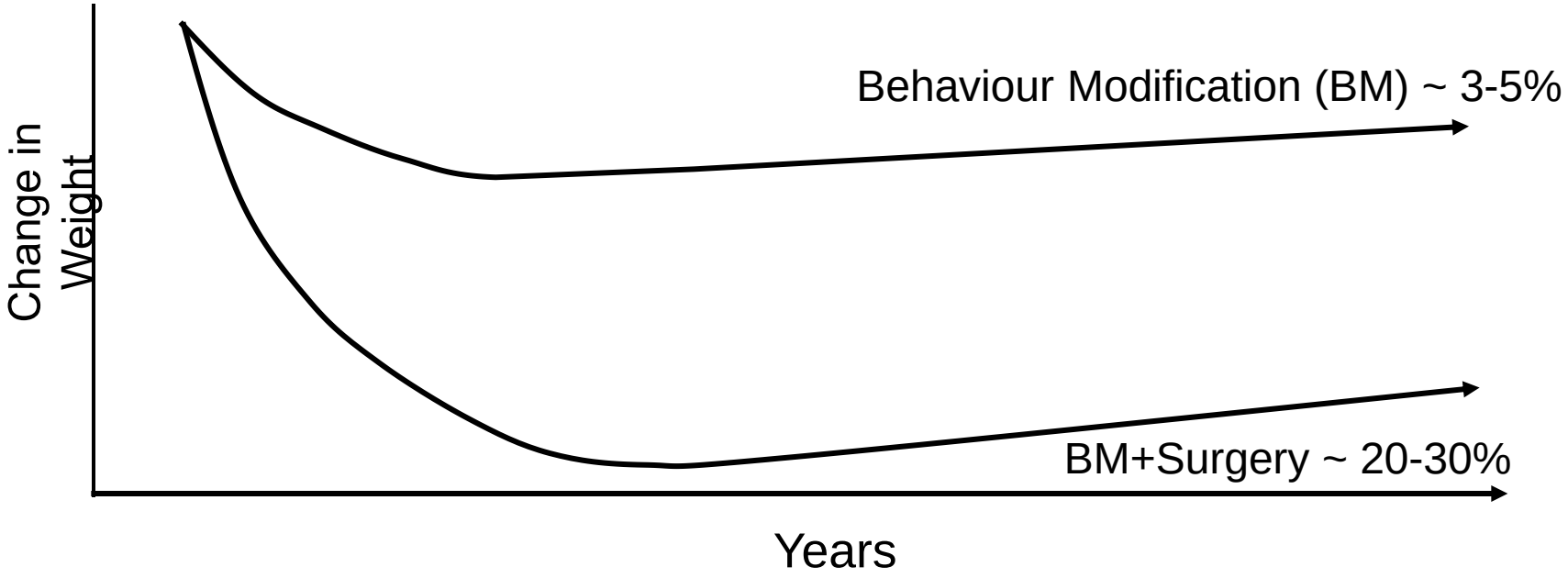

Long-Term Maintenance of Weight Loss in Swedish Obese Subjects (n=2010 vs. 2037)

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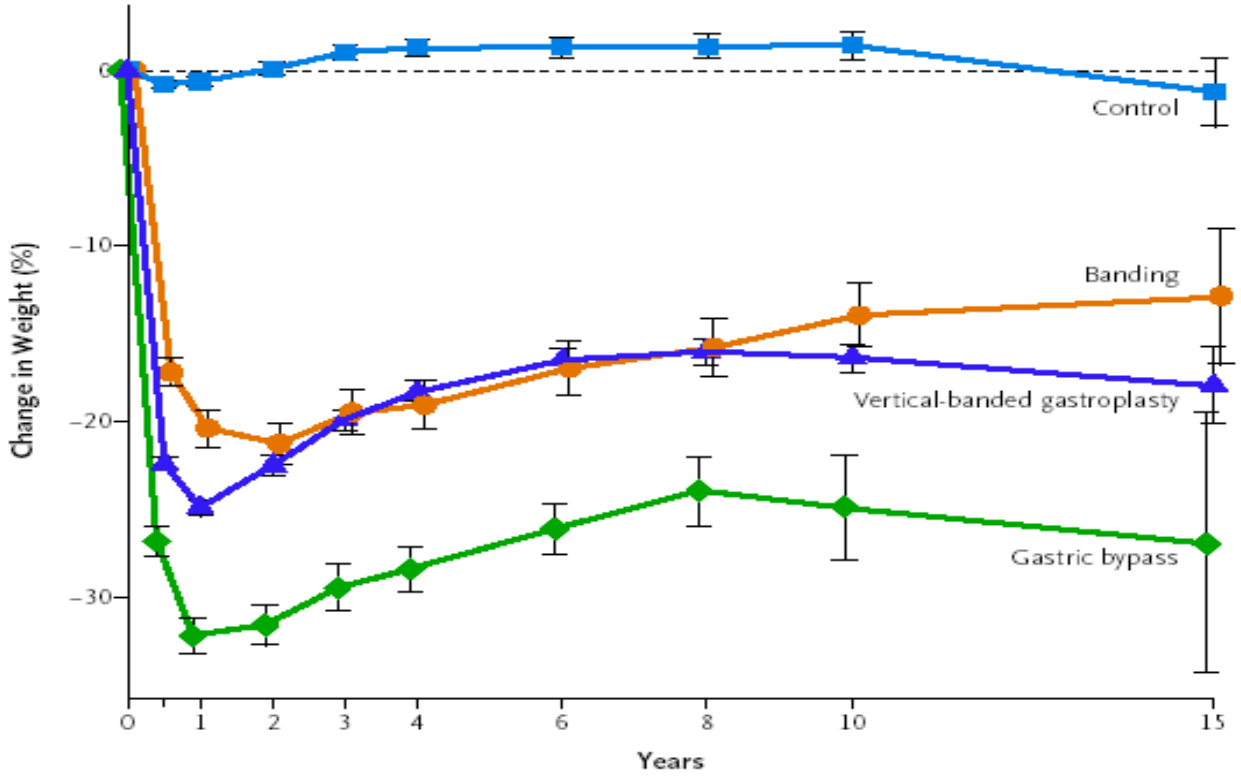
University of Alberta



Sjostrom L et al. *NEJM* 2007;357:741-52

OR

Bariatr
Cardio

Lars Sjöström, M
Markku Peltone
Peter Jacobson,
C. David Sjöströ
Kristjan Karason
Hans Wedel, Ph
Sofie Ahlin, MD
Åsa Anveden, M
Calle Bengtsson,
Gerd Bergmark,
Claude Bouchar
Björn Carlsson,
Sven Dahlgren,

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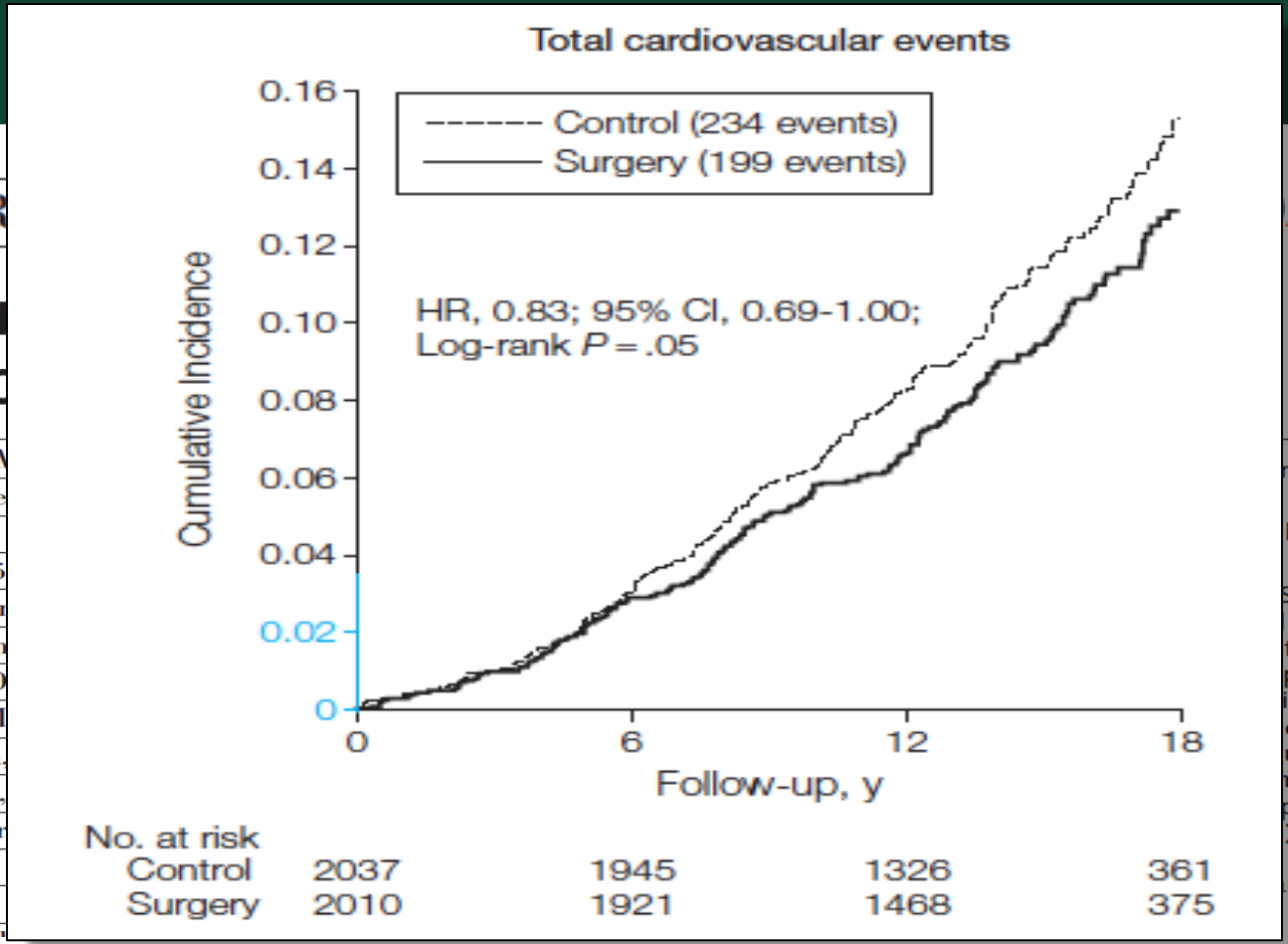

Incidence of Micro and Macro-Vascular Complications After Bariatric Surgery

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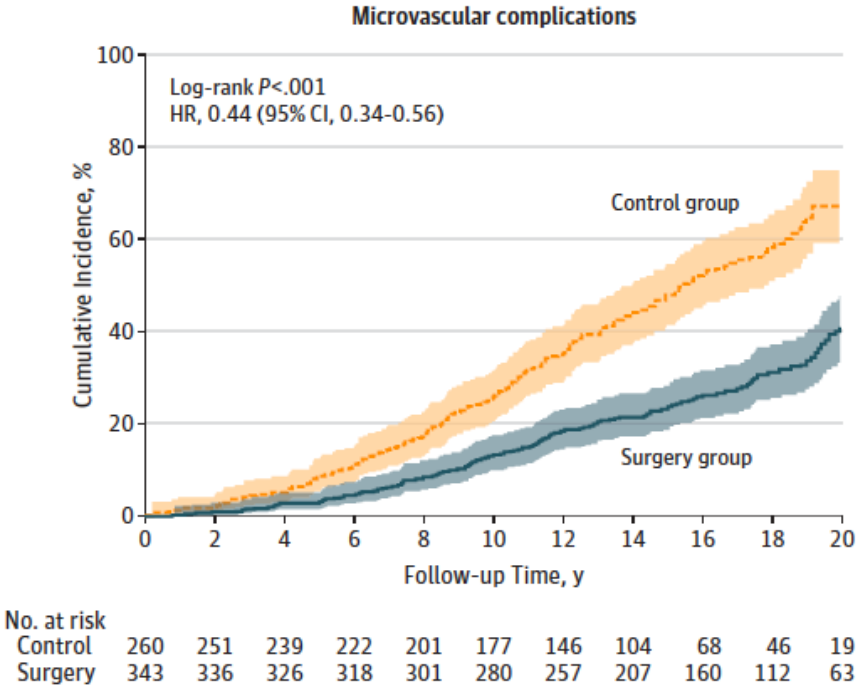

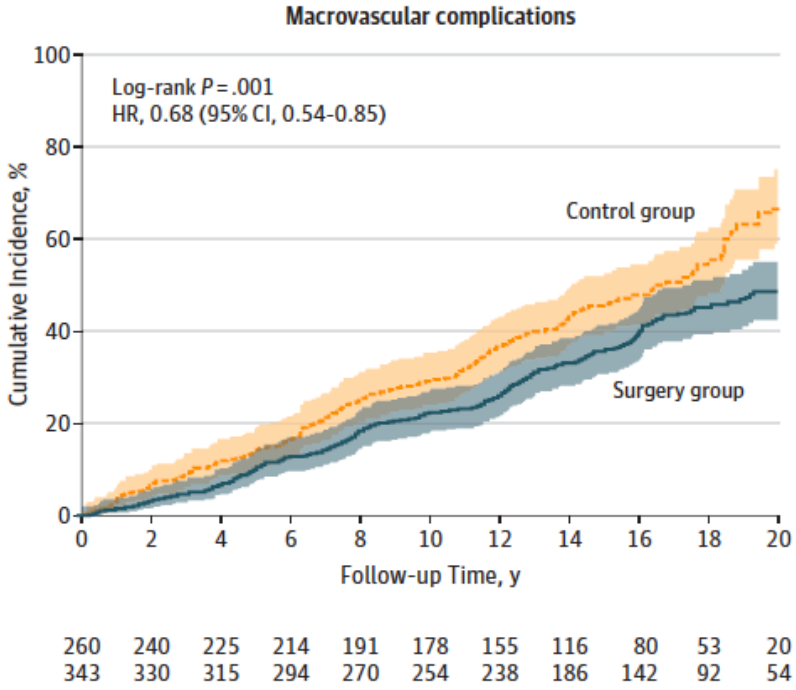

Sjöström L, et al. *JAMA* 2014

The NEW ENGLAND JOURNAL of MEDICINE

March 26, 2012

ORIGINAL ARTICLE

Bariatric Surgery versus Conventional Medical Therapy for Type 2 Diabetes

Geltrude Mingrone, M.D., Simona Panunzi, Ph.D., Andrea De Gaetano, M.D., Ph.D., Caterina Guidone, M.D., Amerigo Iaconelli, M.D., Laura Leccesi, M.D., Giuseppe Nanni, M.D., Alfons Pomp, M.D., Marco Castagneto, M.D.

ORIGINAL ARTICLE

Bariatric Surgery versus Intensive Medical Therapy in Obese Patients with Diabetes

Philip R. Schauer, M.D., Sangeeta R. Kashyap, M.D., Kathy Wolski, M.P.H., Stacy A. Brethauer, M.D., John P. Kirwan, Ph.D., Claire E. Pothier, M.P.H., Susan Thomas, R.N., Beth Abood, R.N., Steven E. Nissen, M.D., and Deepak L. Bhatt, M.D., M.P.H.

HbA1c During 2 Years of Follow-Up

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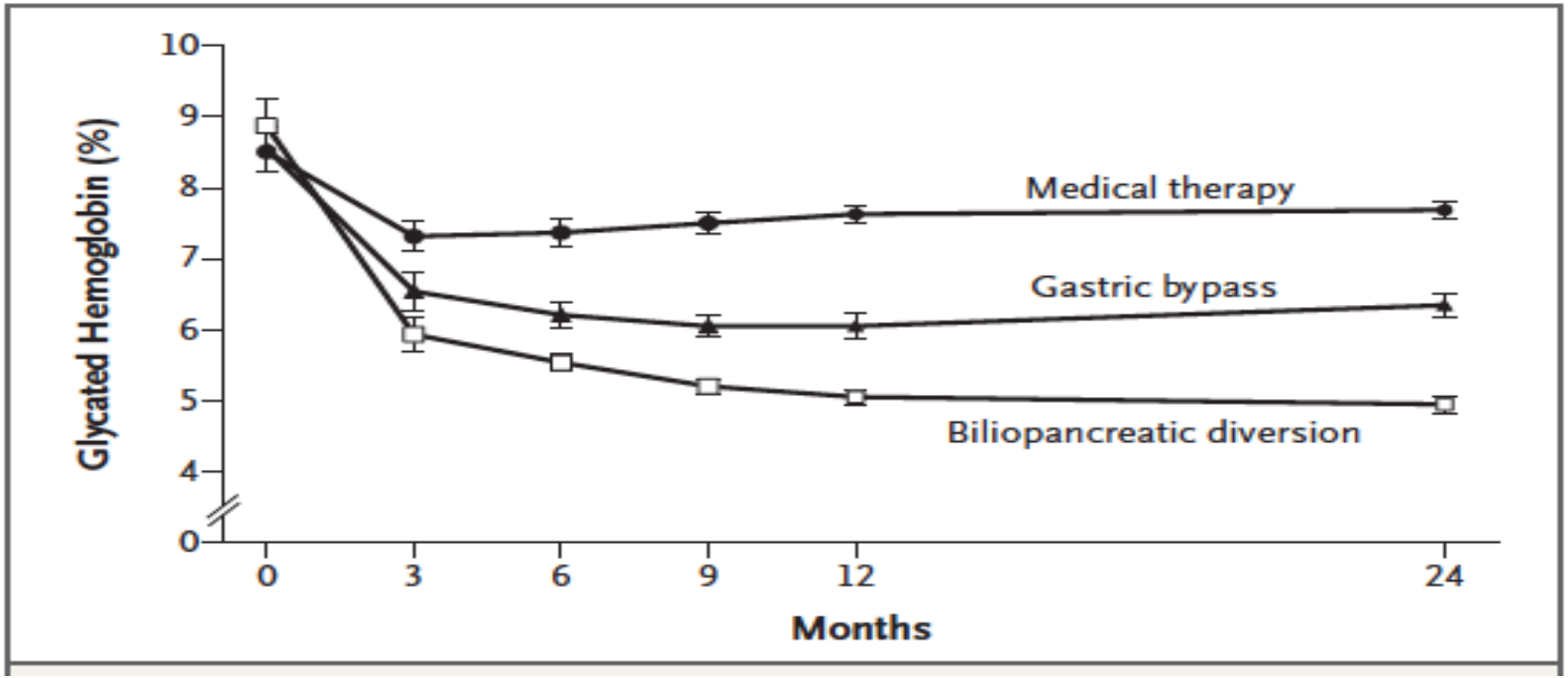

Mingrone G, et al. NEJM 2012

Potential Mechanisms of Type 2 Diabetes Regression in Bariatric Surgery

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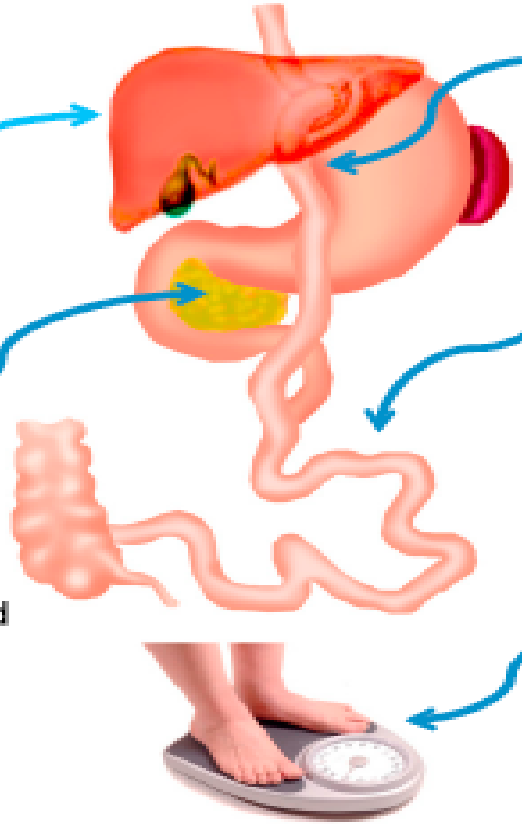
1 .Perioperative calorie restriction: Doubling of hepatic Insulin sensitivity

2. *Unretarded* passage of nutrients into small intestine



3. Abnormally high exposure of distal small intestine (with high L-cell density) to digested nutrients and secretions –> exaggerated release of GLP-1 and PYY

4. Dramatic stimulation of insulin secretion by GLP-1; This is the site where the GLP-1 receptor antagonist, exendin 9-39, blocks meal-induced hypersecretion of insulin

5. Weight loss (with time) –> diabetes resolution in about 50 %

Host JJ, *Diabetes* 2011;60:2203

Use of Diabetes Medication Before and After Bariatric Surgery (n=2235)

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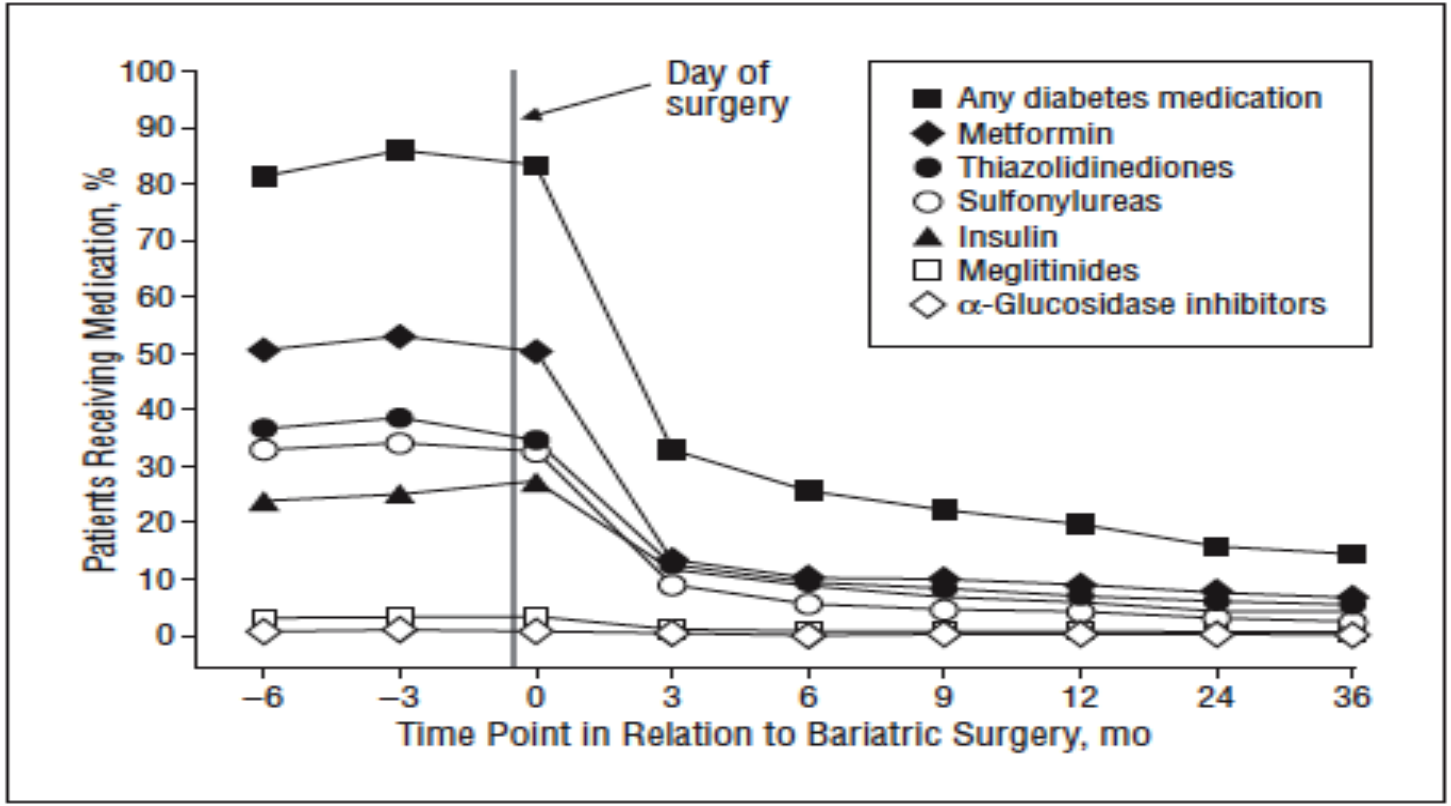

Makary MA et al. Arch Surg 2010;145:726

Estimated Number of Eligible Patients

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Estimate	County
>10,000	Colombia, Croatia, Switzerland, Taiwan, Ukraine
>25,000	Finland, Greece, Panama
>50,000	Austria, Belgium, Kuwait, Lithuania
>100,000	Portugal, Venezuela
>250,000	Jordan, Netherlands, Peru, Serbia
>500,000	Canada, Japan, United Arab Emirates
>1,000,000	Argentina, Brazil, Egypt, Germany, India, Italy, Mexico, New Zealand & Australia, Russia, South Africa, Spain, Syria, USA
No estimate	Guatemala, Romania

This amounts to a conservative estimate of >16,000,000 patients eligible for bariatric surgery in IFSO member countries

Sharma and Weiner 2010, unpublished

Global Trends in Bariatric Surgery

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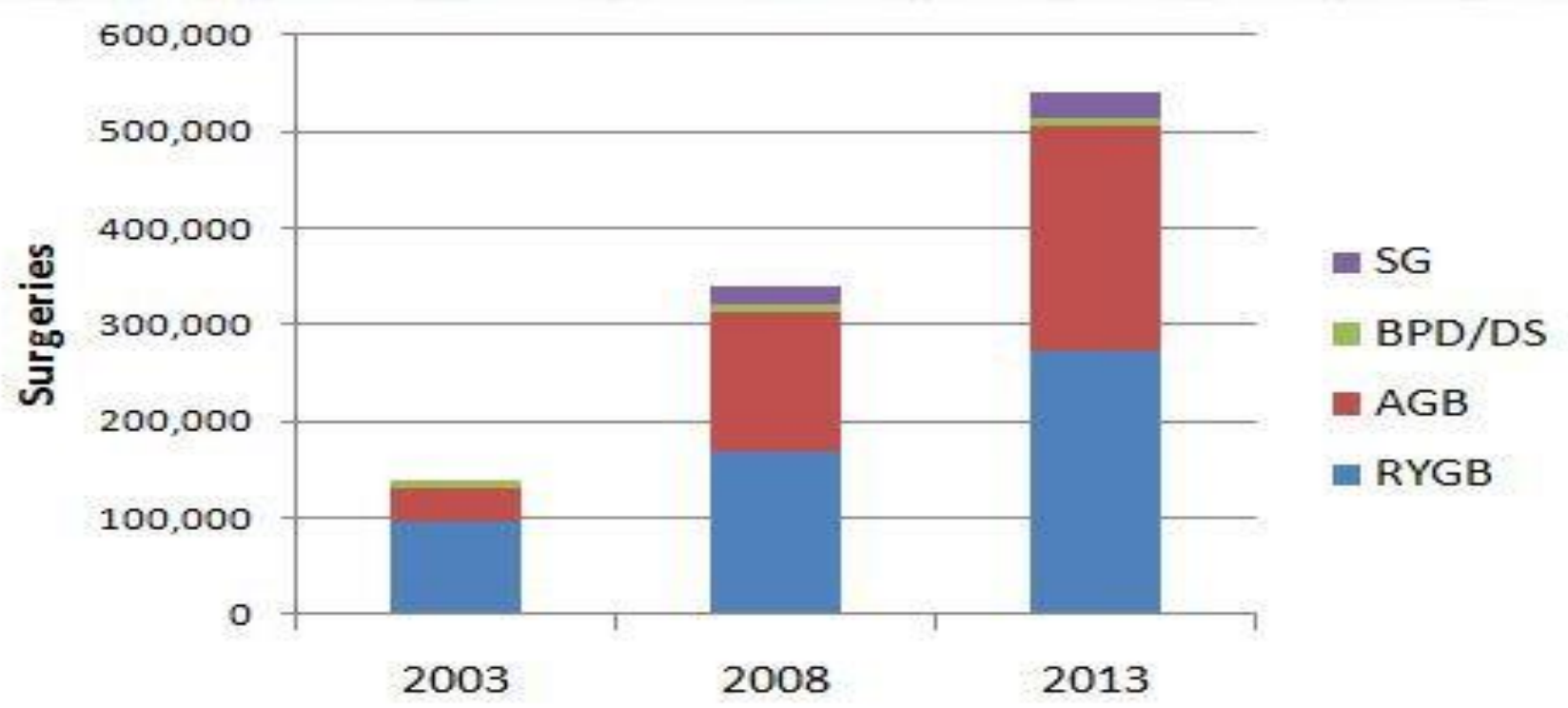

MedMarket Diligence, LLC; Report #S835

Bariatric Surgeries in Canada

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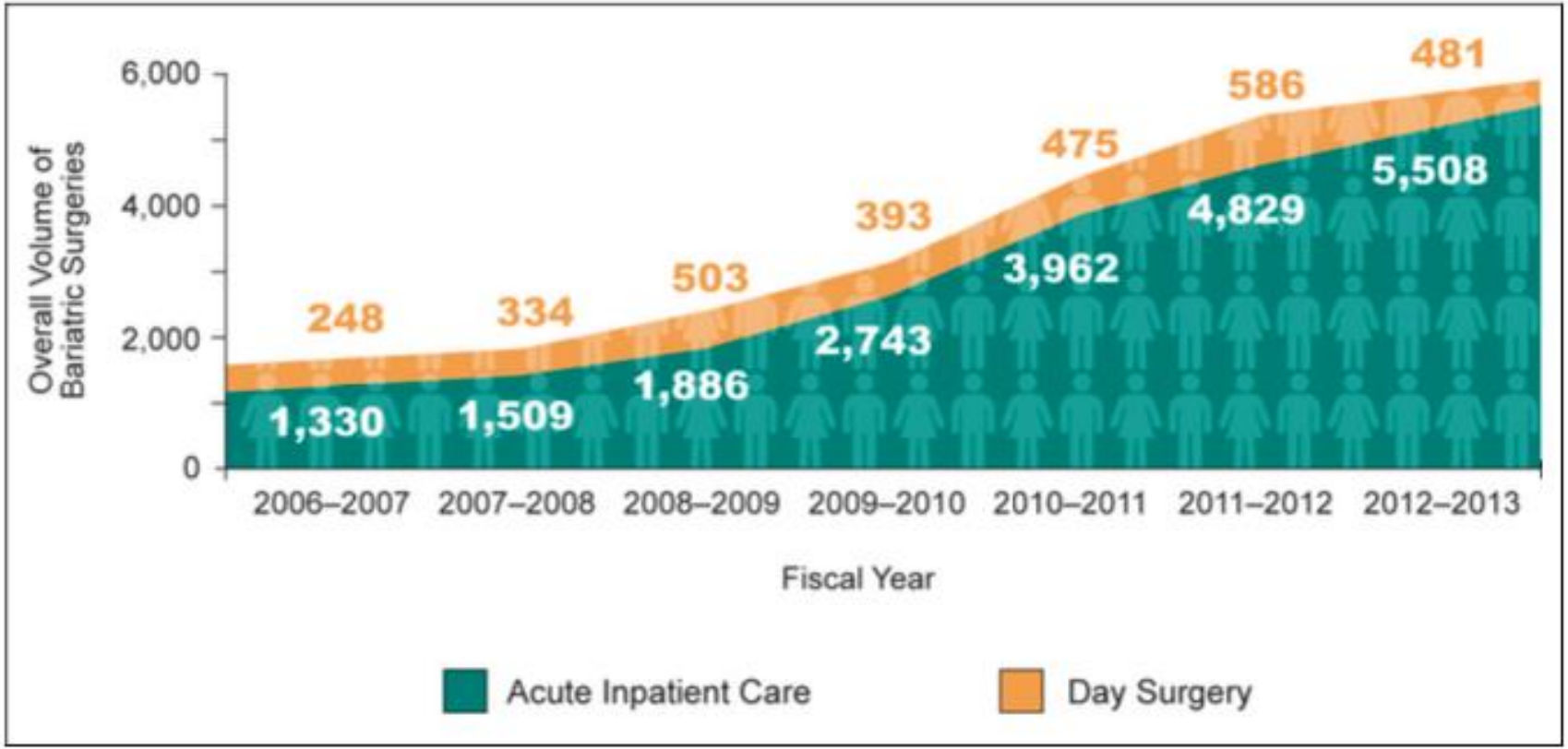

Chipping Away At The Iceberg

Chipping Away At The Iceberg

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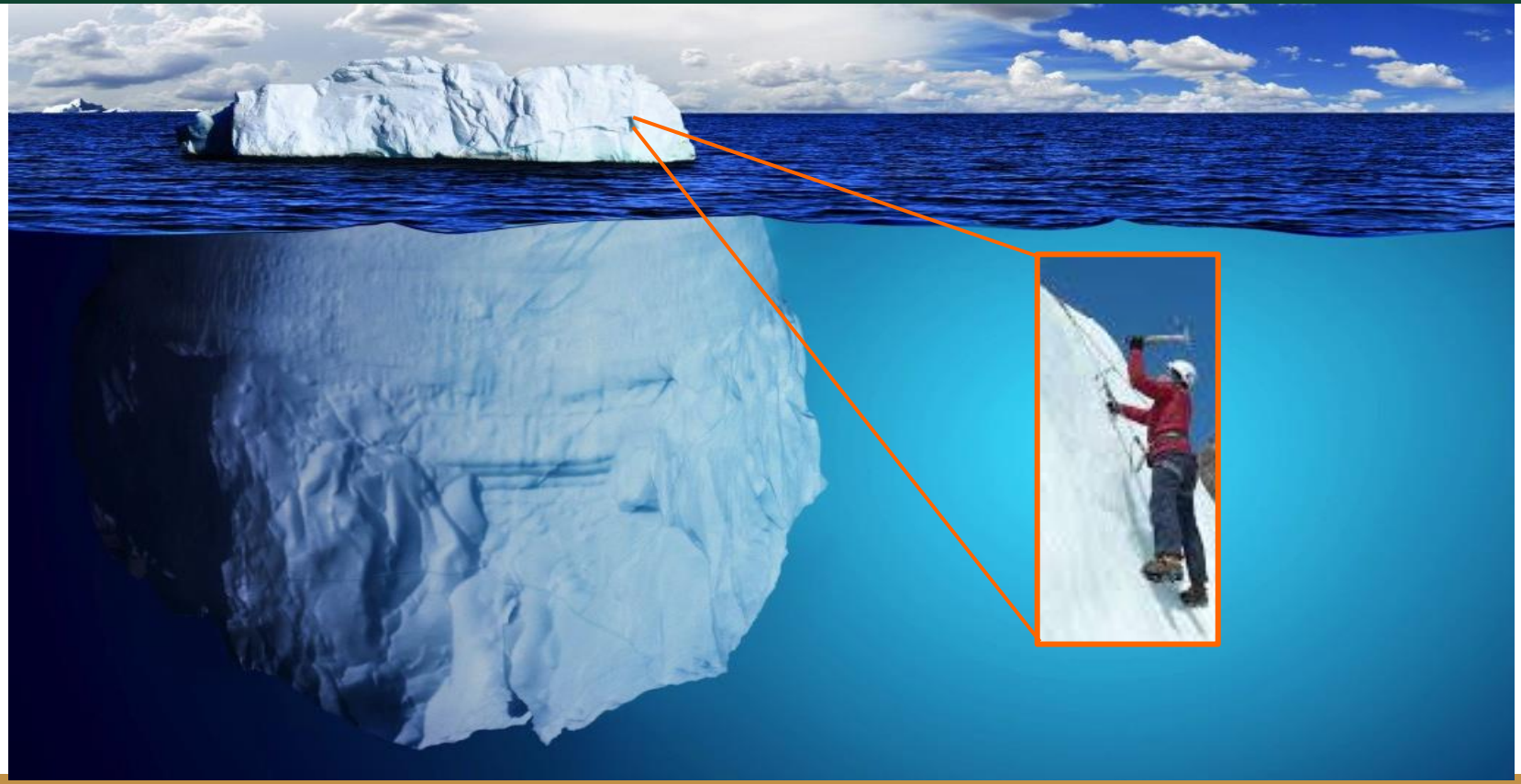

Typical Treatment Success

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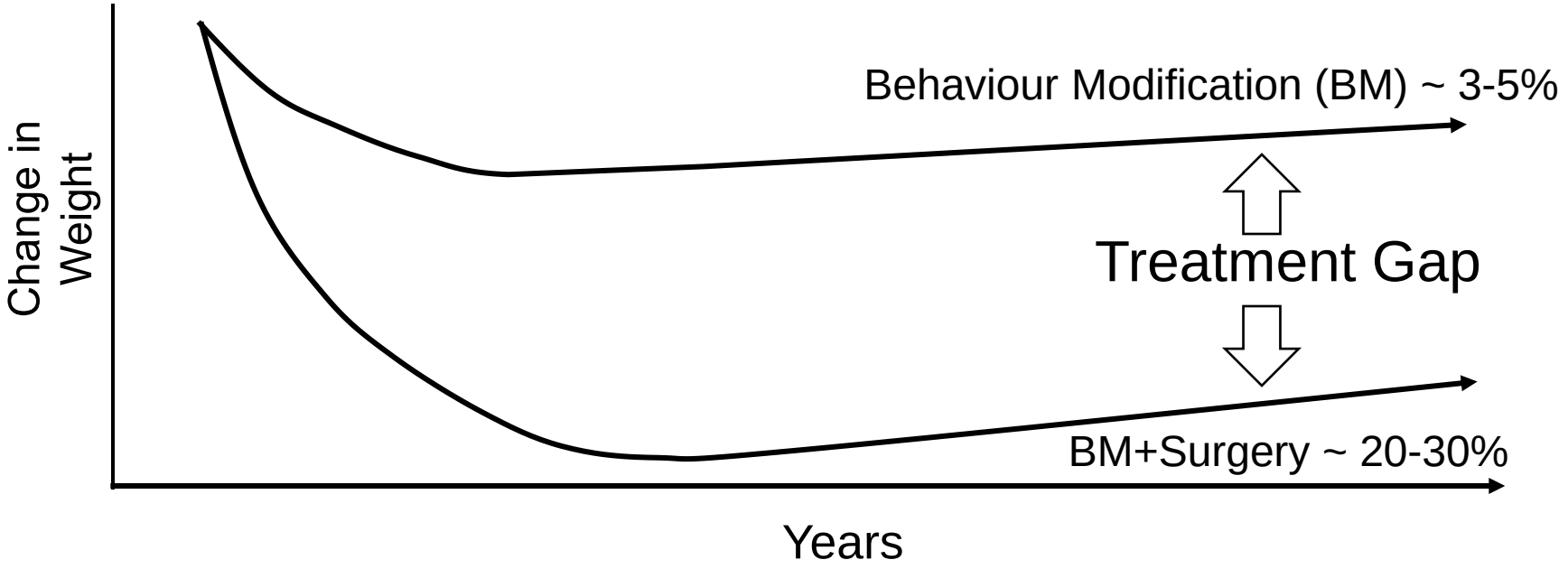

Typical Treatment Success

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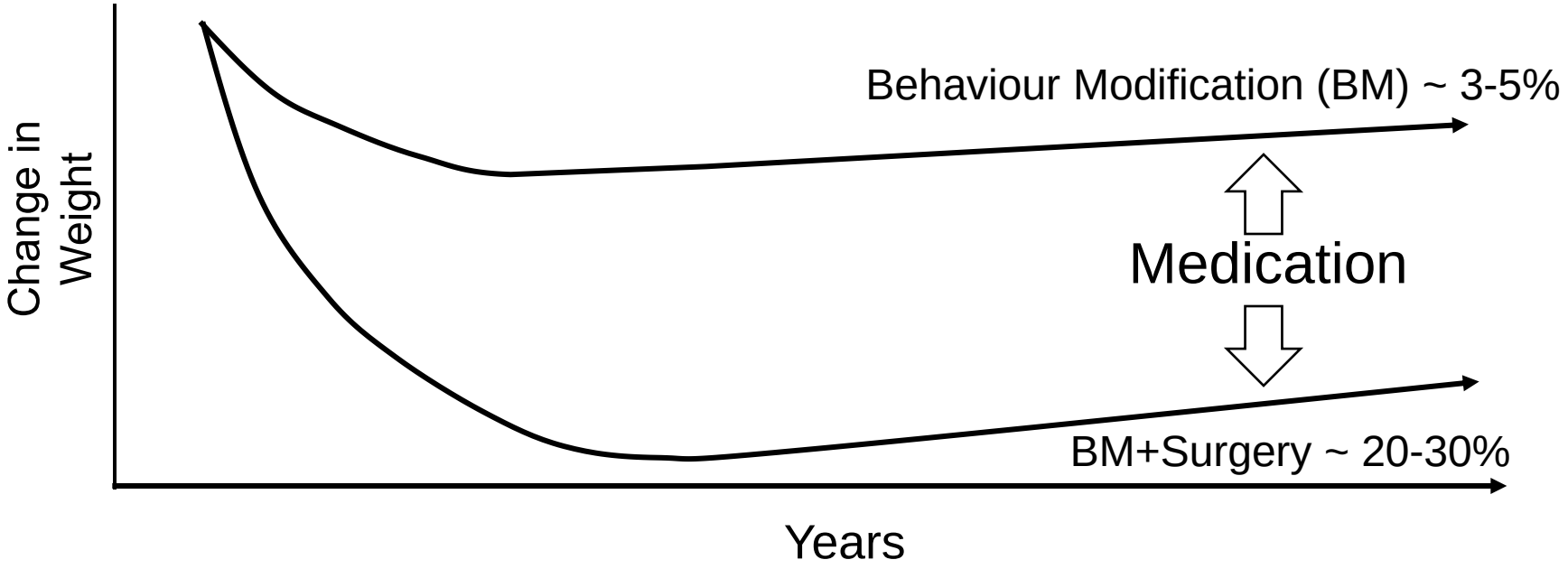

Pharmacological Targets in Obesity

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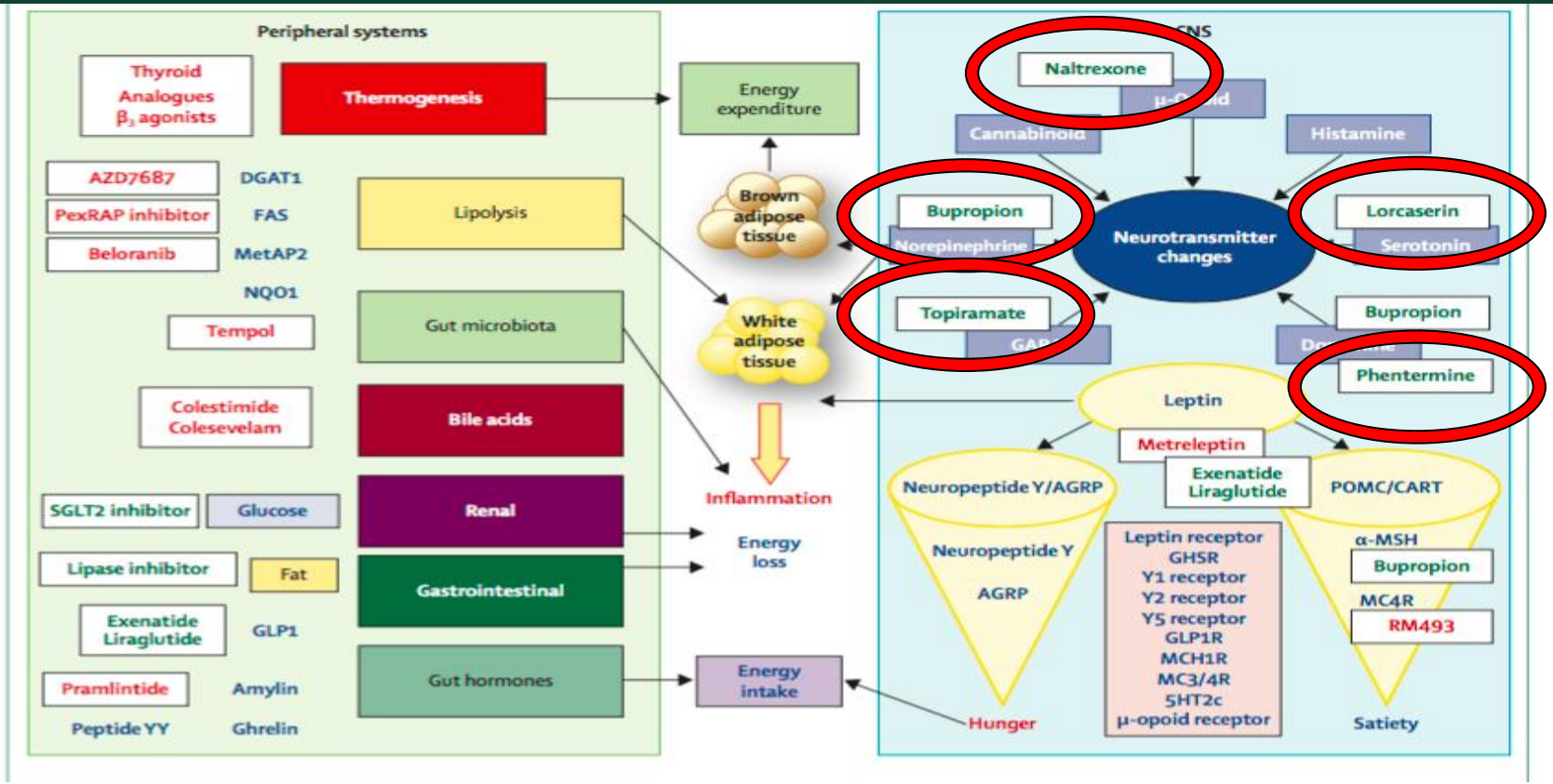

Bray et al. *Lancet* 2016

Pharmacological Targets in Obesity

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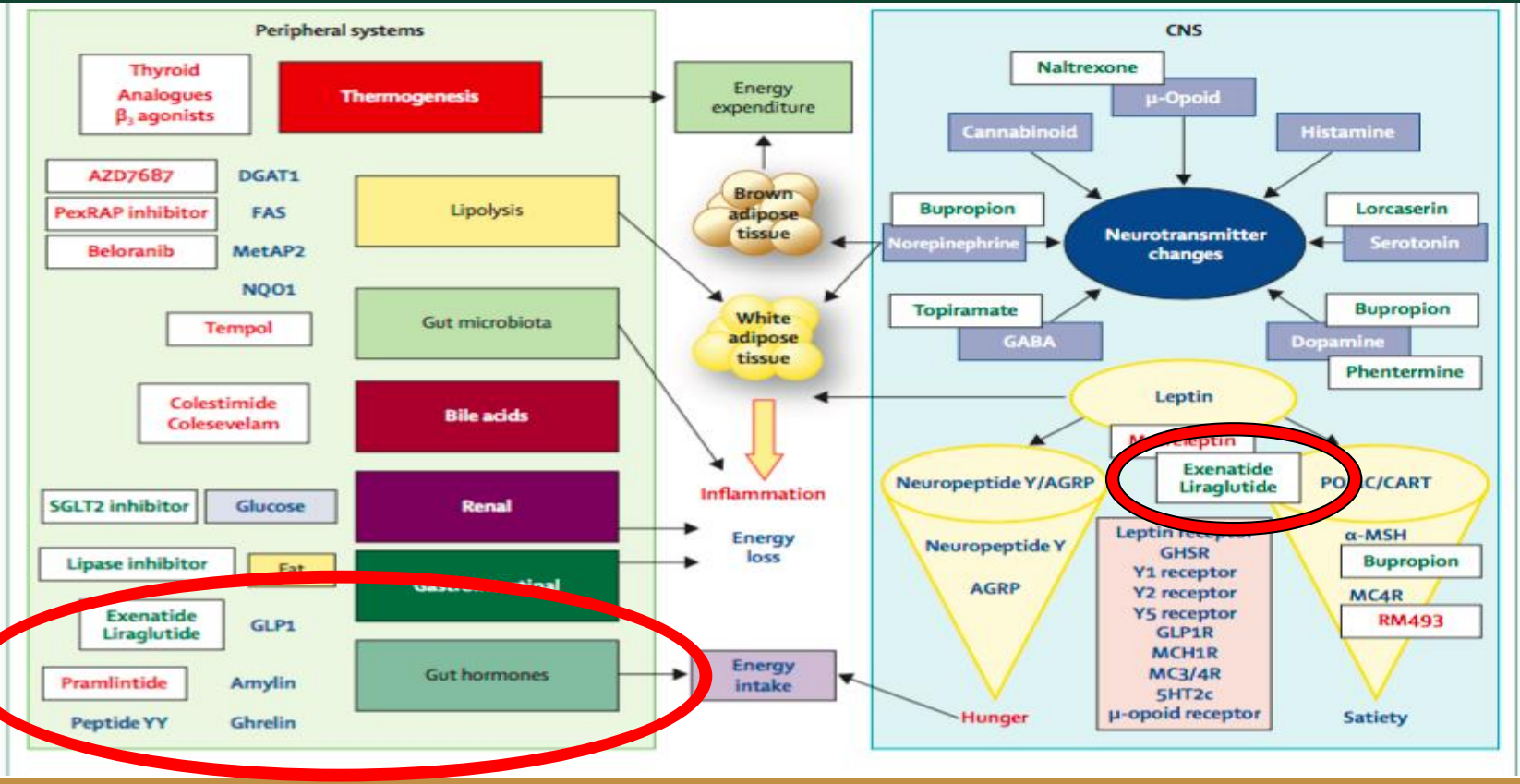

Bray et al. *Lancet* 2016

Liraglutide – Independent Effects on Glucose and Body Weight

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University of Alberta

Liraglutide

Weight lowering → ↓ Appetite

Brain

Glucose lowering → ↑ Insulin*
↓ Glucagon

Pancreas

*Insulin secretion is glucose-dependent and occurs only under hyperglycemic conditions

Meier JJ, *Nat Rev Endocrinol*. 8: 728–742; 2012

Liraglutide Works Directly in Brain Areas Associated with Appetite Regulation

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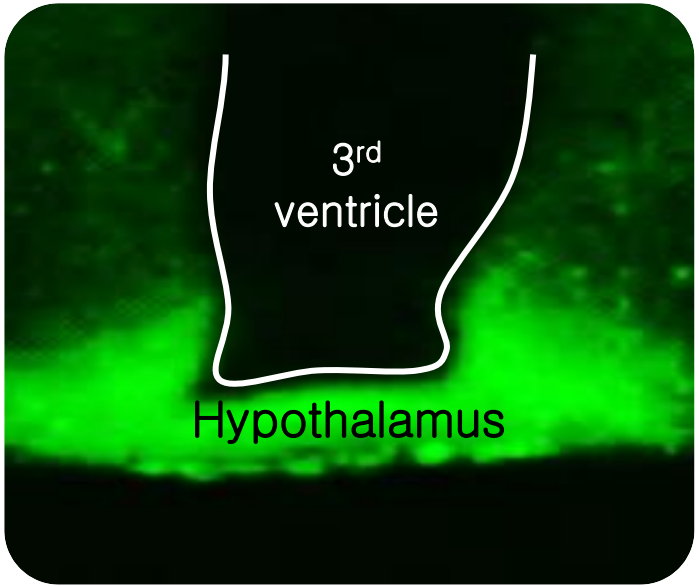

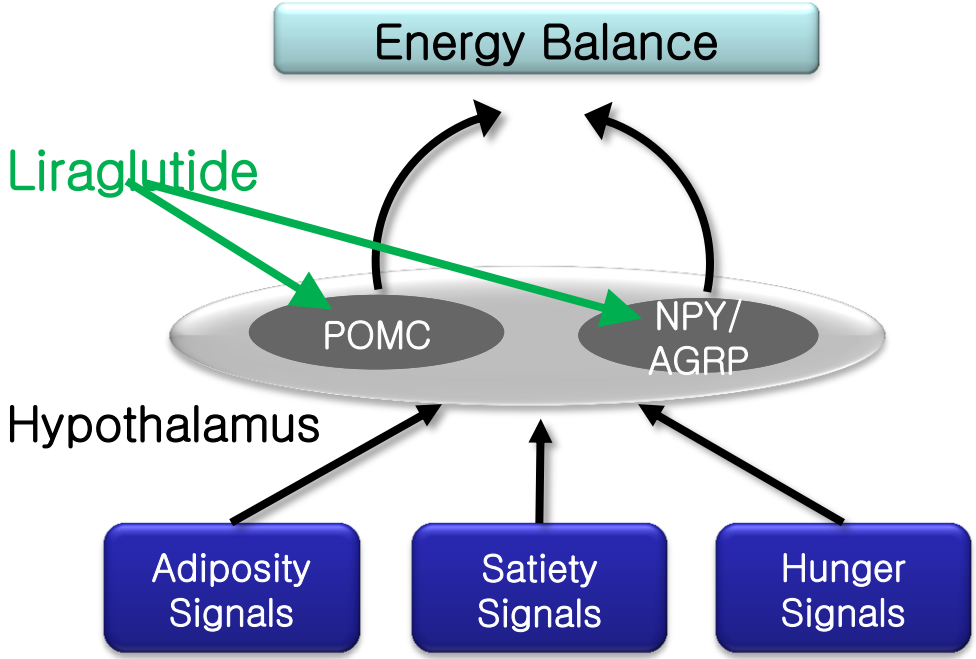

POMC, proopiomelanocortin;
NPY, neuropeptide Y; AGRP, agouti–related peptide

Secher A et al., *J Clin Invest*. 2014.

Liraglutide 3.0 mg in Diabetes: Weight Loss

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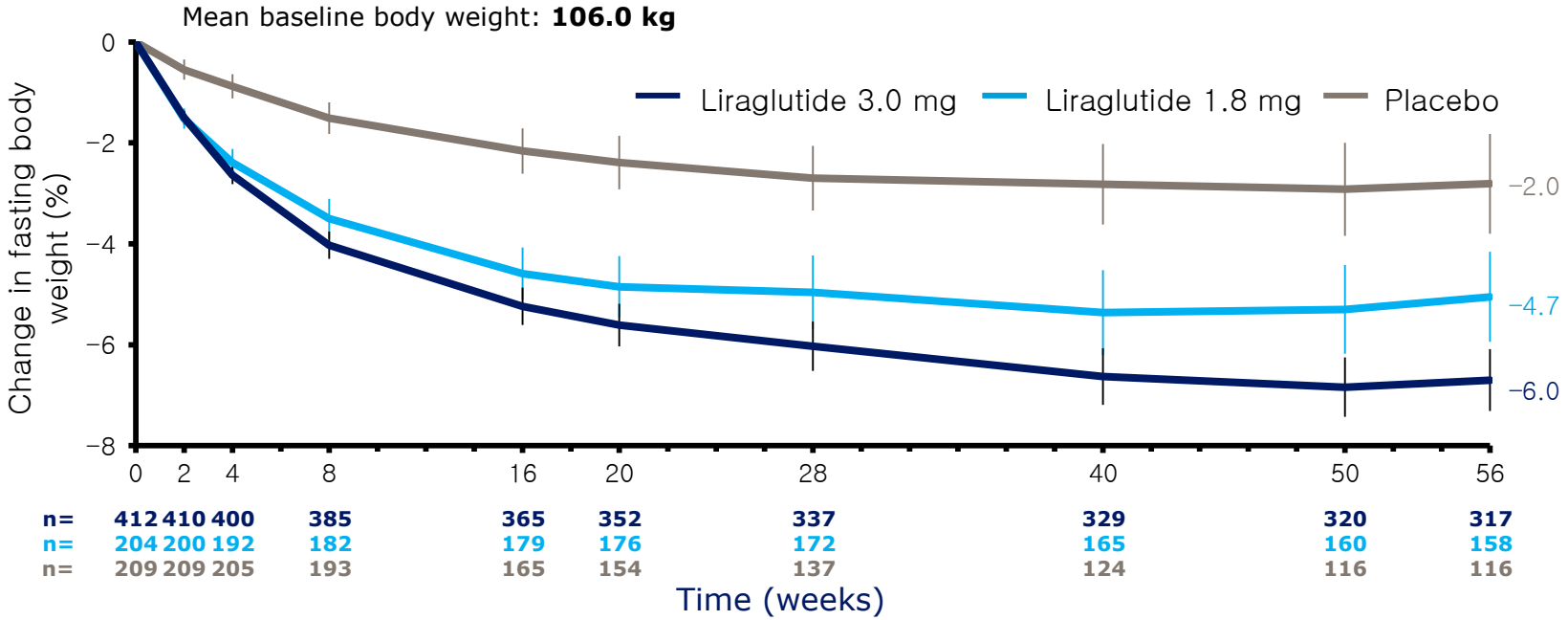
University of Alberta

Liraglutide 1.8mg/day is not approved for weight management



FAS; line graphs are observed means (±95% Wald CI); statistical analysis is ANCOVA; CI, confidence interval; FAS, full analysis set

Davies *et al. JAMA* 2015;314:687–99

SCALE Trial 1923: Weight Loss with Liraglutide 3.0 mg After LCD Run–

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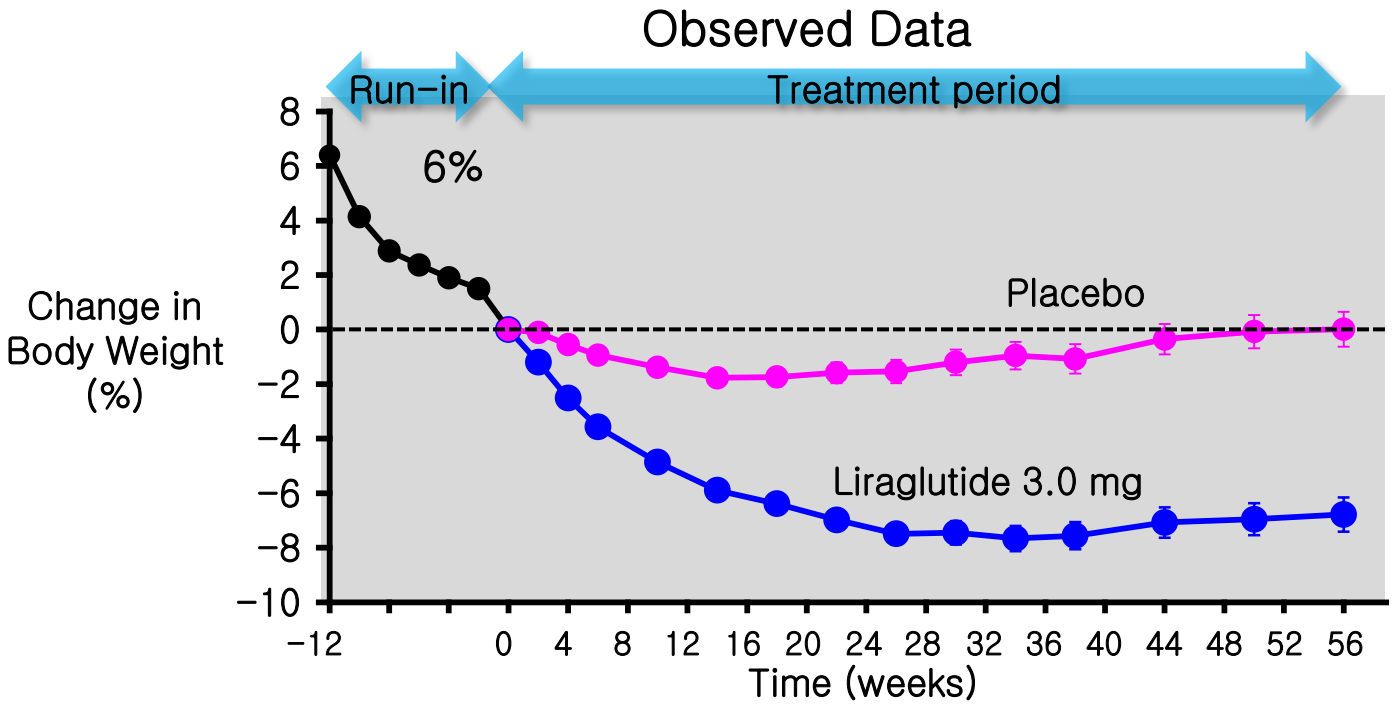
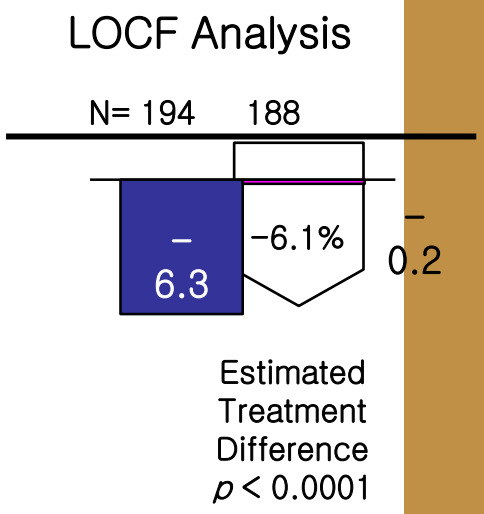




LCD = low calorie diet, Observed mean +/− SE for patients completing each scheduled visit; FAS with LOCF; N: number of patients contributing to analysis; data are LSMeans.

Wadden *et al. Int J Obes (Lond)* 2013;37:1443–51

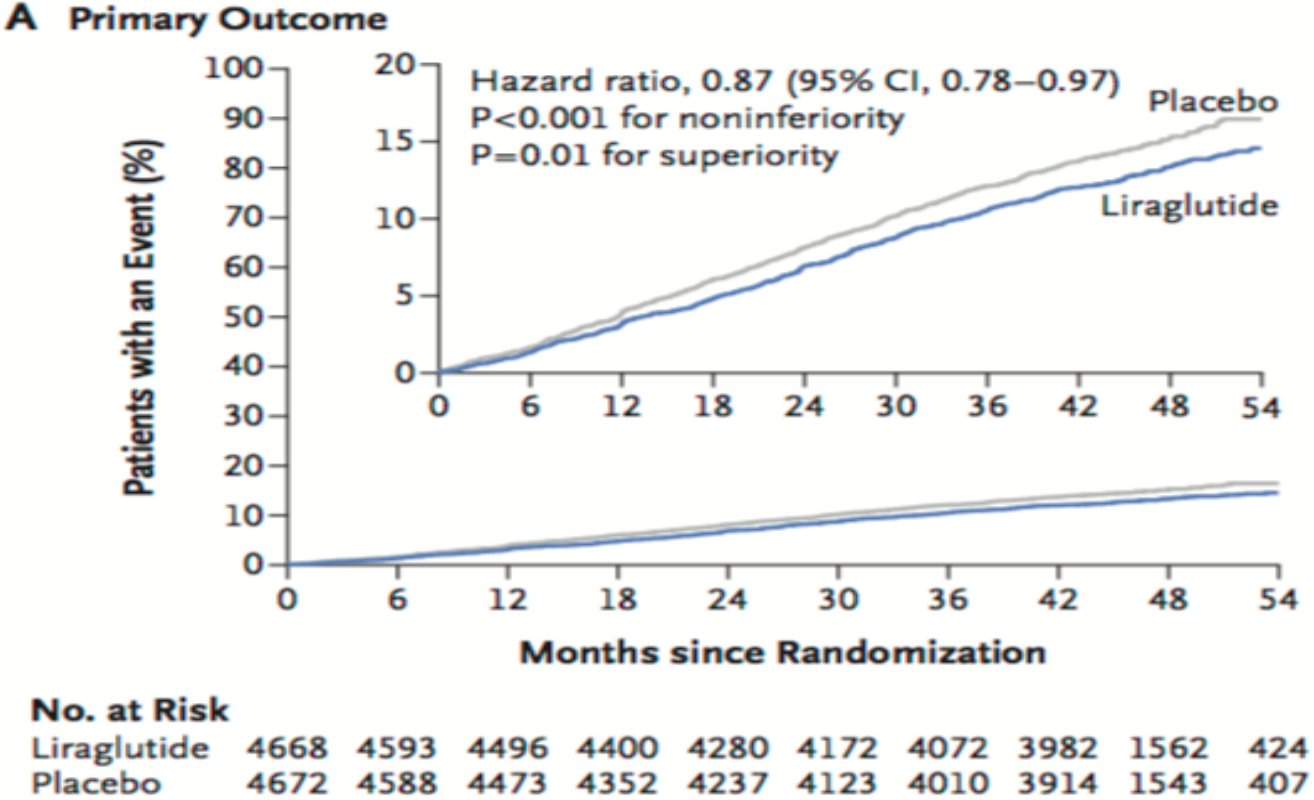
The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JULY 28, 2016 VOL. 375 NO. 4

Liraglutide and Cardiovascular Outcomes in Type 2 Diabetes

Steven P. Marso, M.D., Gilbert H. Daniels, M.D., Kirstine Brown-Frandsen, M.D., Peter Kristensen, M.D., E.M.B.A., Johannes F.E. Mann, M.D., Michael A. Nauck, M.D., Steven E. Nissen, M.D., Stuart Pocock, Ph.D., Neil R. Poulter, F.Med.Sci., Lasse S. Ravn, M.D., Ph.D., William M. Steinberg, M.D., Mette Stockner, M.D., Bernard Zinman, M.D., Richard M. Bergenstal, M.D., and John B. Buse, M.D., Ph.D., for the LEADER Steering Committee on behalf of the LEADER Trial Investigators*

LEADER Trial – Liraglutide 1.8 mg



Marso SP et al. *NEJM* 2016

The NEW ENGLAND JOURNAL of MEDICINE

September 16, 2016

ORIGINAL ARTICLE

Semaglutide and Cardiovascular Outcomes in Patients with Type 2 Diabetes

Steven P. Marso, M.D., Stephen C. Bain, M.D., Agostino Consoli, M.D., Freddy G. Eliaschewitz, M.D., Esteban Jódar, M.D., Lawrence A. Leiter, M.D., Ildiko Lingvay, M.D., M.P.H., M.S.C.S., Julio Rosenstock, M.D.,

SUSTAIN-6: Semaglutide in Type 2 Diabetes

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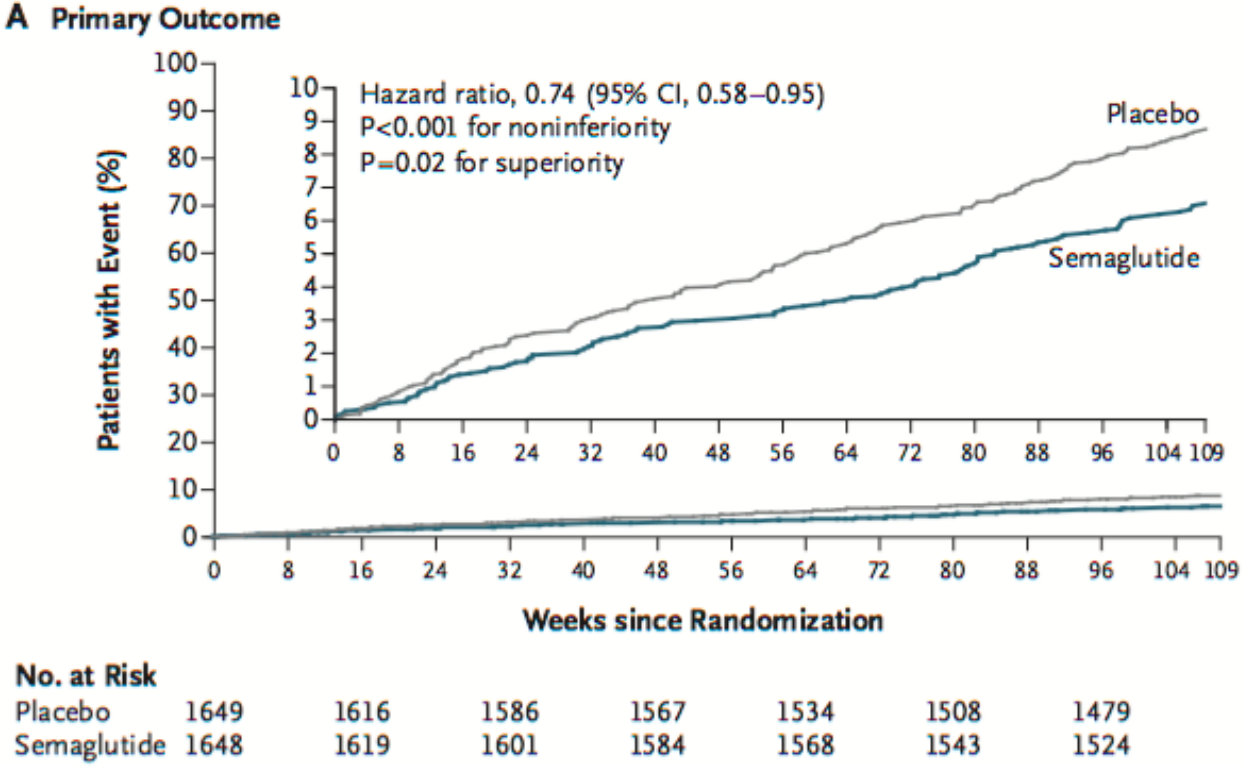

SUSTAIN-6 investigators, *NEJM* 2016

SUSTAIN-6: Semaglutide in Type 2 Diabetes

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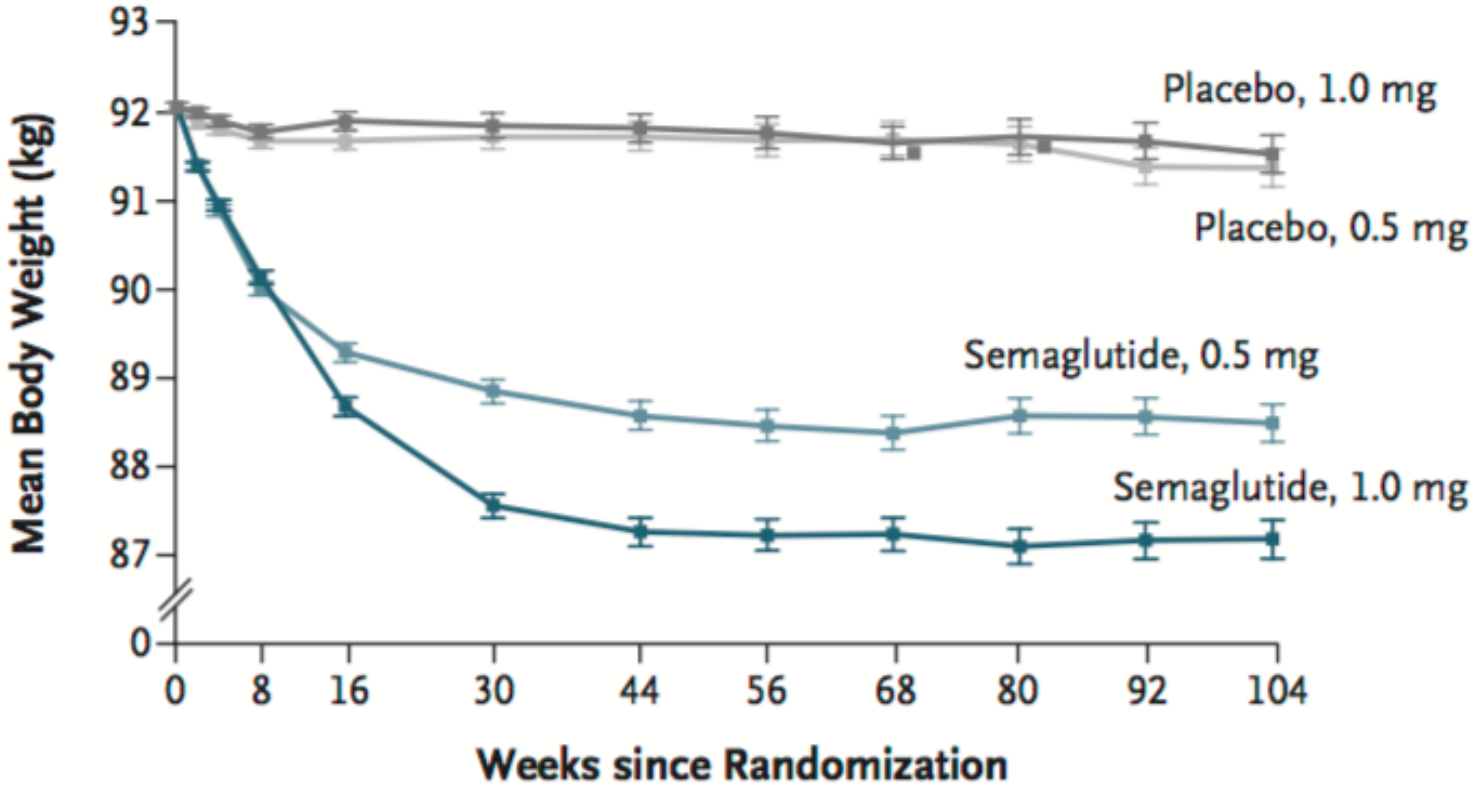

SUSTAIN-6 investigators, *NEJM* 2016

Pharmacological Targets in Obesity

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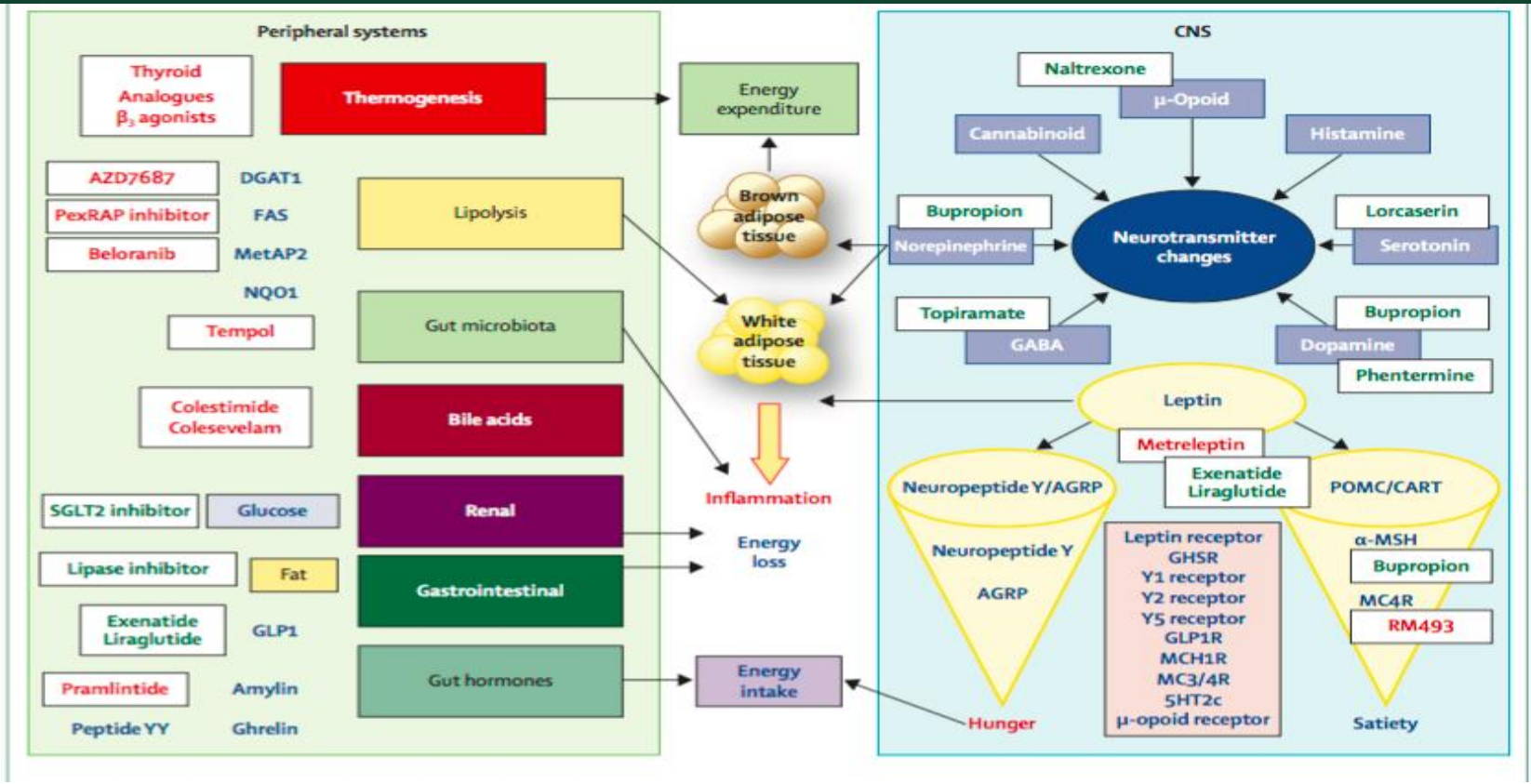

Bray et al. *Lancet* 2016

Typical Treatment Success

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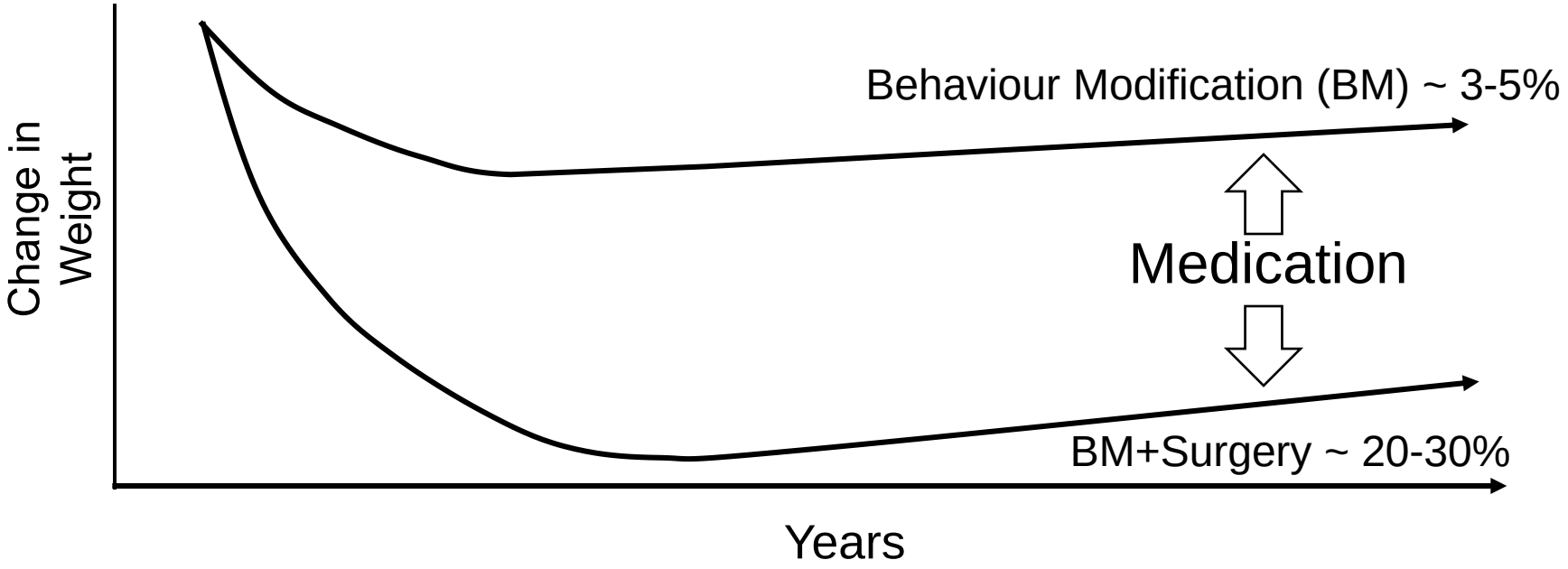

Key Points

- Bariatric surgery remains the most effective treatment for severe obesity
- While providing important benefits to individual patients, bariatric surgery cannot be scaled to meet the needs of all people living with obesity
- Emerging pharmacotherapy for obesity will eventually fill the obesity treatment gap with increasing recognition of obesity as a chronic disease

Dr. Sharma's Obesity Notes

www.DrSharma.ca

In The News

Diet, exercise not enough for some patients

Apr. 10, 2012 CBC – "Dr. Arya Sharma, chair of obesity research and management at the University of Alberta, applauds Williams for airing the issue publicly, saying there is a lot of stigma attached to being fat — and even more to using surgery to address the problem." Read the article

» More news articles...

Publications

"Incidental finding of bulky retroperitoneal lymphadenopathy in a patient with a primary occult small gastric carcinoid tumor."

» Browse and download more journal publications...

Watch Dr. Sharma in the News!

Friday, April 20, 2012

Obesity A to Zzzzzzzzs

Regular readers are well aware of the increasing evidence that points to a major role for sleep deprivation in the current obesity epidemic. Indeed, one of the most evident societal changes coinciding with the epidemic spread of excess weight is the significant reduction in sleeping hours – in both kids and adults.

2 tweets tweeted

Now a study by Orfeo Buxton and colleagues from Harvard University, published in ***Science Translational Medicine***, shows just how profoundly sleep restriction and disruption of sleep cycles can affect your metabolism.

The experiments were designed to tested the hypotheses that prolonged sleep restriction with concurrent circadian disruption, as can occur in people performing shift work, impairs glucose regulation and metabolism.

Healthy adults were recruited to spend at least five weeks under controlled laboratory conditions in which they experienced an initial baseline segment of optimal sleep, three weeks of sleep restriction (5.6 hours of sleep per 24 hours) combined with circadian disruption (recurring 28-hour "days"), followed by 9 days of recovery sleep with circadian re-entrainment.

Not only die sleep restriction with concurrent circadian disruption markedly decrease participants' resting metabolic rates but these interventions also increased plasma glucose concentrations after a meal, due to reduced pancreatic insulin secretion.

Nine days of recovery sleep normalized all of these changes.

Interestingly enough, a recent study by Korean researchers, published in the ***Journal of Sleep Research***, looking at the relationship between sleeping patterns and body weight in almost 1,000 school children (48.2% boys) aged 10 or 11 found that, after adjusting for relevant confounding variables (age, sex, breakfast eating, screen time and parental

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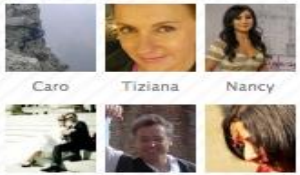


Join us in Banff, Alberta for the 5th Canadian Obesity Summit!
April 25 – April 29, 2017 Banff Springs
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