



Baker IDI

HEART & DIABETES INSTITUTE

Diabetes and Obesity – Diabesity As GPs what can we do? What works?

Professor John B Dixon MBBS, FRACGP, FRCP Edin, PhD

NHMRC Senior Research Fellow

Head of Clinical Obesity Research, Baker IDI Heart and Diabetes
Institute

Adjunct Professor – School of Primary Health Care, Monash University



Disclosures: Professor John B Dixon

Apollo Endosurgery

Consultant, Research Support

Bariatric Advantage

Consultant, Speakers fees

Nestle Australia

Medical Advisory Board, Speakers Bureau,
Research Support

ResMed

Research Support

I-Nova

Consultancy, Speaker and educational material

Dendrite Clinical Systems

Speaker fees

RACGP

Research Support

BUPA

Research Support

NHMRC

Research Support

Nestec Ltd

Consultant

Covidien

Meeting-speaker support

"Patient Access to Evidence-Based Obesity Services"

- Overnight
- American Medical Association (AMA) passes a resolution to help in the fight to improve patient access to evidence-based obesity treatments including:
 - Intensive behavioural counselling
 - FDA-approved obesity drugs
 - Bariatric and metabolic surgery.

June 12 2014

Diabetes – Chronic disease management

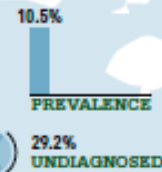
- The global & local issue
- How good are we at treating diabetes?
- Why is obesity so difficult to tackle?
- Determinants - Physiology
- How good are we at treating obesity?



NORTH AMERICA AND CARIBBEAN

More healthcare dollars were spent on diabetes in this region than any other

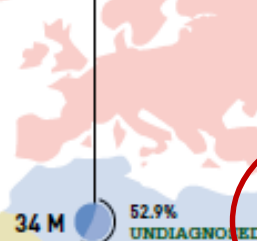
1 in 10 adults in the region has diabetes



MIDDLE EAST AND NORTH AFRICA

1 in 9 adults in the region has diabetes

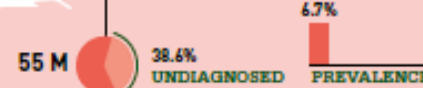
More than half of people with diabetes in the region don't know they have it



EUROPE

1 out of every 3 dollars spent on diabetes healthcare was spent in the region

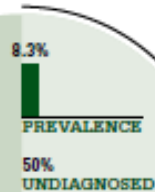
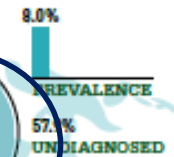
21.2 million people in the region have diabetes and don't know it



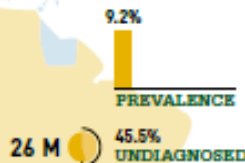
WESTERN PACIFIC

1 in 3 adults with diabetes lives in the region

6 of the top 10 countries for diabetes prevalence are Pacific Islands



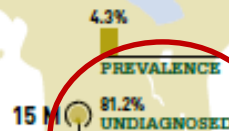
WORLD
371 M
people living with diabetes



SOUTH AND CENTRAL AMERICA

Only 5% of all healthcare dollars for diabetes were spent in the region

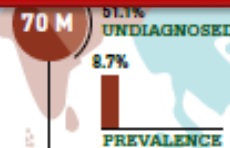
1 in 11 adults in the region has diabetes



AFRICA

Over the next 20 years, the number of people with diabetes in the region will almost double

The region has the highest mortality rate due to diabetes



SOUTH-EAST ASIA

1 in 5 of all undiagnosed cases of diabetes is in the region

1 in 4 deaths due to diabetes occurred in the region

Highest prevalence MENA

Most undiagnosed AFR

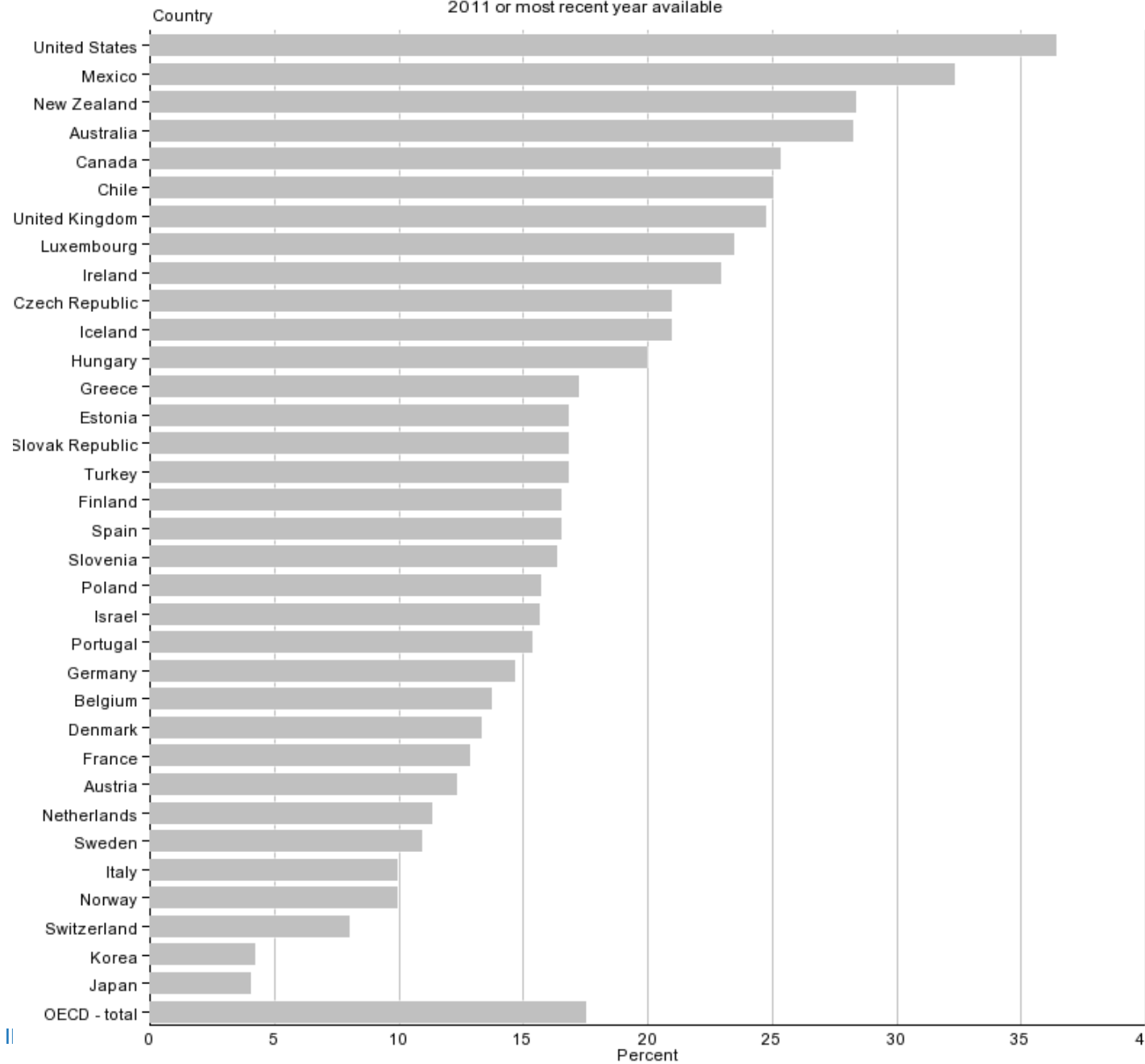
Largest number WP

*All estimates are presented as comparative rates

Obesity rates – OECD

By country

2011 or most recent year available



Australian's with type 2 Diabetes 2011

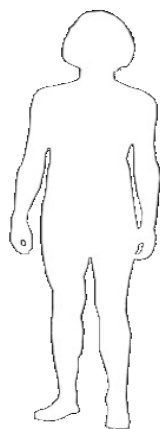
Clinical Terms Used to Describe Various Levels of Body Fat*

NORMAL
BMI 18.5 — 24.9



12%

OVERWEIGHT
BMI 25 — 29.9



29%

Class I
BMI 30 — 34.9



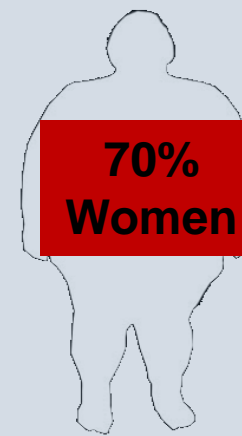
29%

Class II
BMI 35 — 39.9



16%

Class III
BMI ≥ 40



14%



30% in the severely obese categories

* BMI (Body Mass Index): A measurement of an individual's weight in relation to height (kg/m^2).

Dixon, J. B., J. L. Browne, et al. (2013). "Severe obesity and diabetes self-care **attitudes, behaviours and burden**: implications for weight management from a matched case-controlled study. Results from Diabetes MILES-Australia." Diabet Med.



Dixon, J. B., J. L. Browne, et al. (2013). "Severe obesity and diabetes self-care **attitudes, behaviours and burden**: implications for weight management from a matched case-controlled study. Results from Diabetes MILES-Australia." Diabet Med.

HbA1c
Medications
Eyes
Feet
Urine
Follow-up

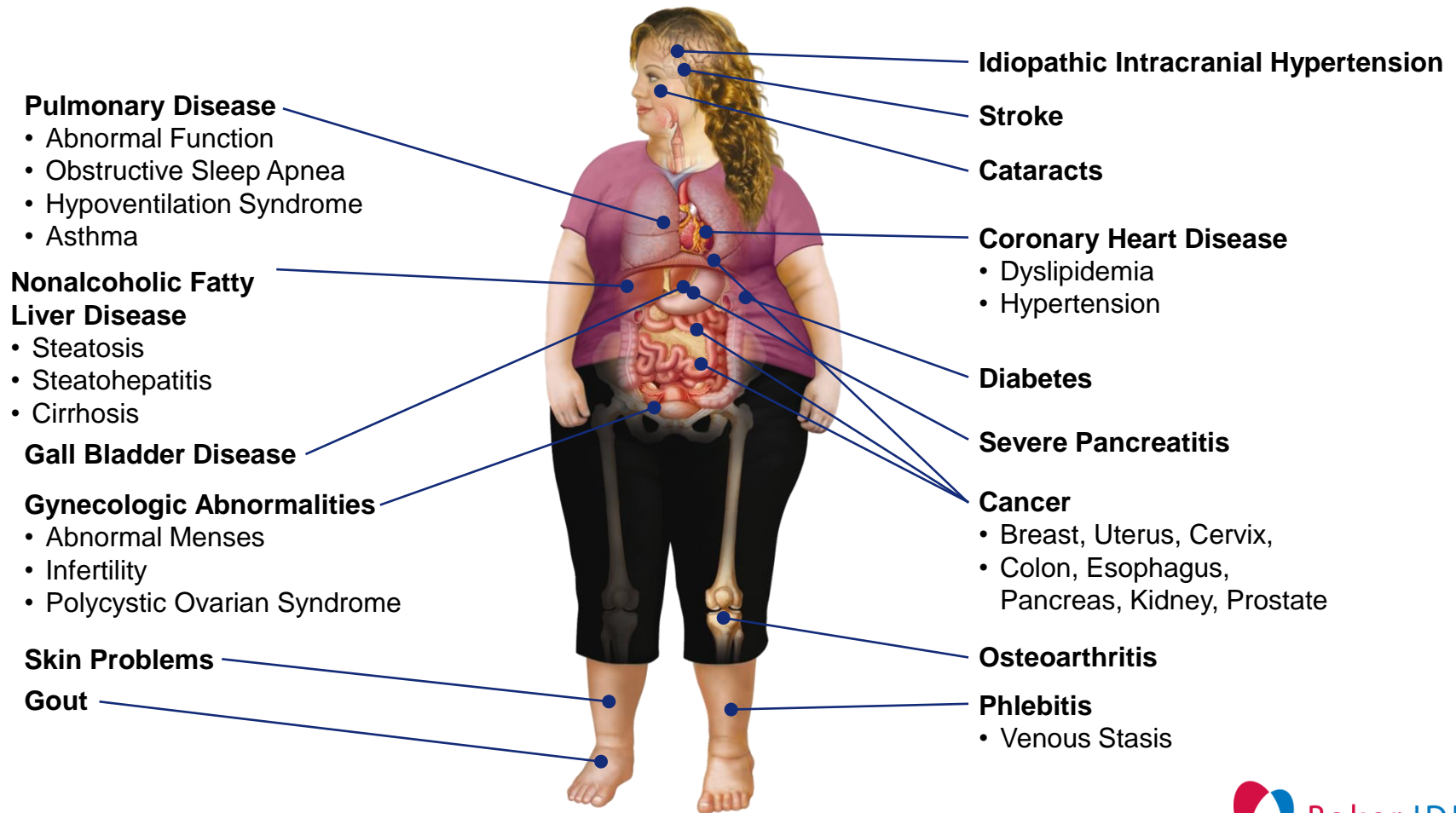


Diet
Physical activity

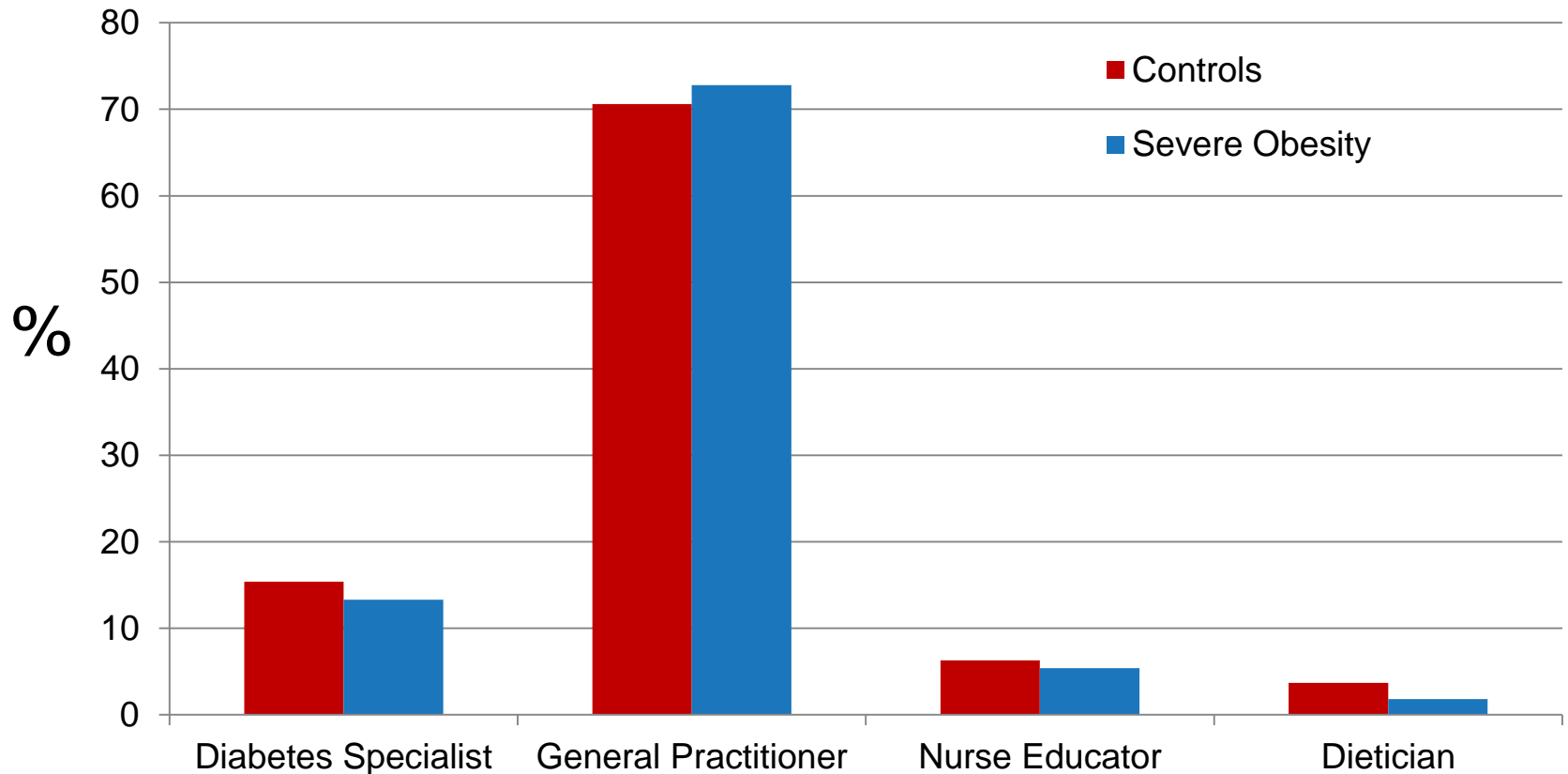
Less important
Poor uptake
Greater barriers

Obesity Is Linked to a Large Number of Serious Medical Conditions

Obesity-related Co-morbidities¹



Which health professional do you rely on most for your diabetes care?



Dixon, et al, AFP 2014

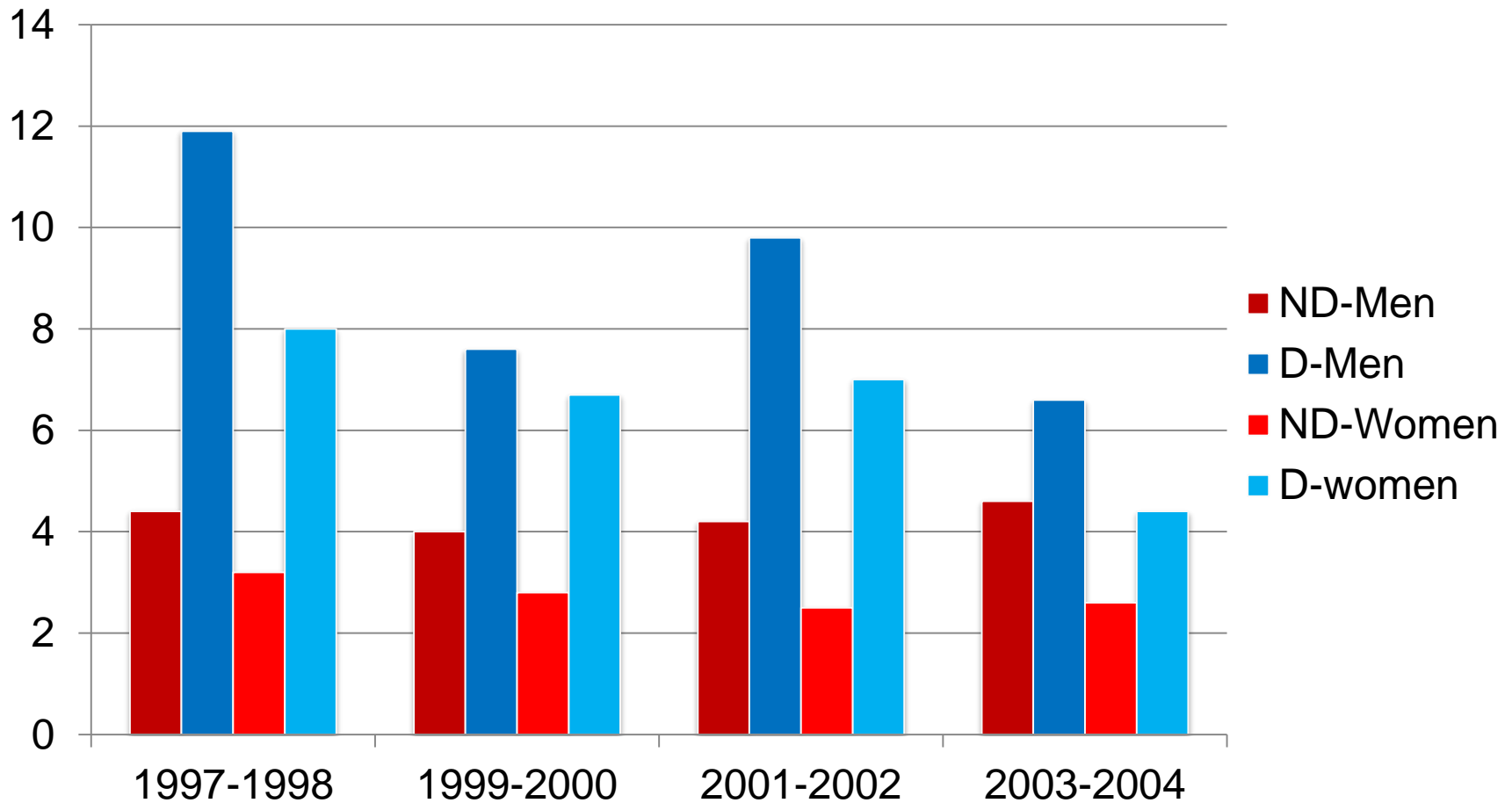


Baker IDI

HEART & DIABETES INSTITUTE

How good are we at treating type 2 diabetes?

Age-adjusted cardiovascular mortality Deaths/1000 people



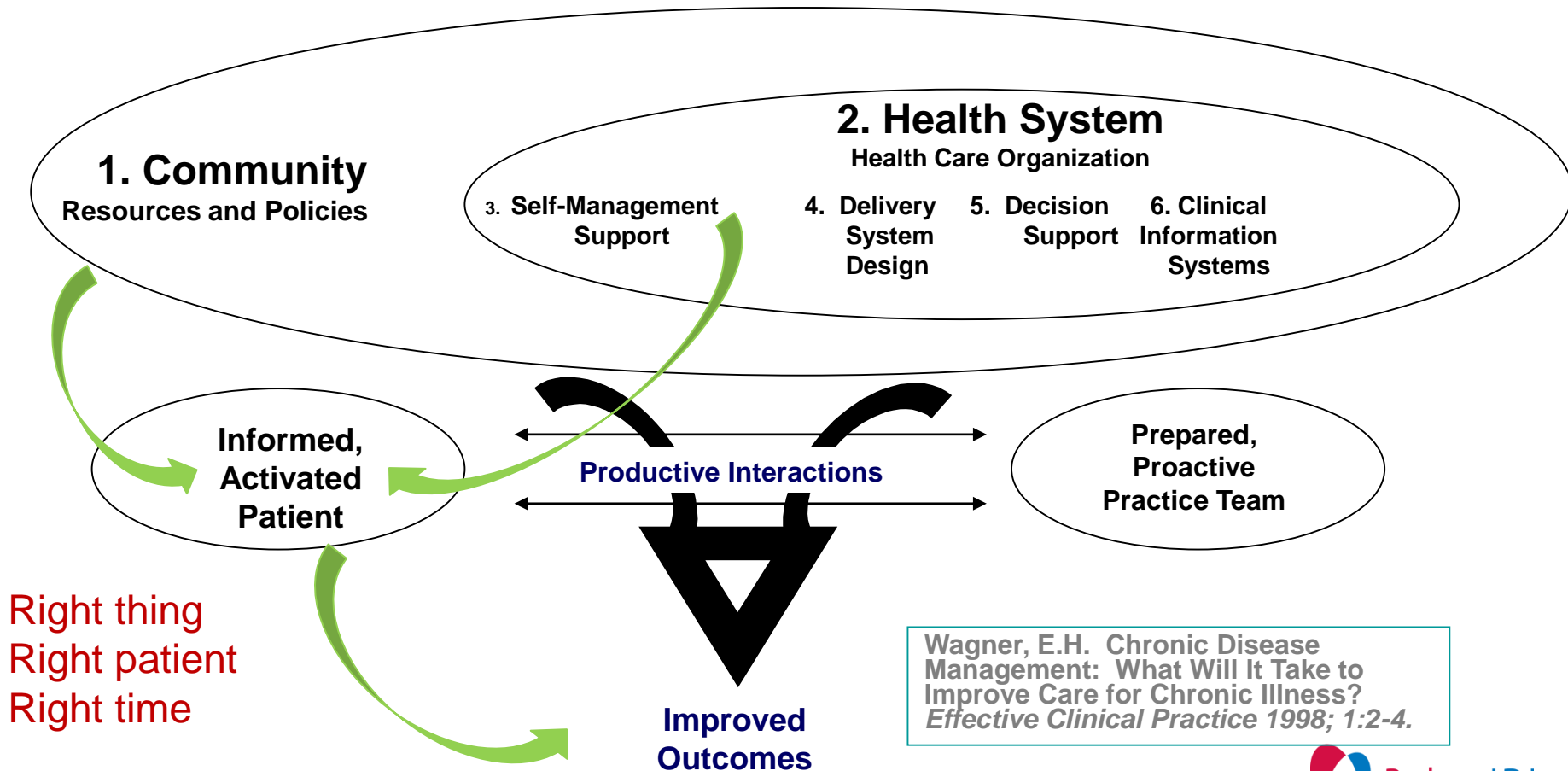
Where do these improvements come from?

- Steady improvement in quality and the organization of care
- Models of chronic disease management
- Promotion of self management behaviors
- Pharmacotherapy
 - Hypertension
 - Hyperlipidemia
- Reductions in
 - Lower limb amputations
 - End stage renal disease
 - Cardiovascular hospitalization
 - Smoking prevalence

Results similar in Norway, Finland, & Australia

Gregg, E. W., Y. J. Cheng, et al. (2012). "Trends in death rates among U.S. adults with and without diabetes between 1997 and 2006: findings from the National Health Interview Survey." Diabetes Care **35(6): 1252-1257.**

Chronic Care Management Model



The lessons from a glucocentric approach!

Having a focus on **glucose** as the cause of a condition - to the exclusion of other factors

Clinicians may need to reprioritise their efforts in diabetes management to better reflect the current evidence base

Is lower better? U-shaped curve between HbA1c and mortality

ACCORD – ADVANCE – US VA trial changed the landscape

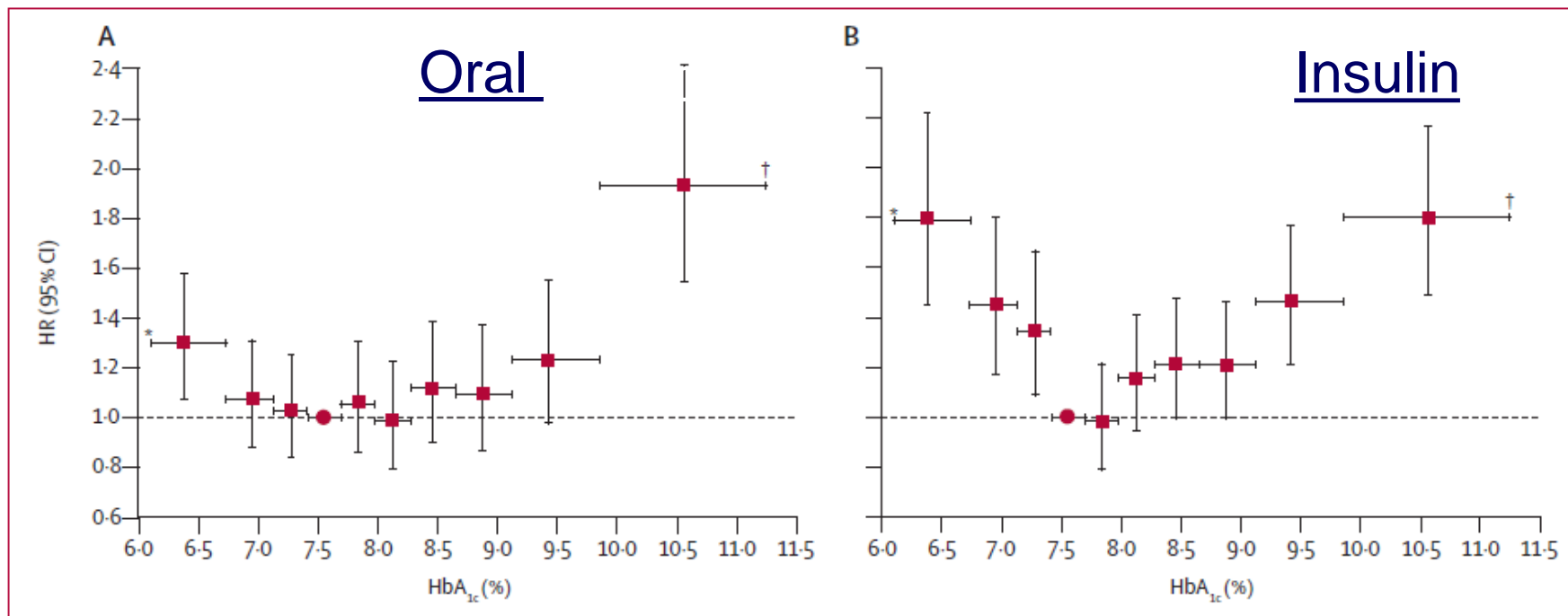


Figure 1: Adjusted hazard ratios for all-cause mortality by HbA_{1c} deciles in people given oral combination and insulin-based therapies
Cox proportional hazards models were used, with the HbA_{1c} base case scenario. Vertical error bars show 95% CIs, horizontal bars show HbA_{1c} range. Red circle=reference decile. *Truncated at lower quartile. †Truncated at upper quartile. Metformin plus sulphonylureas (A); and insulin-based regimens (B).

Currie et al Lancet 2009



Baker IDI
HEART & DIABETES INSTITUTE



Bariatric Medicine



Professor John B Dixon, MBBS PhD

NHMRC Senior Research Fellow
Head, Clinical Obesity Research
Baker IDI Heart & Diabetes Institute
Melbourne, Australia

The top 5 myths about obesity

1. Obese people are less physically active
2. Body weight is a good measure of health
3. All obese people eat unhealthy foods
4. Anyone can control their weight with diet and exercise
5. Obese people lack motivation and self control

Clinical Obesity June 2014

An emerging area of medicine to prevent and manage clinically severe obesity

- Understand the determinants of, and the disrupted regulation leading to obesity
- Understand how obesity impairs health, quality of life, and causes complications
- The management of obesity with a chronic disease model of care

Aiming to improve function, quality of life, psychological wellbeing, prevent complications, end-organ damage, and reduce mortality related to obesity

Genes and Obesity



Type	Correlation Men	Correlation Women
Monozygotic		
Reared apart	0.70	0.66
Reared Together	0.74	0.66
Dizygotic		
Reared Apart	0.15	0.25
Reared Together	0.33	0.27

Stunkard AJ et al New Engl
J Med 322:1483-7 1990

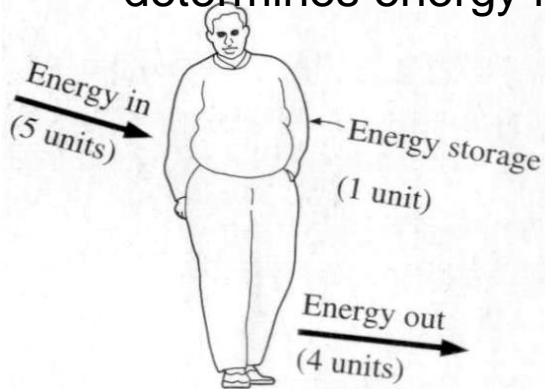


“Early years are critical in setting the pattern for overweight and obesity by secondary school the die-dye may be cast”

Oh, if it were as simple as energy in energy out and will power!

This notion is fundamentally flawed, for one simple reason: it assumes that **weight** is the “**dependent**” variable in this equation.

Indeed, everything we know about human physiology points to the fact that it is as much (if not more) **body weight** itself that determines energy intake and output as vice versa.

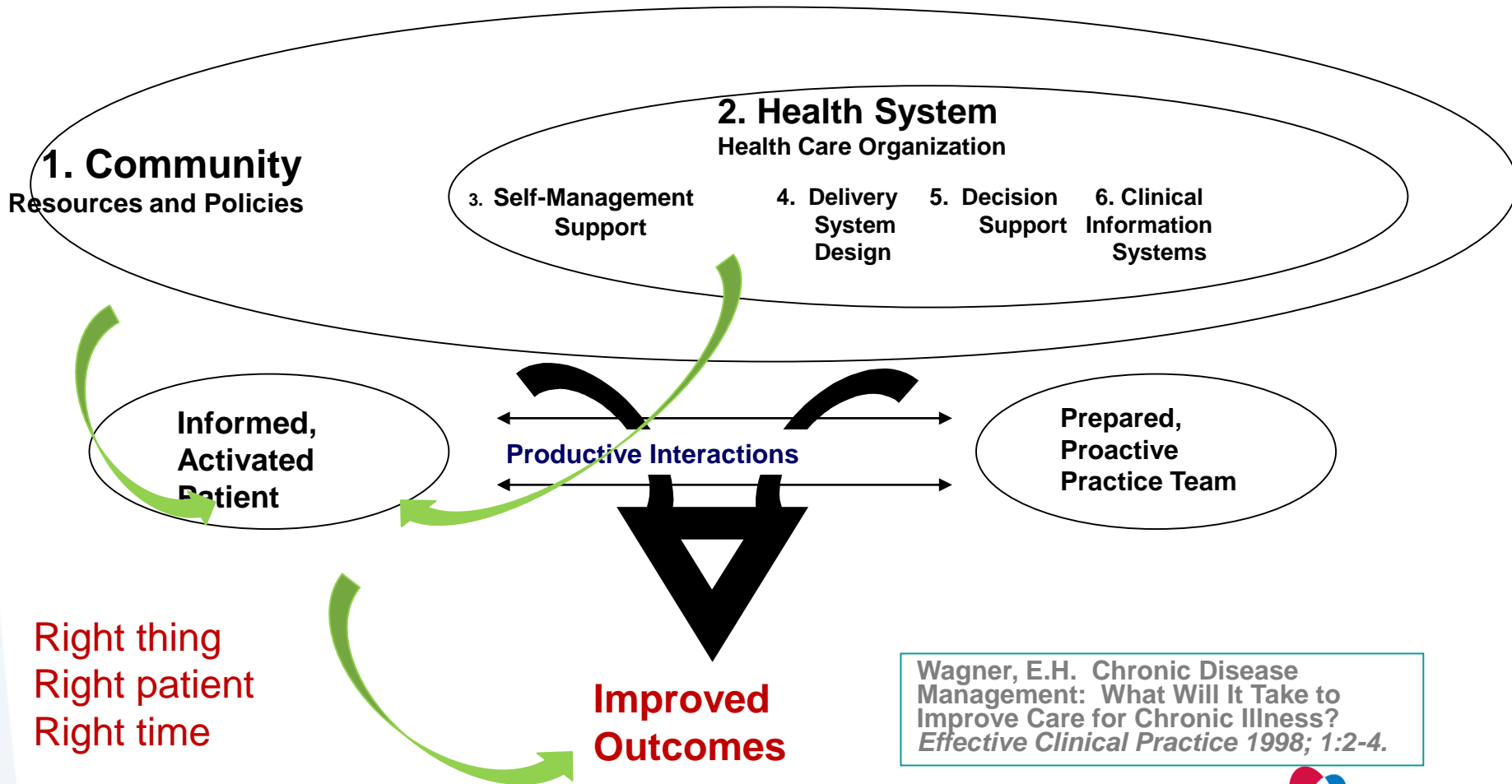


The first law of thermodynamics is of little practical use in an open biological system

Controversies in Obesity

Haslam, David W., Sharma, Arya M., le Roux, Carel W. (Eds.)

Chronic Care Management Model

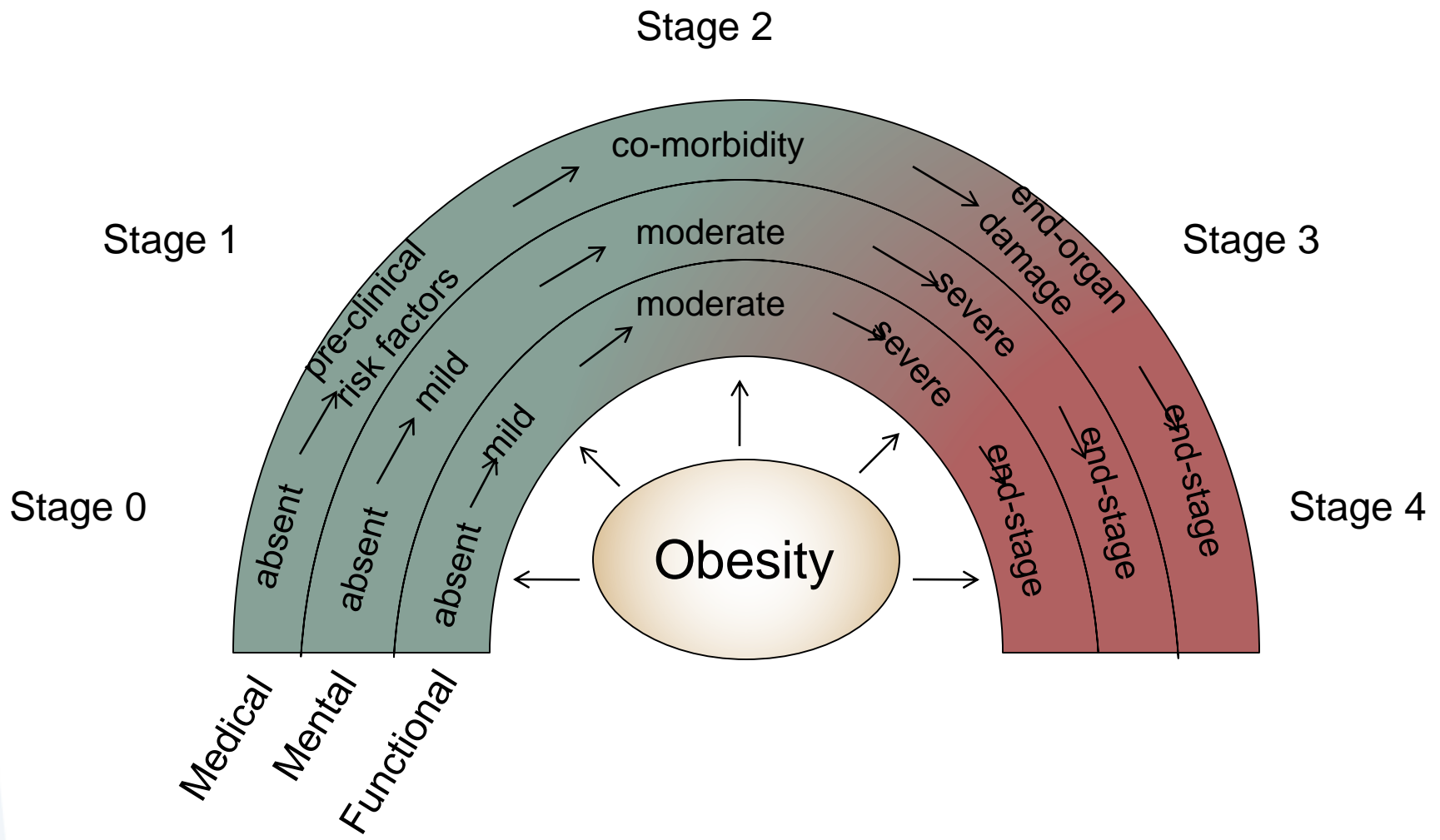


The 5 “A”s of obesity care

- **ASK and ASSESS** current lifestyle and behaviour, BMI, co-morbidities and risk
- **ADVISE** and promote the benefits of a healthy lifestyle and weight management
- **ASSIST** in development of a program that includes individually tailored lifestyle interventions based on BMI, risk, comorbidity and plan subsequent review and monitoring
- **ARRANGE** regular follow-up visits, referral to secondary care providers as required, and support for long-term weight management

Clear permission to engage chronic disease management

Edmonton Obesity Staging System (EOSS)



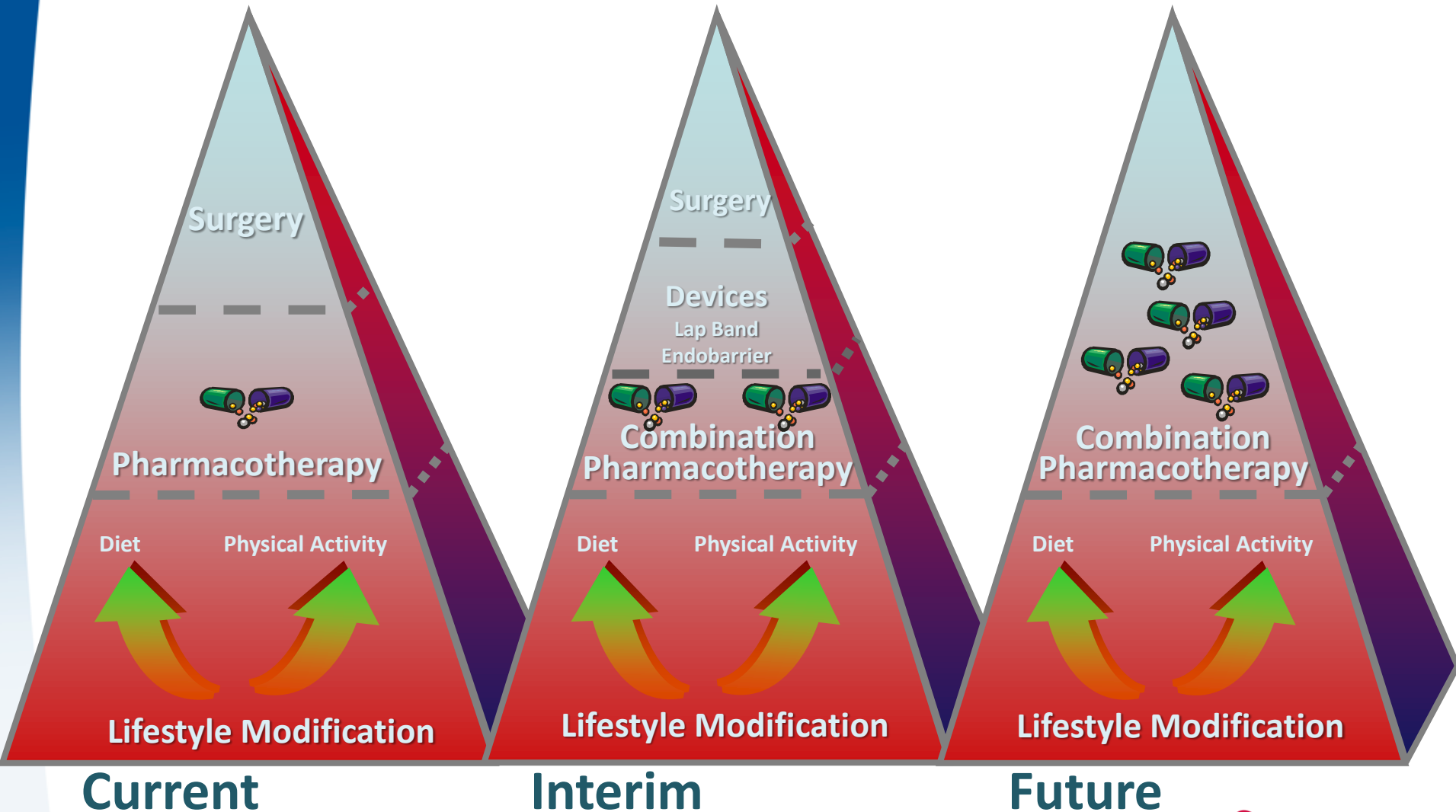
Sharma AM & Kushner RF, *Int J Obes* 2009

The US Obesity Society – Key messages to the FDA

- Obesity is not a lifestyle disease or a lifestyle choice
- It is NOT a willpower issue
- Modest weight loss has profound health benefits
- We need better therapy

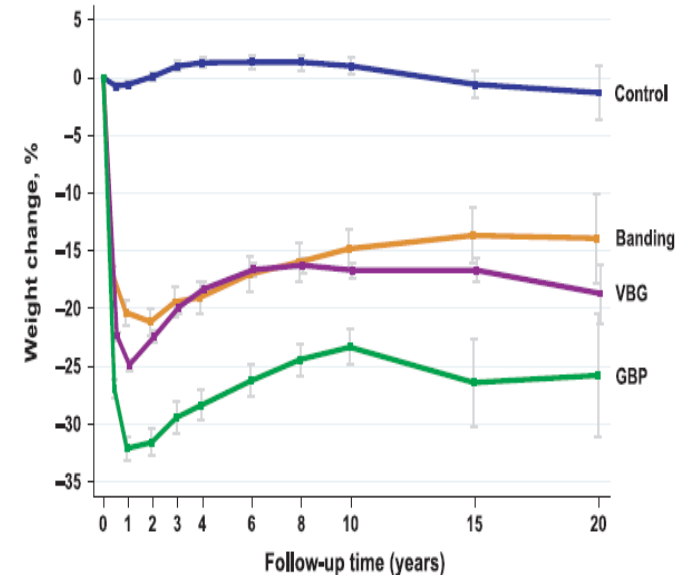


Obesity Treatment Pyramid



Every essential for a functional life must be carefully regulated

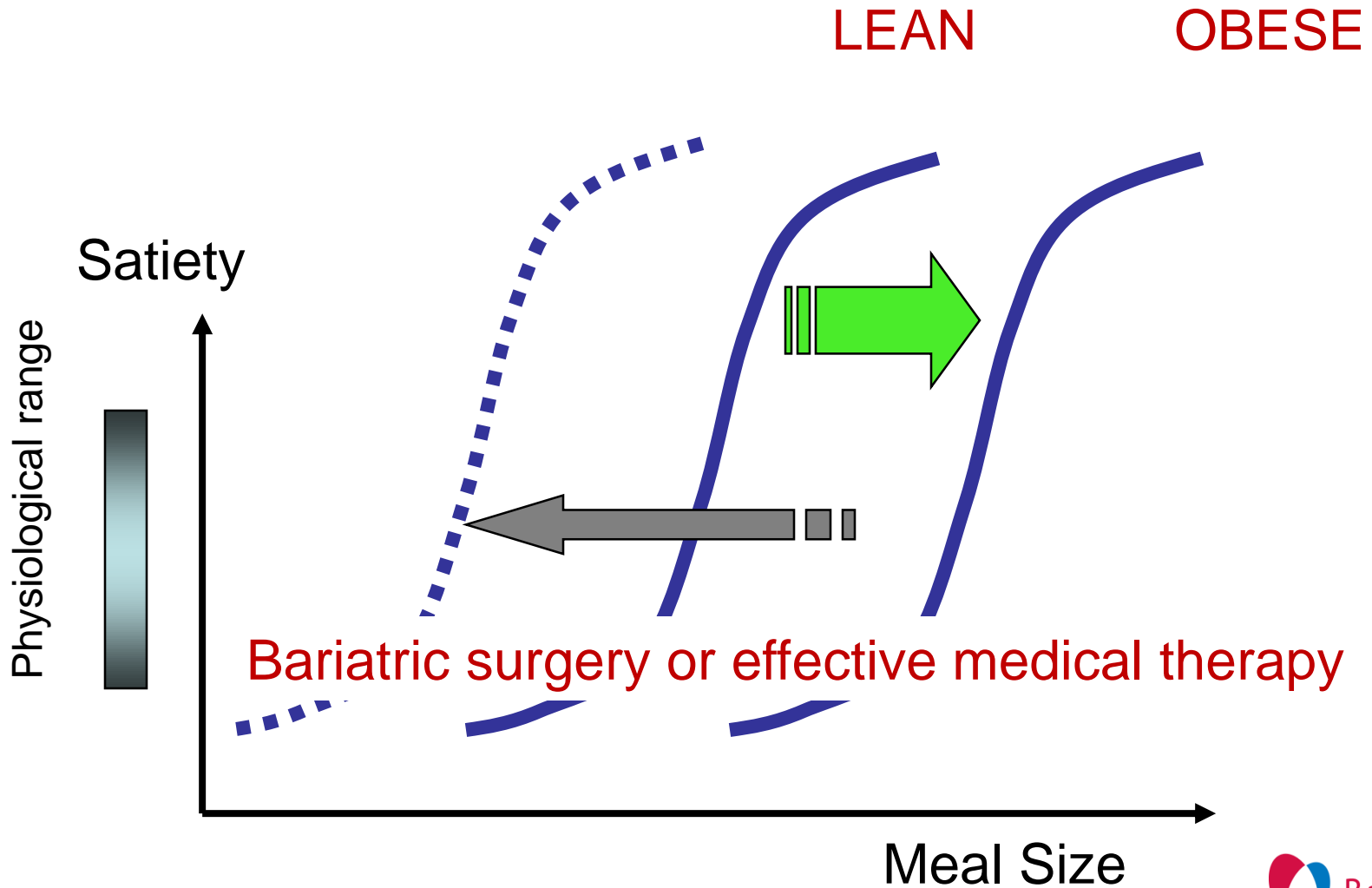
- Temperature
- Oxygen saturation
- Blood pressure
- Blood glucose
- **Fuel stores**



The regulation of energy stores is still working when an obese patient has lost weight following surgery

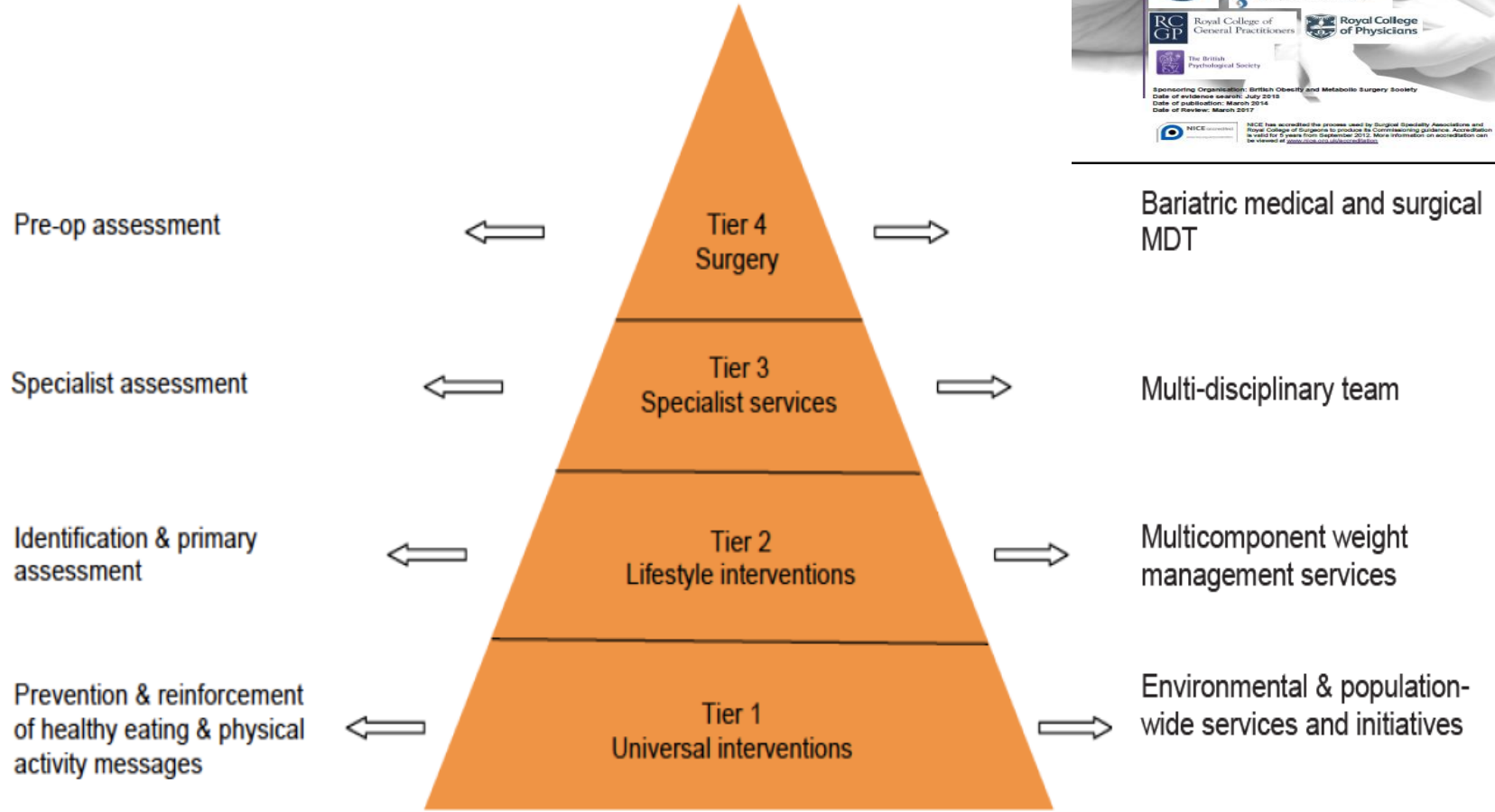
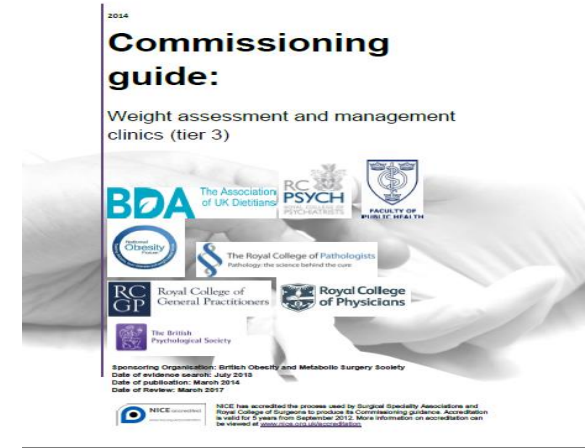
Dose response curve

“A change in regulation”

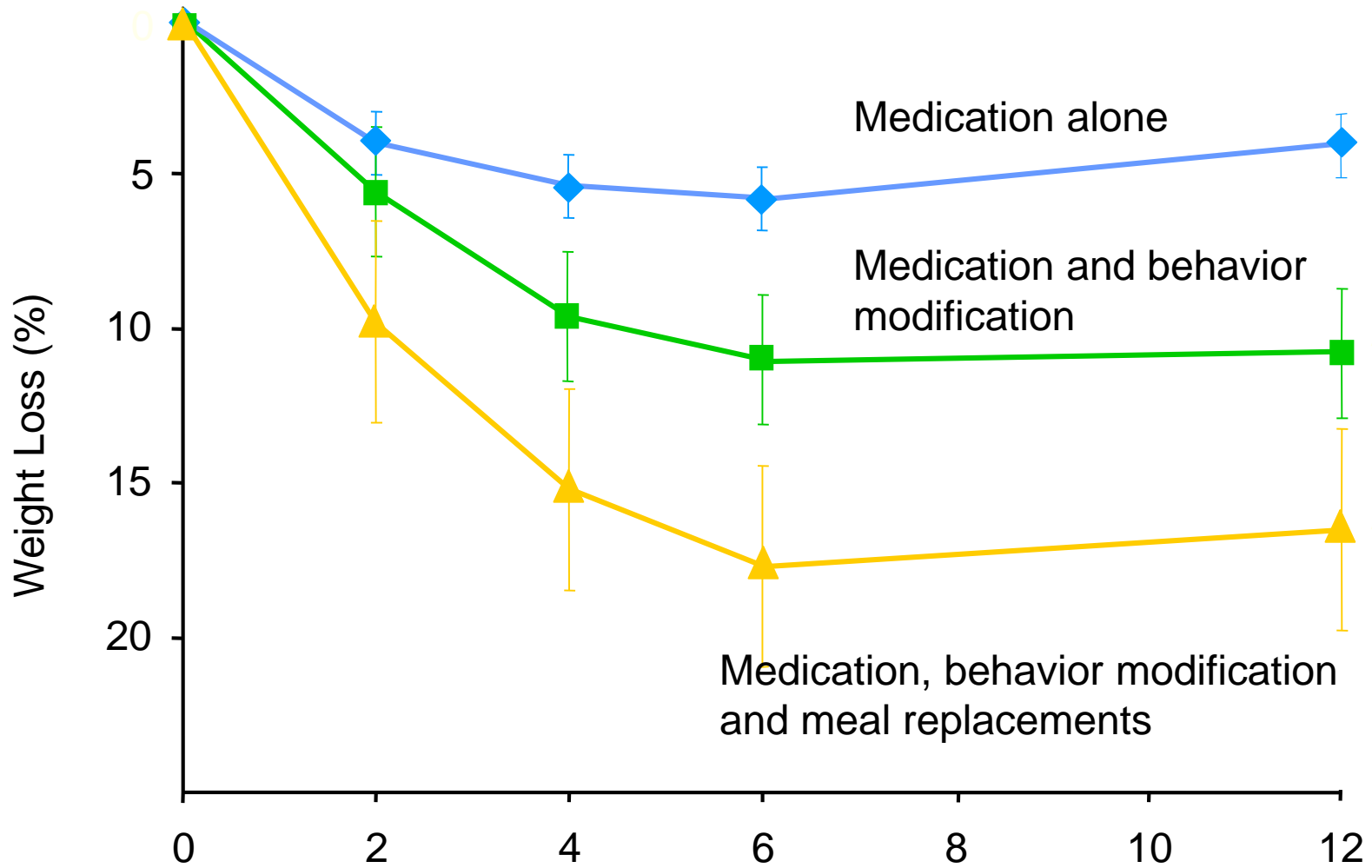


England NHS 2014

“Commissioning of Tier 3 services”



Additive Effects of Behavior and Meal Replacement Therapy With Pharmacotherapy for Obesity



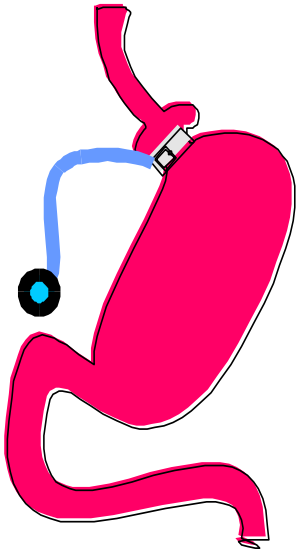
Wadden et al. *Arch Intern Med* 2001;161:218.

Currently limited

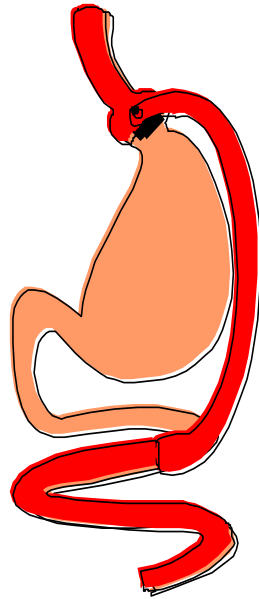
- Orlistat “Xenical”
- Phentermine “Duromine”
- Diabetes therapy
 - Exenitide
 - Liraglutide
 - SGLT-2 blockers

Several new preparations have been approved by the FDA in the US – And many more are in the pipeline

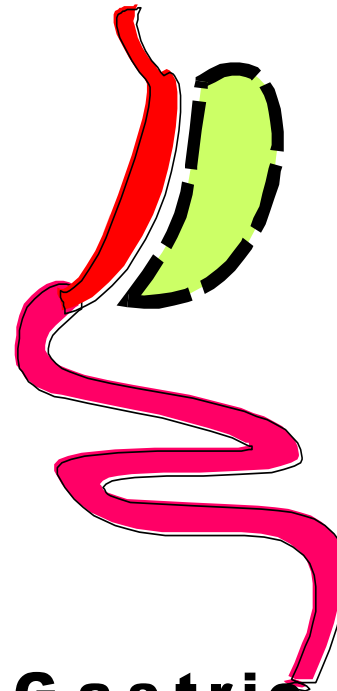
The currently accepted four bariatric operations



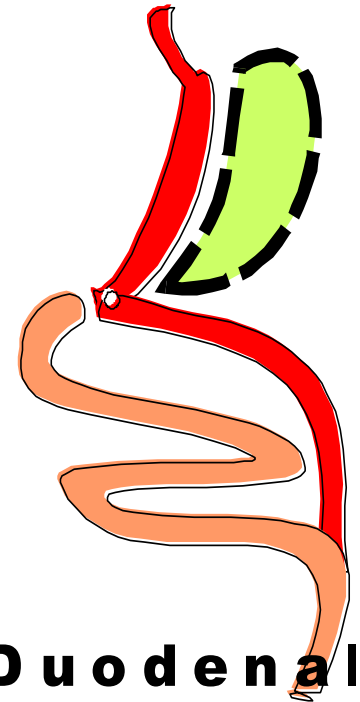
**Adjustable
Gastric
Band**



**Gastric
Bypass**



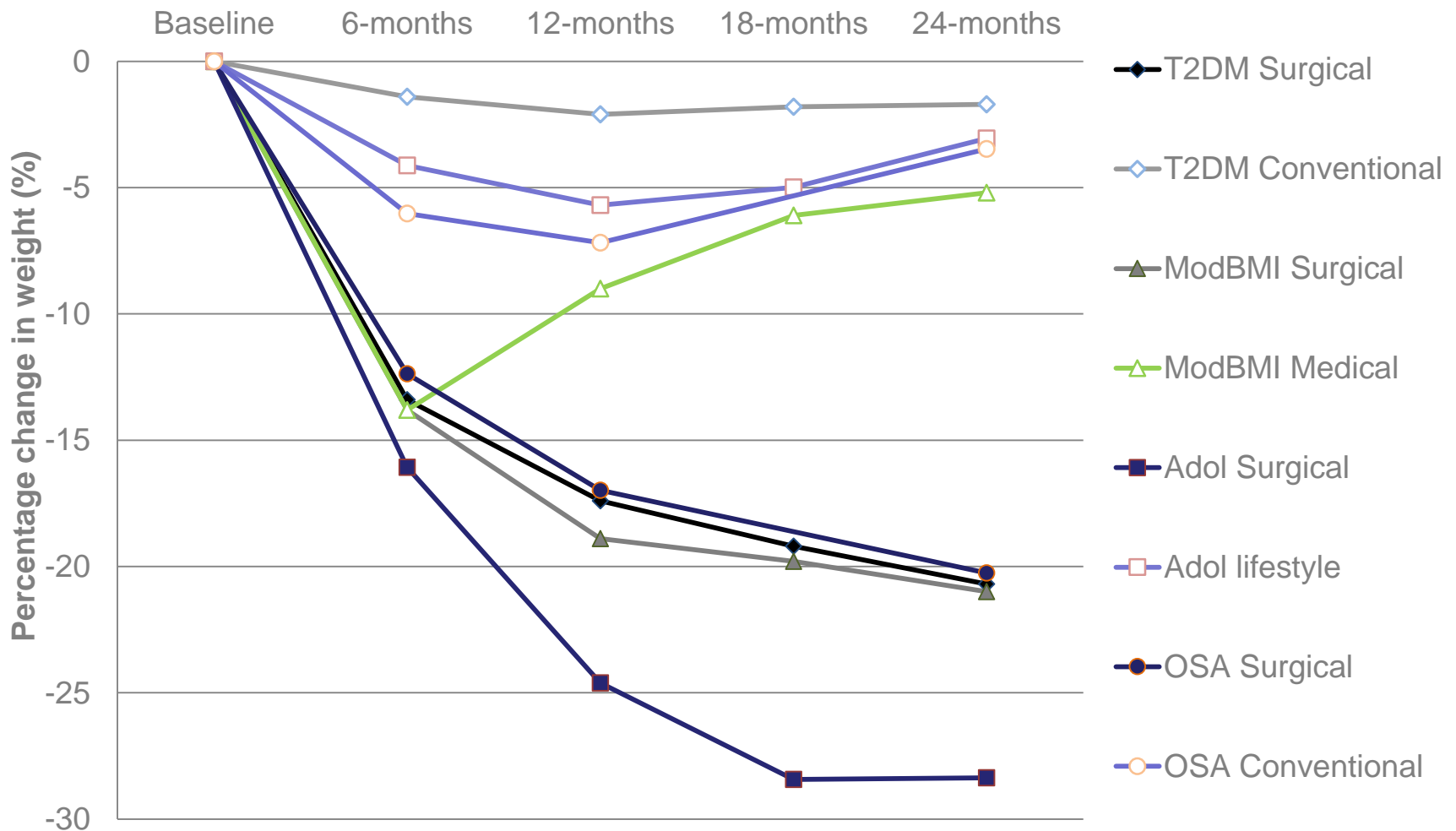
**Gastric
Sleeve**



**Duodenal
Switch**

Dixon, J.B. et al. *Surgical approaches to the treatment of obesity. Nat Rev Gastroenterol Hepatol*, (2011).

Efficacy – Weight Loss



Ann Intern Med, (2006). 144(9): p. 625-33.
 JAMA, (2010). 303(6): p. 519-26;

JAMA, (2008). 299(3): p. 316-23;
 JAMA, (2012). 308(11): p. 1142-9.

Where does surgery fit in?

Eligibility and prioritisation for bariatric surgery based on failed non-surgical weight loss therapy, BMI, ethnicity and disease control

BMI Range	Eligible for surgery	Prioritised for Surgery
< 30	No	No
30 –35	YES-Conditional*	No
35–40	YES	YES-Conditional*
> 40	YES	YES

*HbA_{1c} > 7.5 despite fully optimised conventional therapy, especially if weight is increasing, or other weight responsive comorbidities not achieving targets on conventional therapies (e.g. blood pressure, dyslipidaemia, obstructive sleep apnoea)

IDF- Bariatric Surgical and Procedural Interventions in the Treatment of Obese Patients with Type 2 Diabetes

The lessons from a gluco~~X~~entric weightcentric approach!

Having a focus on glu~~X~~ose weight as the
cause of a condition - to the exclusion of other
factors

Clinicians may need to reprioritise their
efforts in diabetes and weight management
to better reflect the current evidence base

The profound benefit of modest
weight loss – no matter where you
start

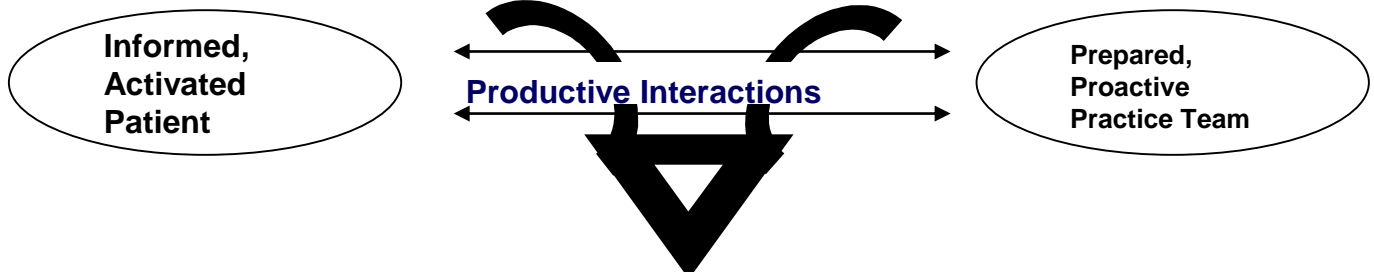
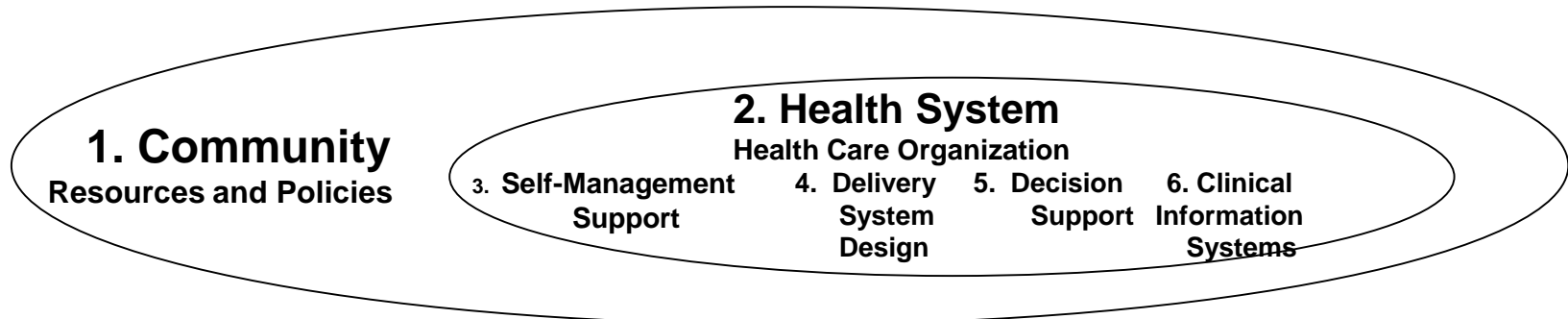
QOL, Function, prevent
complications, end-organ damage,
disability, psychological wellbeing,
Morbidity and mortality

Managing clinically severe obesity

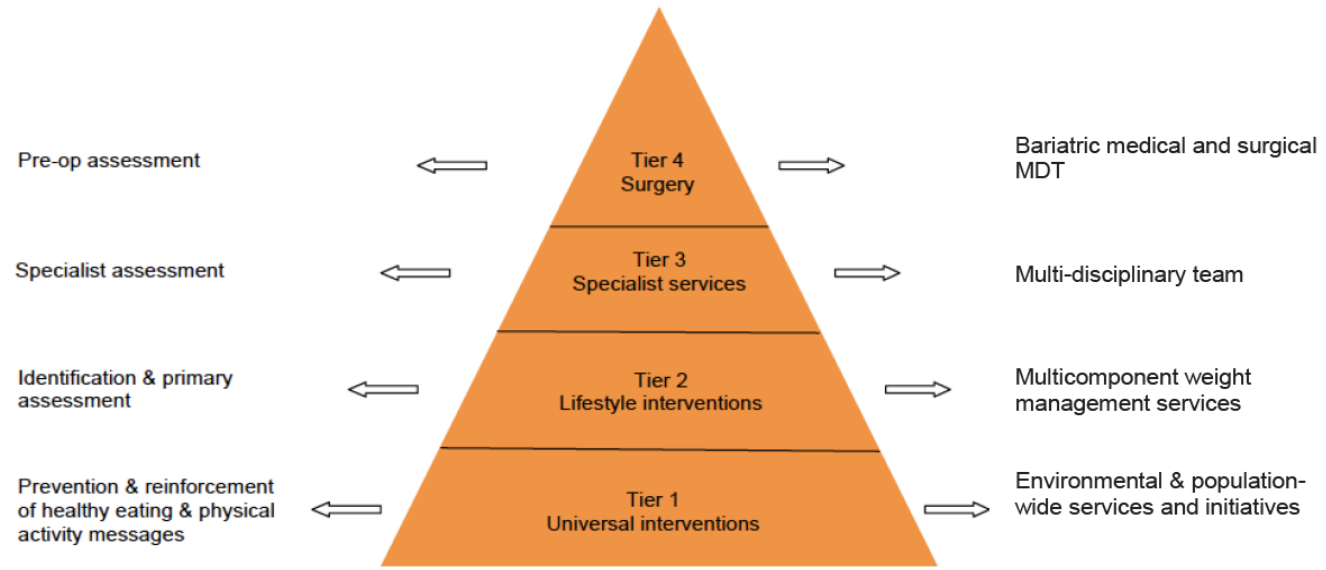
- Obesity is a chronic serious relapsing disease needing chronic disease management – morbidity, mortality and cost
- Weight loss is the perfect storm for weight regain – “We do not cure obesity – we manage it and its comorbidity and complications”
- Weight management has a major role, but quick fixes, unrealistic expectations and prejudice distort the chronic disease management process

Report card: Diabetes & Obesity

- Diabetes 7%
 - CDM approach in place and objective evidence based therapies are generating improved health outcomes
 - 7/10 doing well but always room for improvement
- Clinically severe obesity 6% most women
 - Distortion
 - Blame game
 - Sloth & gluttony
 - Motivation and willpower
 - CDM approach with few exceptions non-existent
 - Negligent
 - Fail



Improved Outcomes





"I'll be right there in the room, and no one even acknowledges me"