Professor John Dixon

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

Saturday, August 10, 2019

(Room 1)

16:30 - 17:00 The Obesity Crisis - What to Do About It?

The Obesity Crisis: What can we do about it?

Professor John B Dixon

Head of the Clinical Obesity Research Laboratory

Baker Heart and Diabetes Institute, Melbourne

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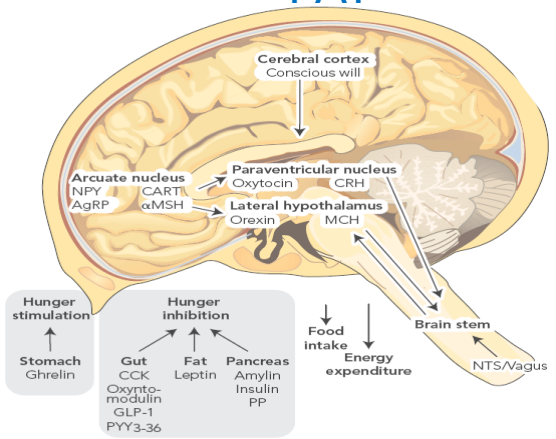
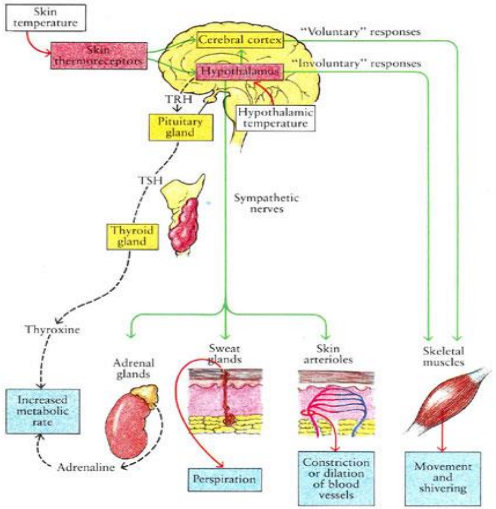
Obesity a disease of central dysregulation of energy balance

FAT

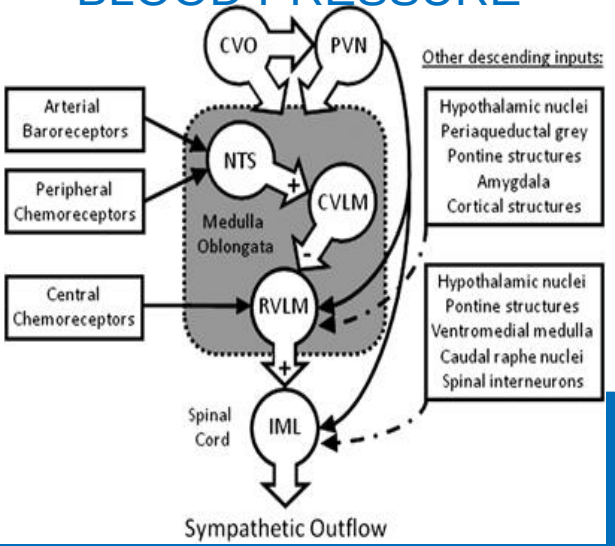


AgRP = agouti-related peptide. CART = cocaine and amphetamine-regulated transcript. CCK = cholecystokinin. CRH = corticotropin-releasing hormone. GLP-1 = glucagon-like peptide. MCH = melanin-concentrating hormone. αMSH = alpha melanocyte-stimulating hormone. NPY = neuropeptide Y. NTS = nucleus of the tractus solitarius. PP = pancreatic polypeptide. PYY = peptide YY.

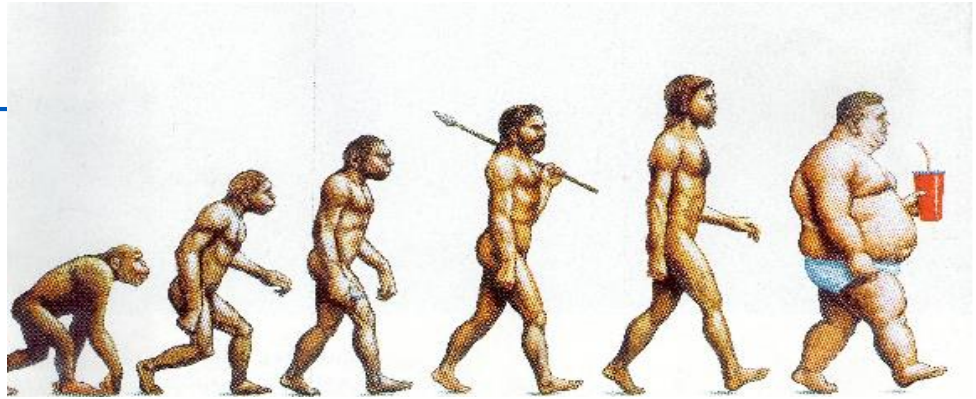
TEMPERATURE



BLOOD PRESSURE



Homo obesus a recently described phenotype of homo sapiens



Chaldakov GN, Fiore M, Tonchev AB, et al. Homo obesus: a metabotrophin-deficient species. *Current pharmaceutical design.* 2007;13:2176-9.

The EcoHealth approach involves transdisciplinary efforts: experts from various academic fields working as a team, learning to speak each other's language, with the strengths of each discipline actively supporting each other.

Moreover EcoHealth encourages researcher to consider the broadest context when looking at concrete problems.

The three pillars of EcoHealth

- Pillar 1: Transdisciplinarity implies an inclusive vision of ecosystem-related health problems. This requires transdisciplinary communication – among researchers, community representatives, and decision-makers.
- Pillar 2: Participation refers to the aim of achieving consensus and cooperation, not only within the community, scientific, and decision-making groups, but also among them.
- Pillar 3: Equity involves analysing the respective roles of men and women, and of various social groups.

Charron DF, editor. Ecohealth research in practice: innovative applications of an ecosystem approach to health. IDRC, 2012. Available at http://idlbnc.idrc.ca/dspace/bitstream/10625/47809/1/IDL-47809.pdf.

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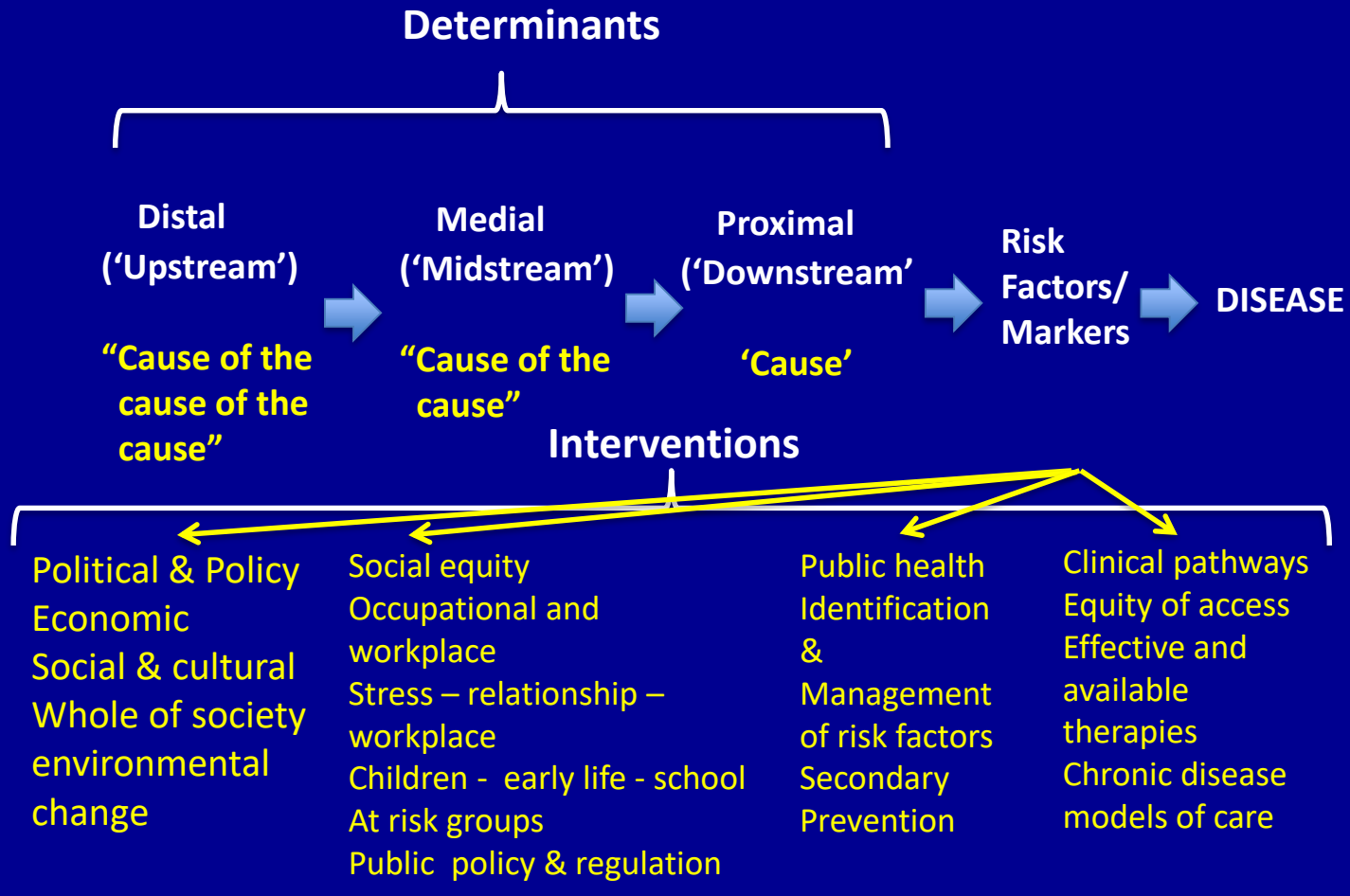
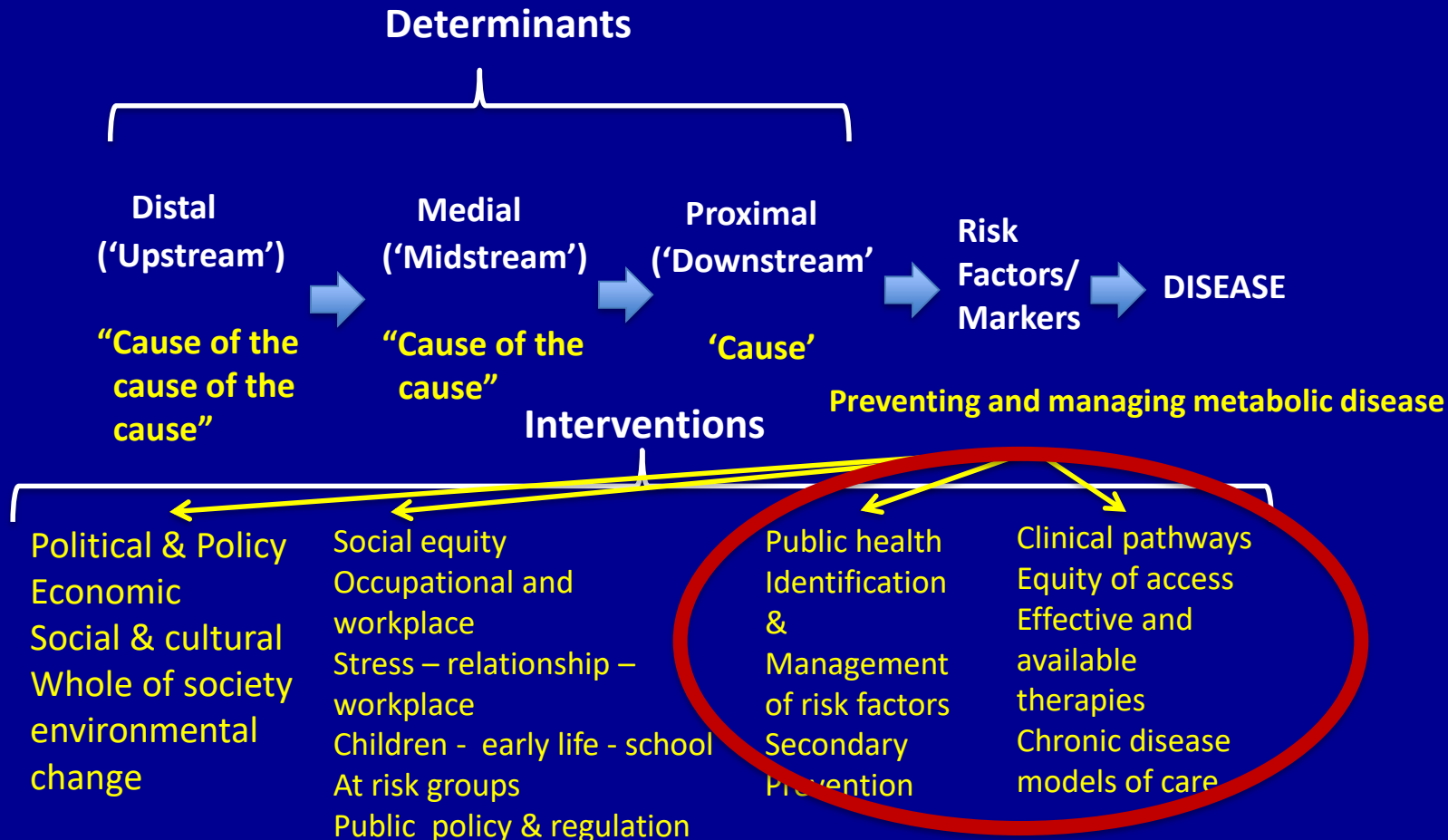
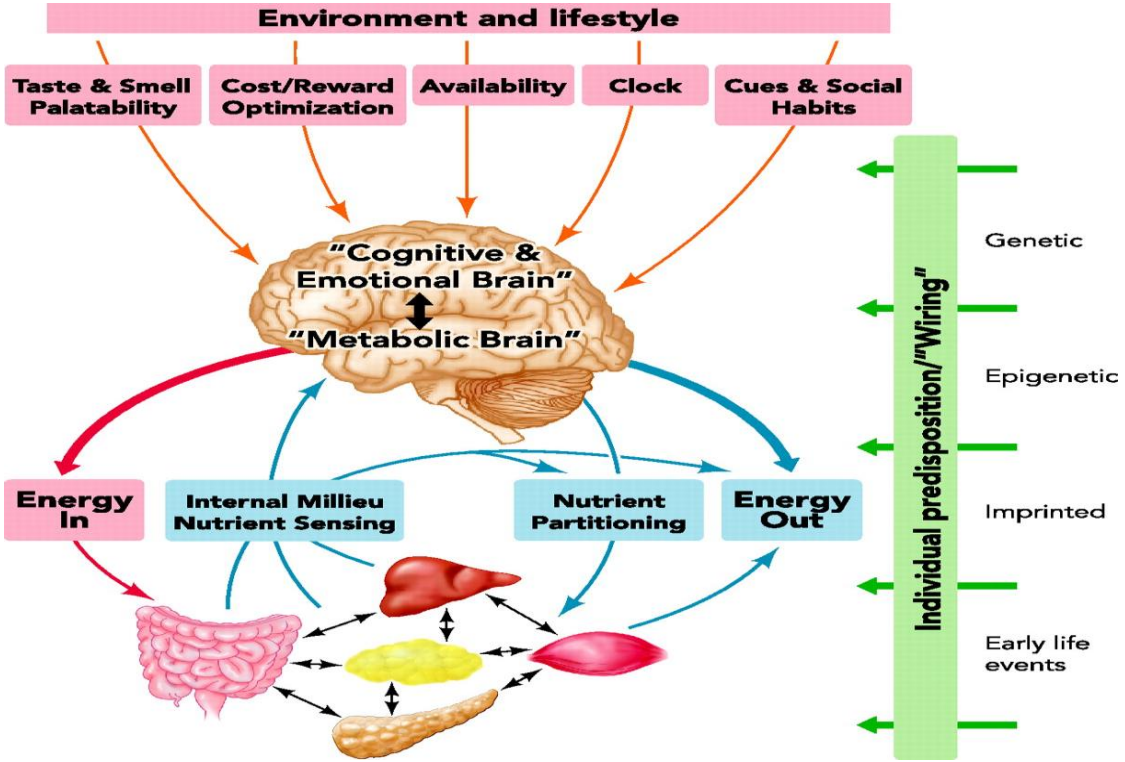
Epidemiology of Disease



Epidemiology of Disease



Schematic diagram showing the major factors determining neural control of appetite and regulation of energy balance



Unfortunately a rise in weight (fat) is defended just as a rise in blood pressure is defended

Huiyuan Zheng, and Hans-Rudi Berthoud Physiology 2008;23:75-83

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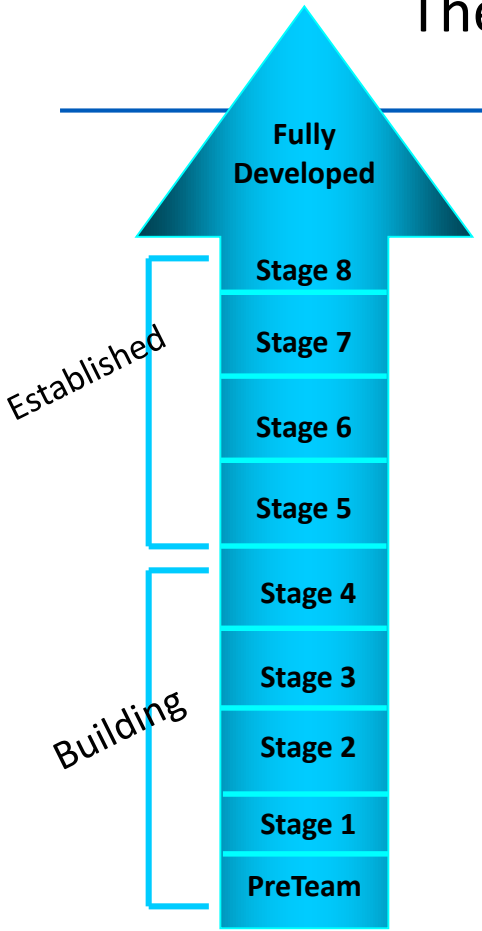
The Team Development Measure (TDM)



Goals Clarity

Clearly defined team goals and the means to reach these goals.

Roles Clarity

Clearly defined roles and expectations. Accomplishments of the team are placed above individuals

Communication

Team members…. Say what they feel and think; are truthful, respectful and positive; address conflict maturely

Cohesion

"…the social glue that binds the team members as a unit."

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Chronic Disease Management
The Transformation Components

COMMUNITY MOBILIZATION
That mobilizes available community resources to meet patients' needs

SELF-MANAGEMENT SUPPORT
That empowers and prepares patients to self-manage their health and their healthcare

HEALTH SYSTEM REDESIGN
The organization and culture, to provide the delivery of coordinated, high quality care

DELIVERY SYSTEM TRANSFORMATION
Collaborative, multi-disciplinary teams using evidence based approaches to deliver clinical care and self-management support

EVIDENCE-BASED DECISION MAKING
The information, systems and tools to ensure clinical care is provided consistent with the best evidence-based available

INTEGRATED INFORMATION SYSTEMS
Clinical and administrative Information systems to support multidisciplinary, collaborative teams providing evidence based care in a variety of care settings

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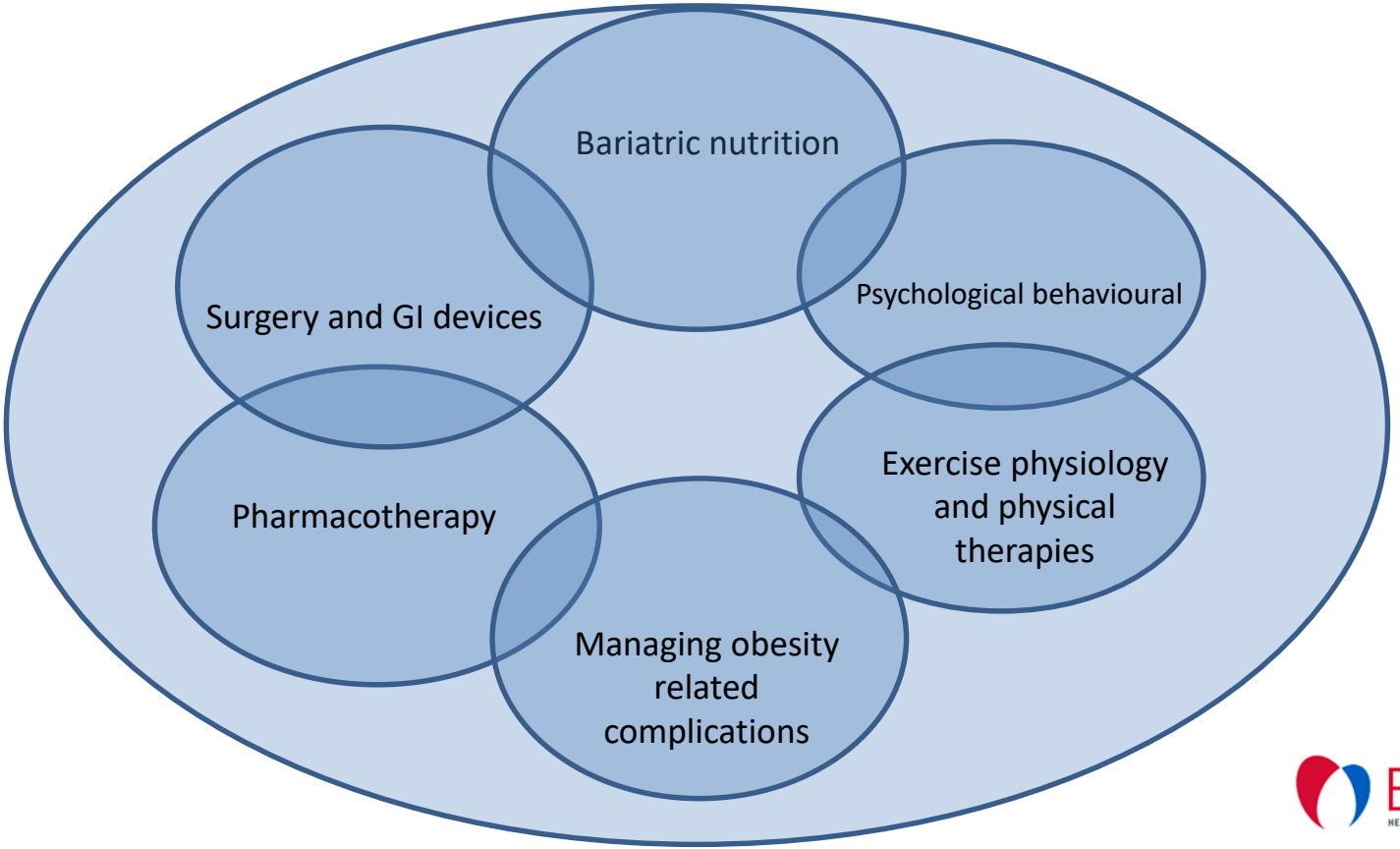
It is time for bariatric-metabolic medicine



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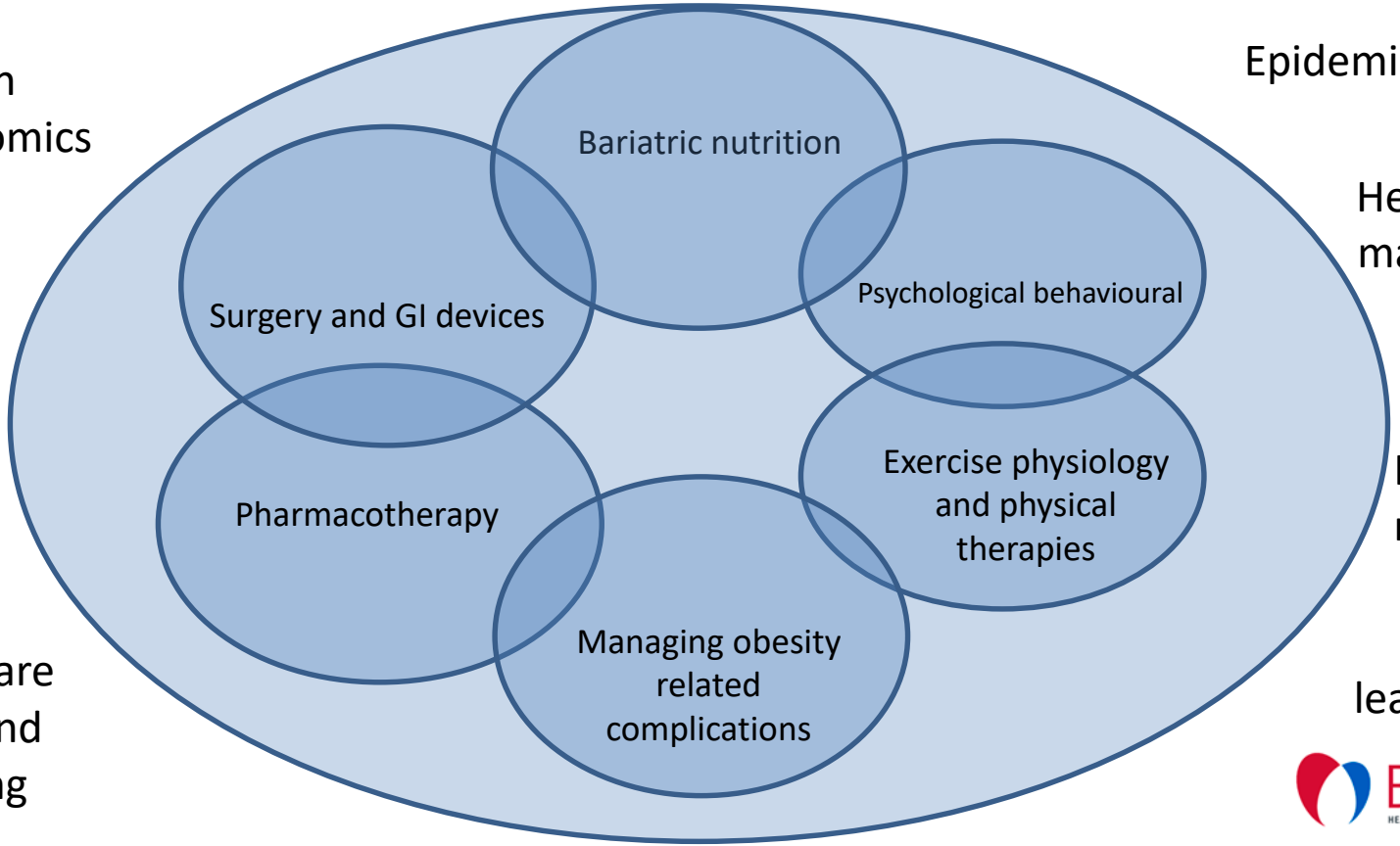

Health Economics

Public Health

Educati on and training

Health care policy and planning

Epidemiology

Health service management-providers

Human resources

National leadership and vision

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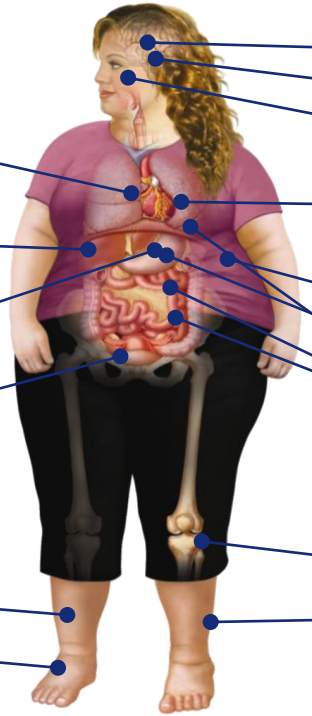
Obesity the canary in the mineshaft for chronic obesity related disease

Obesity-related Complications



Pulmonary Disease
- Abnormal Function
- Obstructive Sleep Apnea
- Hypoventilation Syndrome
- Asthma

Nonalcoholic Fatty Liver Disease
- Steatosis
- Steatohepatitis
- Cirrhosis

Gall Bladder Disease

Gynecologic Abnormalities
- Abnormal Menses
- Infertility
- Polycystic Ovarian Syndrome

Skin Problems

Gout

Idiopathic Intracranial Hypertension

Stroke

Cataracts

Coronary Heart Disease
- Dyslipidemia
- Hypertension

Diabetes

Severe Pancreatitis

Cancer
- Breast, Uterus, Cervix,
- Colon, Esophagus, Pancreas, Kidney, Prostate

Osteoarthritis

Phlebitis
- Venous Stasis

Bhoyrul. *J Manag Care Med.* 2008

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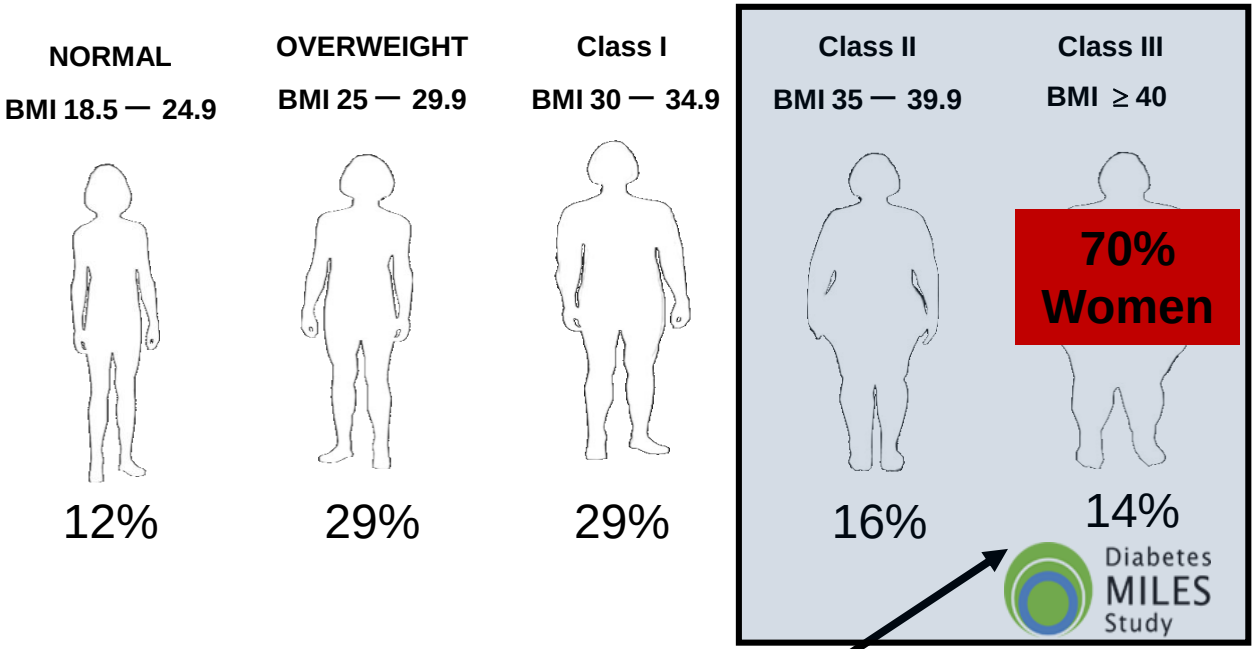
Australian's with type 2 Diabetes 2011

Clinical Terms Used to Describe Various Levels of Body Fat*



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

Dixon, J. B., et al. (2013). "Severely obese people with diabetes experience impaired emotional well-being associated with socioeconomic disadvantage: Results from diabetes MILES - Australia." Diabetes Res Clin Pract **101**(2): 131-140.

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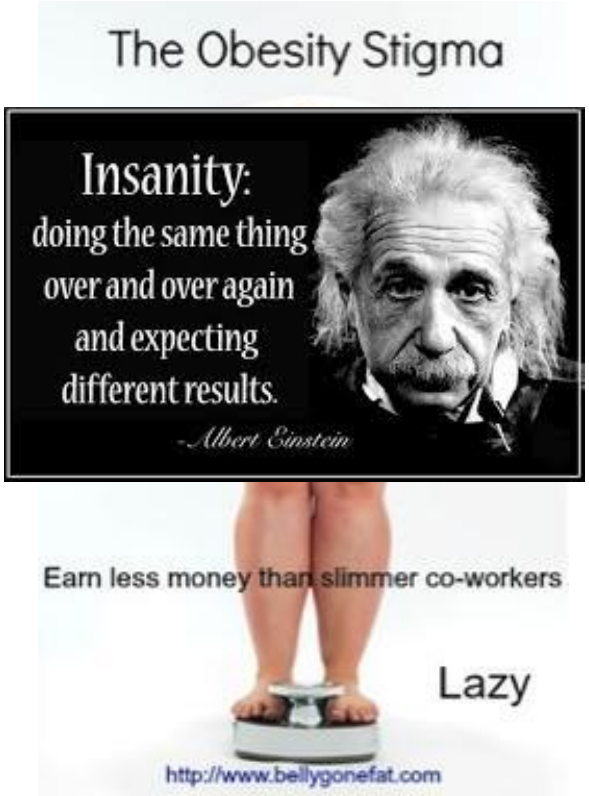
"Severe obesity and diabetes self-care attitudes, behaviours and burden: implications for weight management from a matched case-controlled study."

Results from Diabetes MILES-Australia

The same
HbA1c
Medications
Eyes
Feet
Urine
Follow-up



Different
Diet
Physical activity

Less important
Poor uptake
Greater barriers

Dixon, J. B., J. L. Browne, et al. (2013). Diabet Med.

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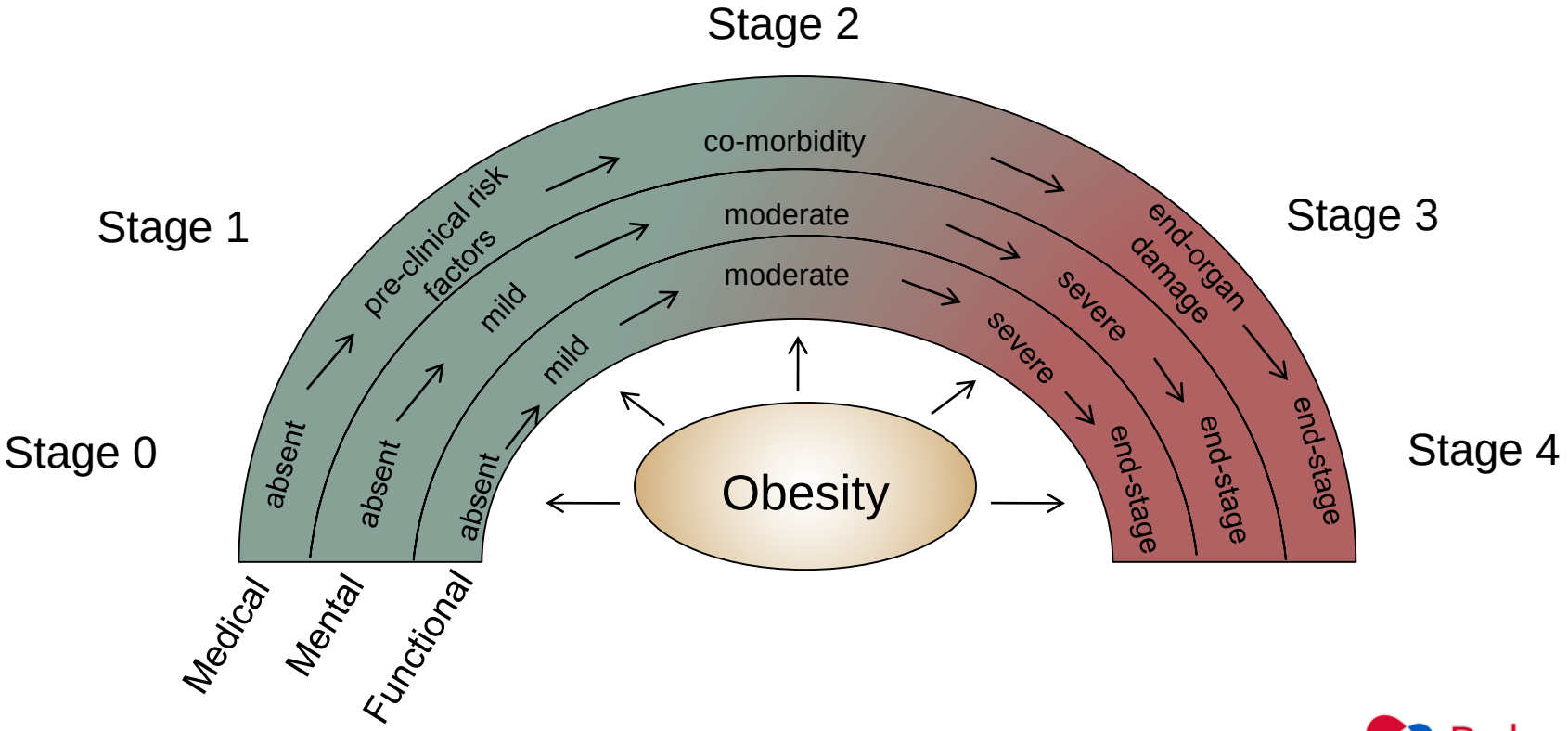
Edmonton Obesity Staging System



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

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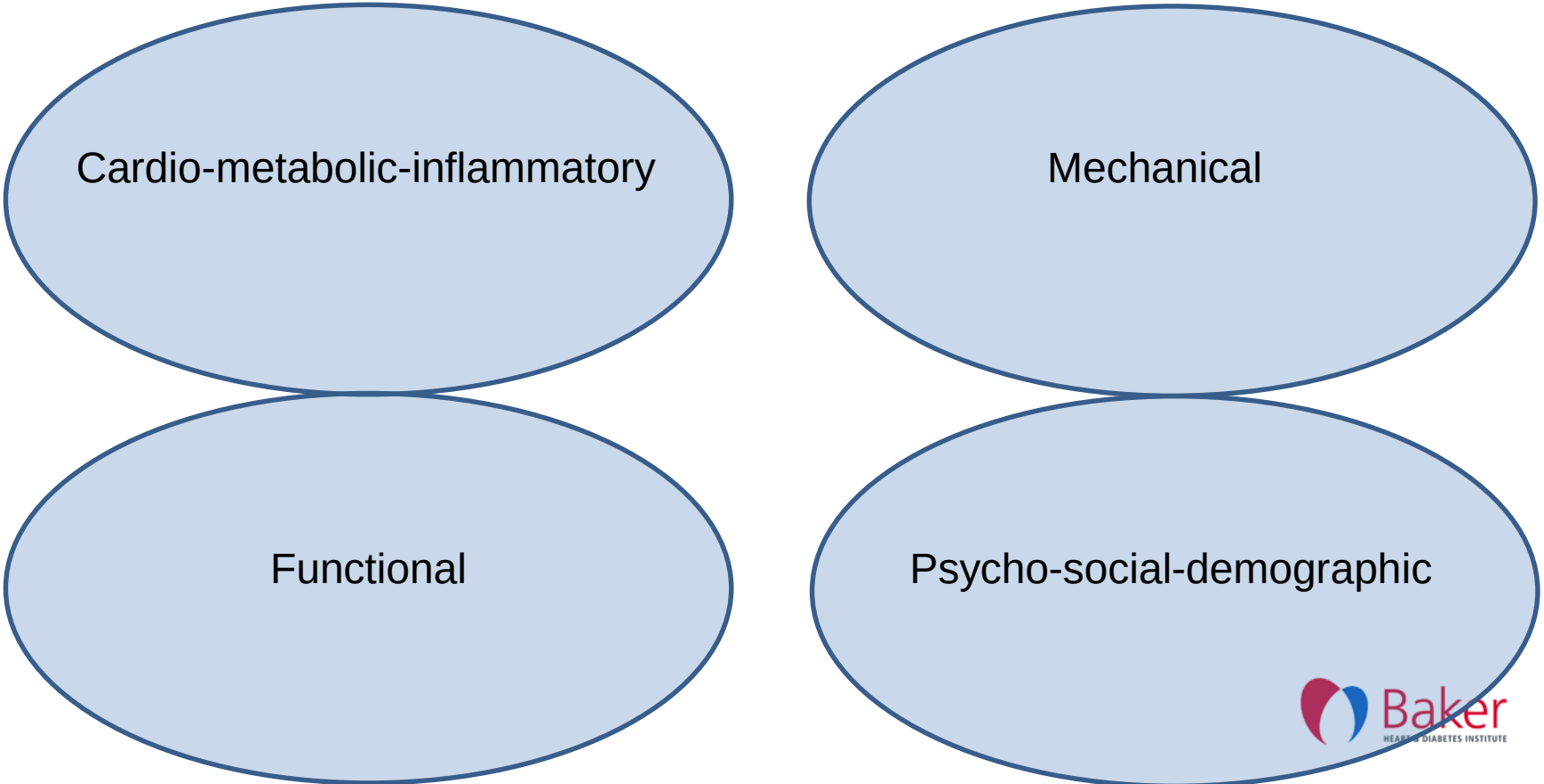
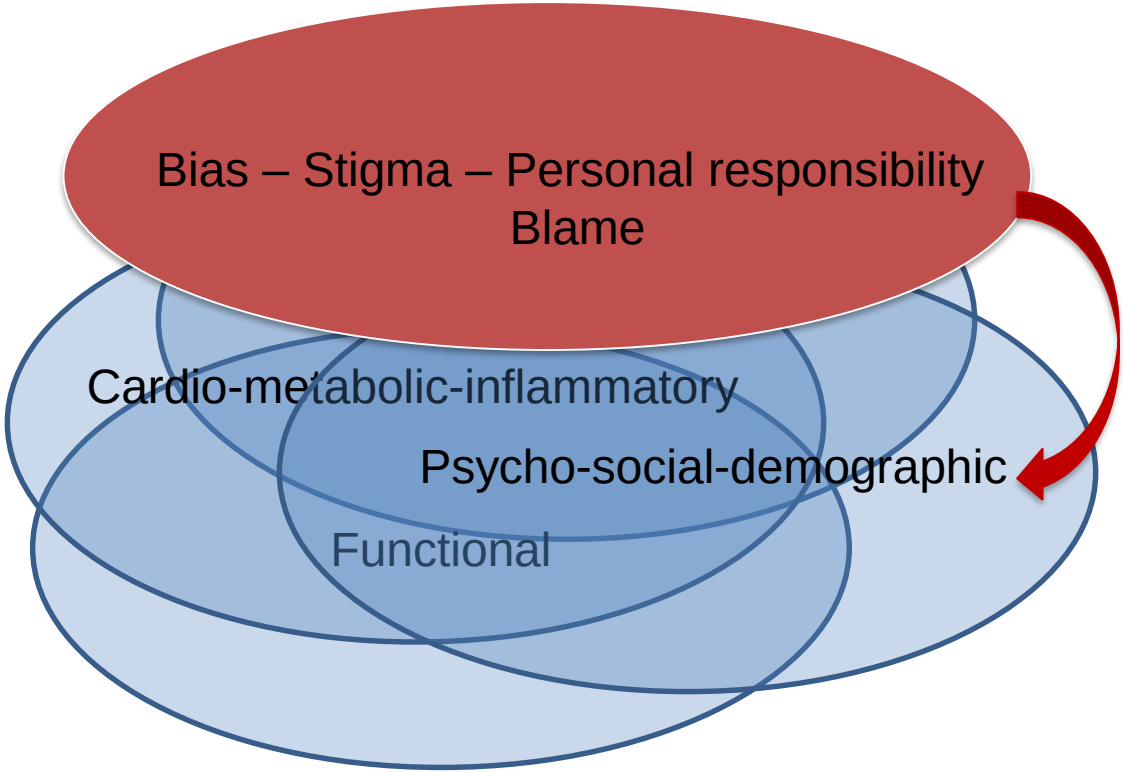
Edmonton scoring system

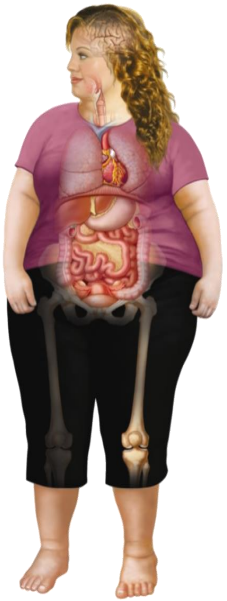
Stage	Description
0	No apparent obesity-related risk factors (e.g., blood pressure, serum lipids, fasting glucose, etc. within normal range), no physical symptoms, no psychopathology, no functional limitations and/or impairment of well being
1	Presence of obesity-related subclinical risk factors (e.g., borderline hypertension, impaired fasting glucose, elevated liver enzymes, etc.), mild physical symptoms (e.g., dyspnea on moderate exertion, occasional aches and pains, fatigue, etc.), mild psychopathology, mild functional limitations and/or mild impairment of well being
2	Presence of established obesity-related chronic disease (e.g., hypertension, type 2 diabetes, sleep apnea, osteoarthritis, reflux disease, polycystic ovary syndrome, anxiety disorder, etc.), moderate limitations in activities of daily living and/or well being
3	Established end-organ damage such as myocardial infarction, heart failure, diabetic complications, incapacitating osteoarthritis, significant psychopathology, significant functional limitations and/or impairment of well being
4	Severe (potentially end-stage) disabilities from obesity-related chronic diseases, severe disabling psychopathology, severe functional limitations and/or severe impairment of well being

Putting this in packets is useful conceptually



Reality tells us a very different story and the and the pathophysiology of obesity related complications are likely to have contributions from all!





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Stigma: “the negative associations felt by and acted upon an individual based on one or more of their personal characteristics.”

Body weight is perceived as something we can control.

Lack of personal responsibility: lazy, no willpower, unsuccessful, unintelligent, recidivist and lacking self-discipline

A lack of personal responsibility and CONTROL

Shaming and blaming “will encourage them to lose weight”

The media has a ball “The biggest loser” & “Dr Phil”

And acted on by the individual

Perceived weight stigma-discrimination is significantly associated with increased risk for chronic stress, atherosclerosis, diabetes, dyslipidaemia and myocardial infarction

Weight gain and central obesity

Poor self-esteem, self-image, depression, reduced social engagement and social isolation

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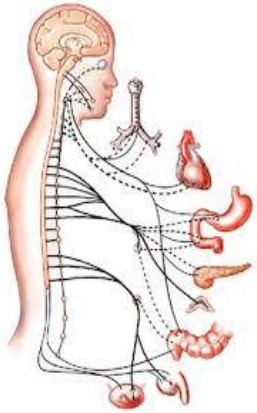
Whitehall II study

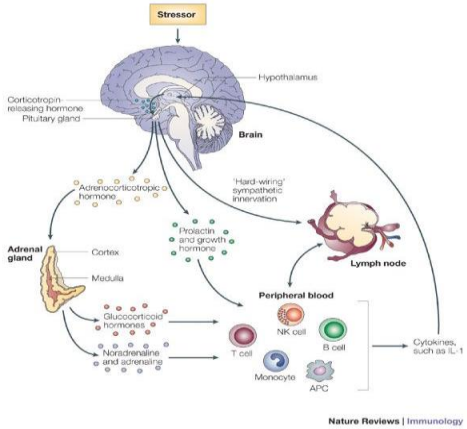
Among women, work stress was associated with higher risk of T2DM in the obese (HR 2.01: 1.06; 3.92), but not in the non-obese

Gender and body weight status play a critical role in determining the direction of the association between psychosocial stress and T2DM

Obesity (Silver Spring). 2012 Feb;20(2):428-33. doi: 10.1038/oby.2011.95. Epub 2011 May.



Chronic Stress
HPA –axis
SNS activation
Gut brain axis
Immune modulation
Gut microbiome
Inflammation
Obesity - metabolic



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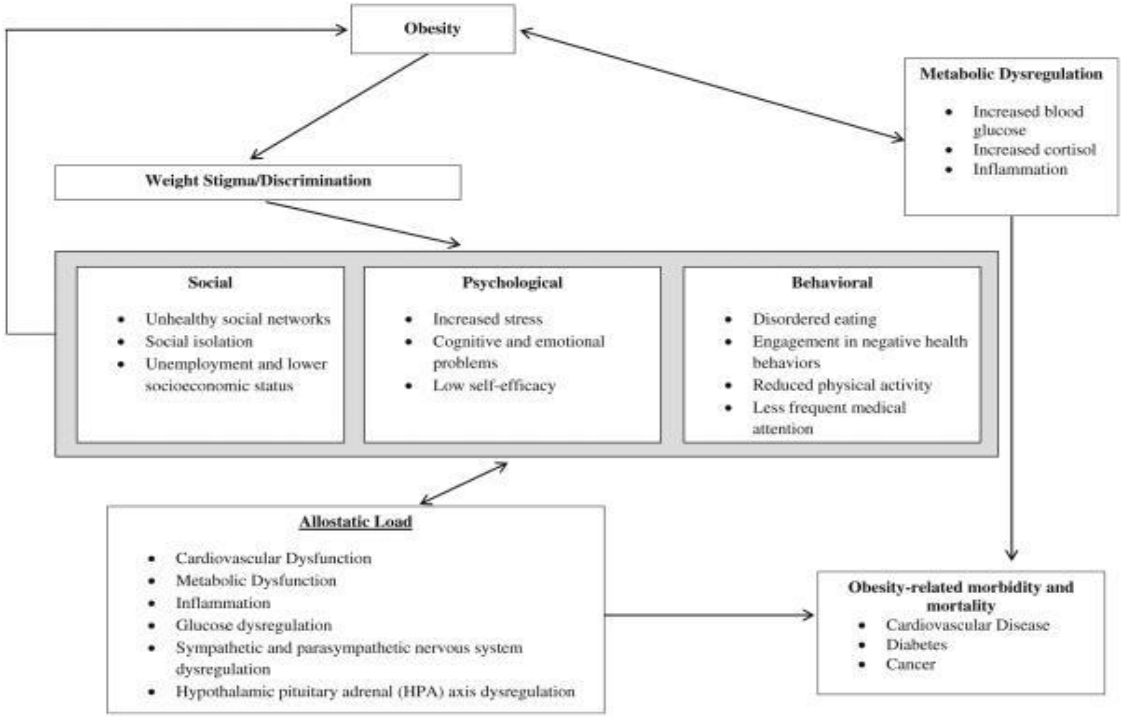
Perceived Weight Discrimination and 10-Year Risk of Allostatic Load



Vadiveloo M, Mattei J. Perceived Weight Discrimination and 10-Year Risk of Allostatic Load Among US Adults. *Ann Behav Med.* 2017;51(1):94-104.

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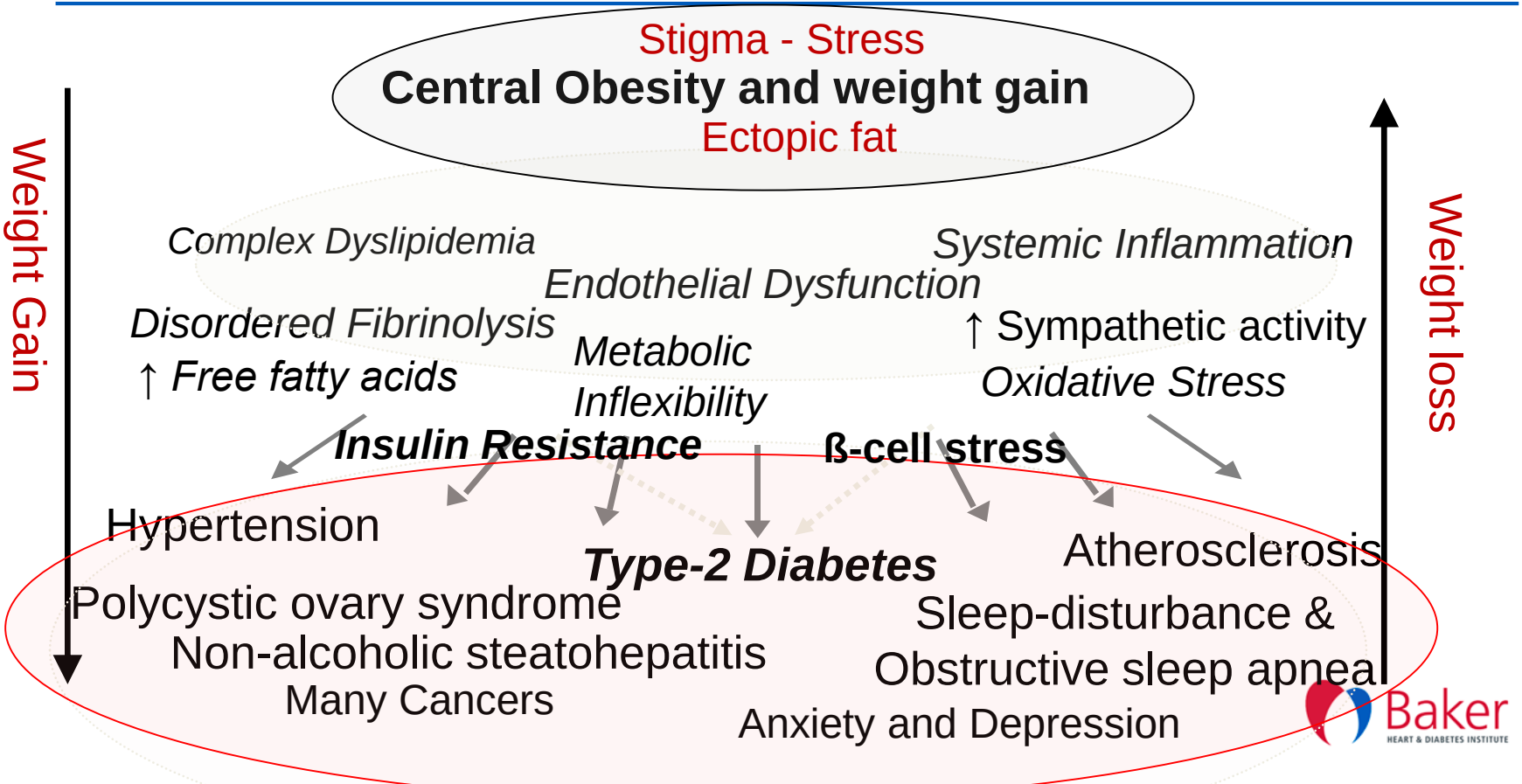
Obesity related type-2 diabetes

One result of Metabolic and inflammatory cascade driven by



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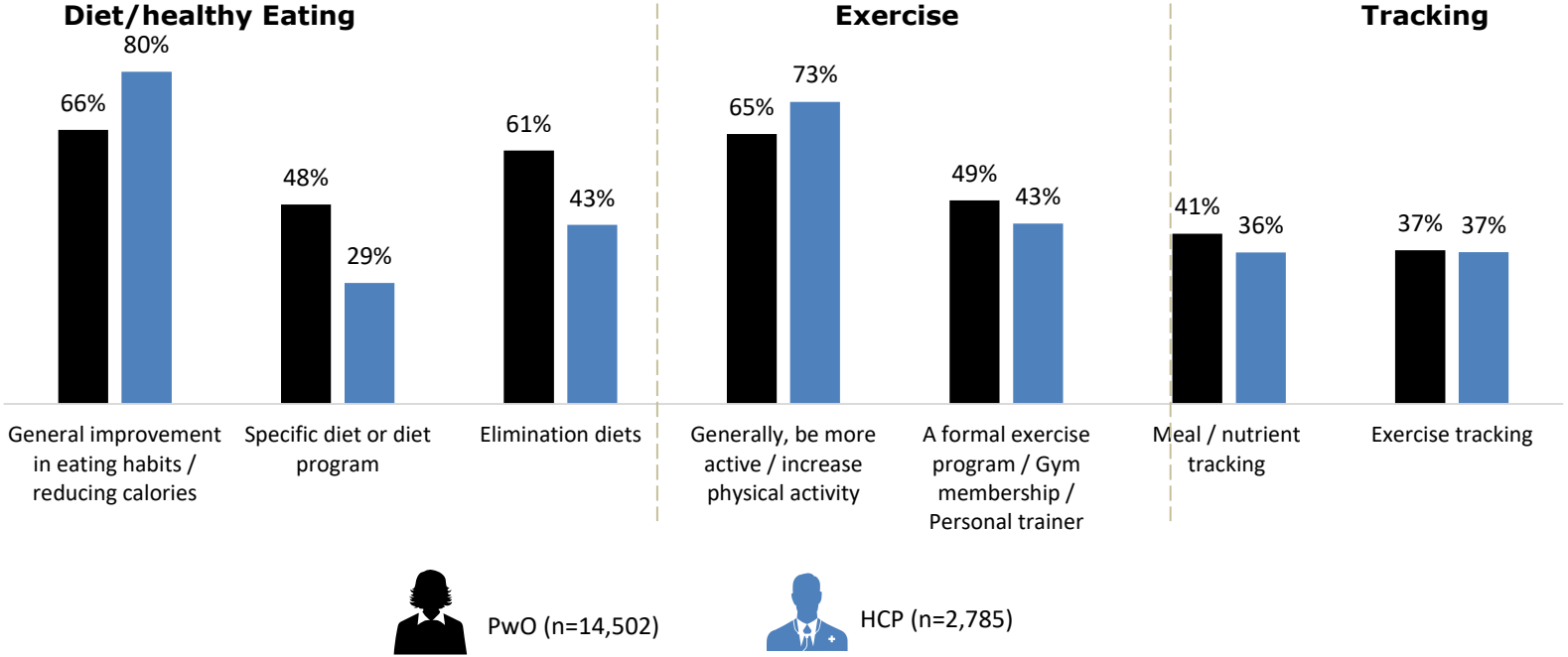
Perceived long-term treatment effectiveness



HCP, healthcare professional; PwO, people with obesity.

Caterson ID et al. *Diabetes Obes Metab*. 2019. DOI: https://doi.org/10.1111/dom.13752.

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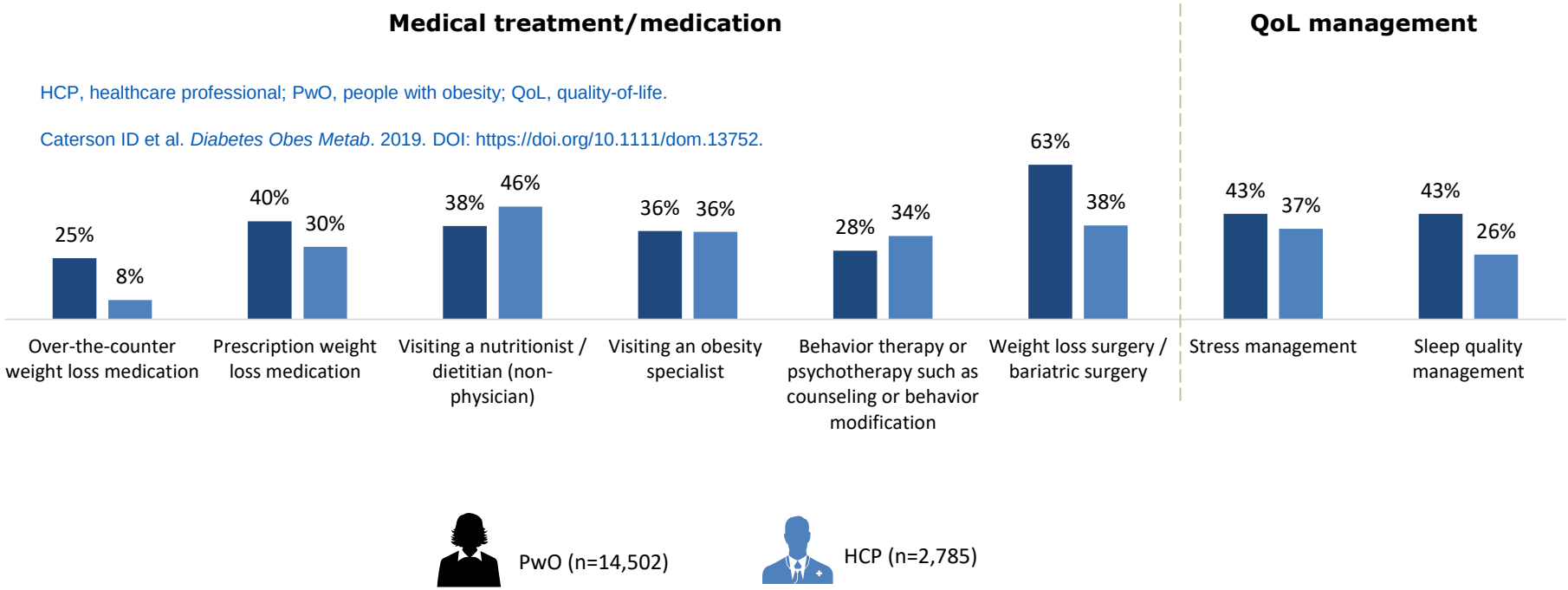
Perceived long-term treatment effectiveness



HCP, healthcare professional; PwO, people with obesity; QoL, quality-of-life.

Caterson ID et al. *Diabetes Obes Metab*. 2019. DOI: https://doi.org/10.1111/dom.13752.

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Psycho-social demographic

Frustration in the lack of efficacy in lifestyle intervention

Obesity

Depression Binge Eating disorder

Major depression linked to impaired glucose tolerance

http://www.medscape.com/viewarticle/703923

Depression associated with: obesity, inflammation, sympathetic activation, activation of the HPA axis

Young JJ, et al, *J Affect Disord.* Dec 2014;169:15-20.

SSRIs posses significant anti-inflammatory properties

A rethink in mode of action?

Walker FR; Neuropharmacology. Apr 2013;67:304-317.

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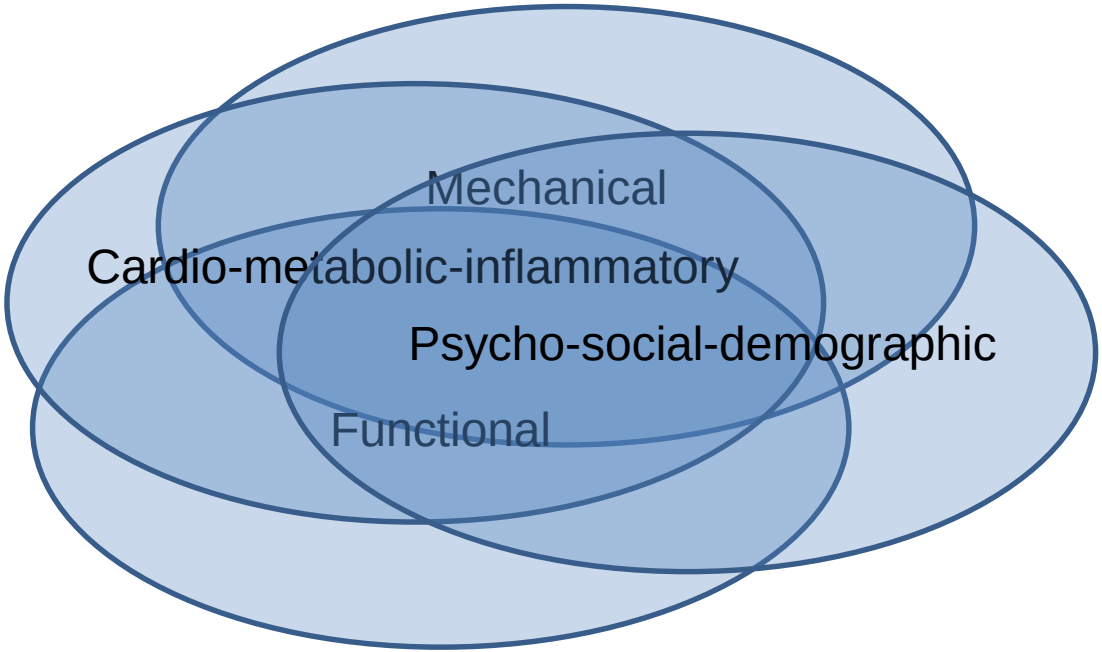
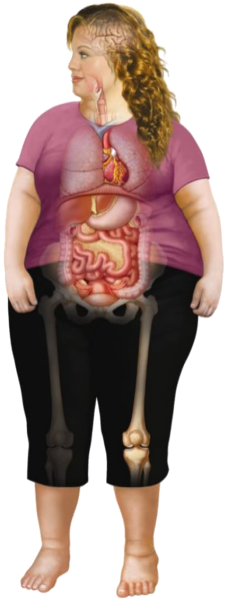
While conceptually we can divide the complications of obesity into packets the individual with obesity has their pattern of dysfunction and disease





Respect

Dignity

Compassion

Professionalism

No Blame

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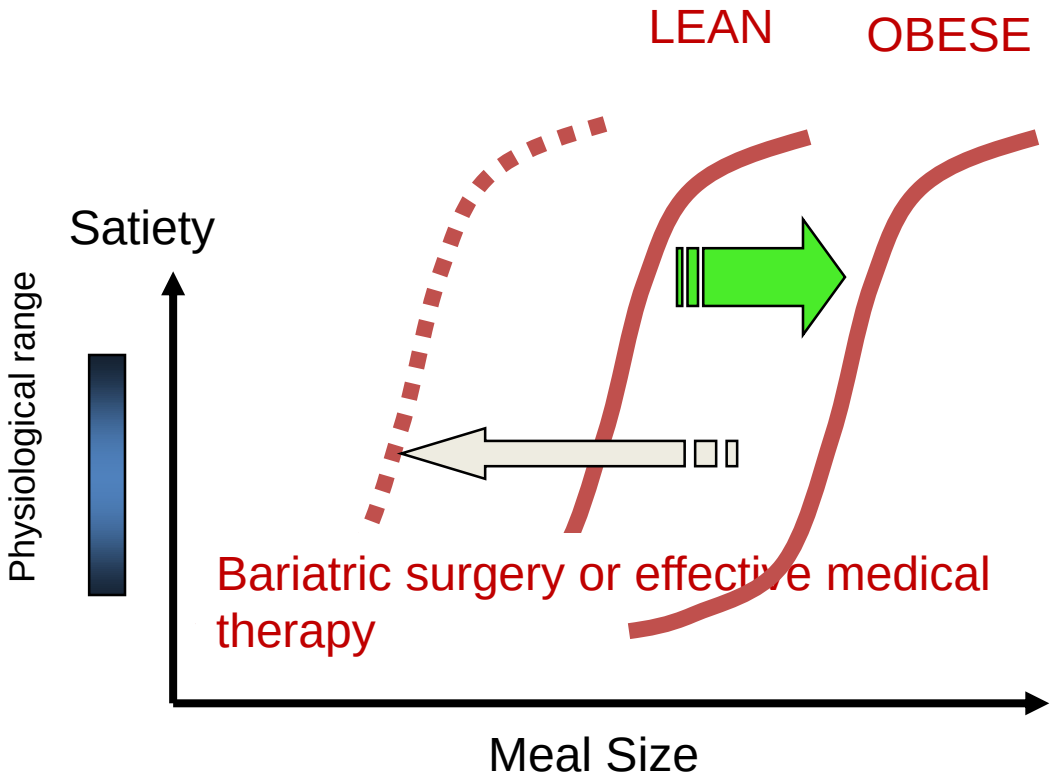
Dose response curve

"A change in regulation"



Effective therapy is a lifestyle enabler

An enabler for living

Miras AD, le Roux CW. *Nat Rev Gastroenterol Hepatol.* 2013;10(10):575-584.

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Stigma around anxiety is far lower than you may think – The Age 15 Oct 2018

“Beyond Blue on line survey”

Two in three people with an anxiety condition believe others may see it as "a sign of personal weakness", but Beyond Blue found the perception of stigma did not match reality.

90% per cent of people believe anxiety is a real medical illness, 86% of those surveyed said they did not consider it a weakness.
86% do not believe the condition is something "you can just snap out of".

"The self-shame, self-stigma and fear we place on ourselves is stopping people getting better” Beyond Blue CEO, Georgie Harman

She wants people experiencing an anxiety condition to know others do not judge them as "weak".

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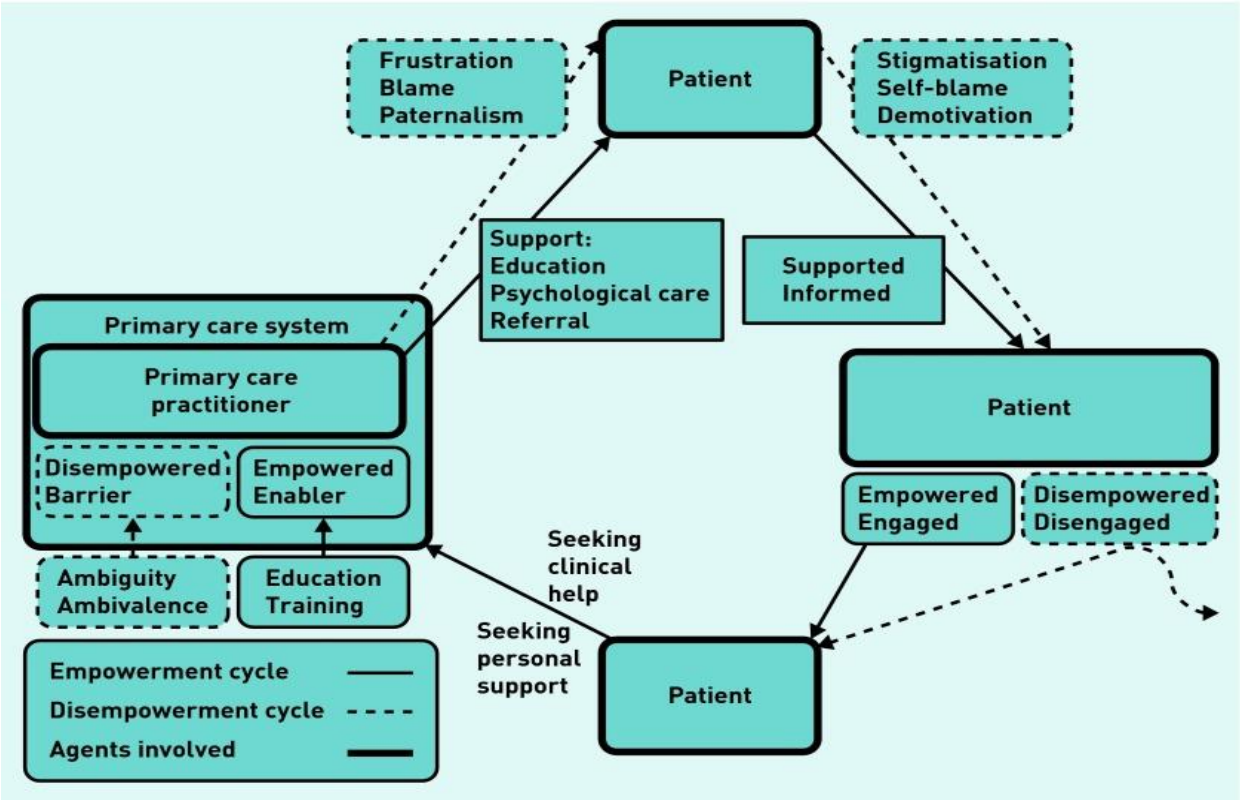
Obesity in primary care
Patient – Practitioner perspective on roles and responsibilities



"Weight bias is ubiquitous in society as a whole.

Doctors are part of society."

Henderson E. Obesity in primary care: a qualitative synthesis of patient and practitioner perspectives on roles and responsibilities. *Br J Gen Pract.* 2015;65(633):e240-247.

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Obesity – disease – complications

This is a serious chronic relapsing disease

There are many targets for intervention and improving health outcomes

They extend well beyond weight loss

Aims of Chronic Disease Management

Reduce mortality

Cardiovascular – diabetes - Cancer

Reduce morbidity

Reduce end-organ damage

Heart – liver – pancreas –joints - brain …….

Improve function

Physical – Mental – Cognitive – Sleep - Social

Improved psychosocial well being

Improved quality of life

Bias – Stigma – Shame and Blame are not elements of chronic disease management

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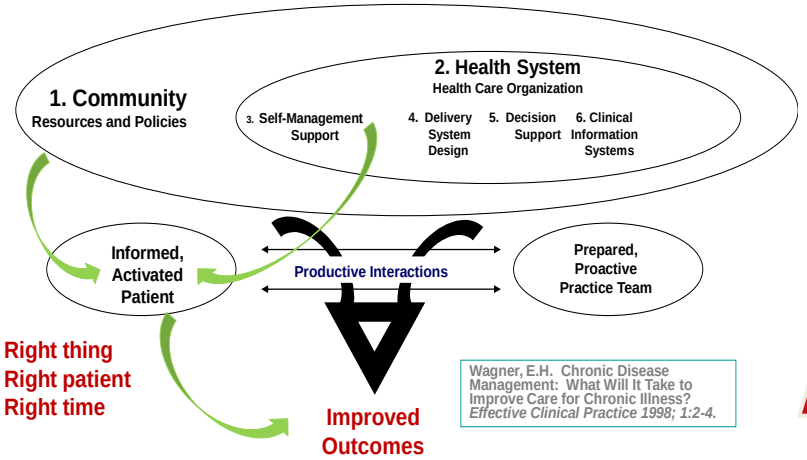
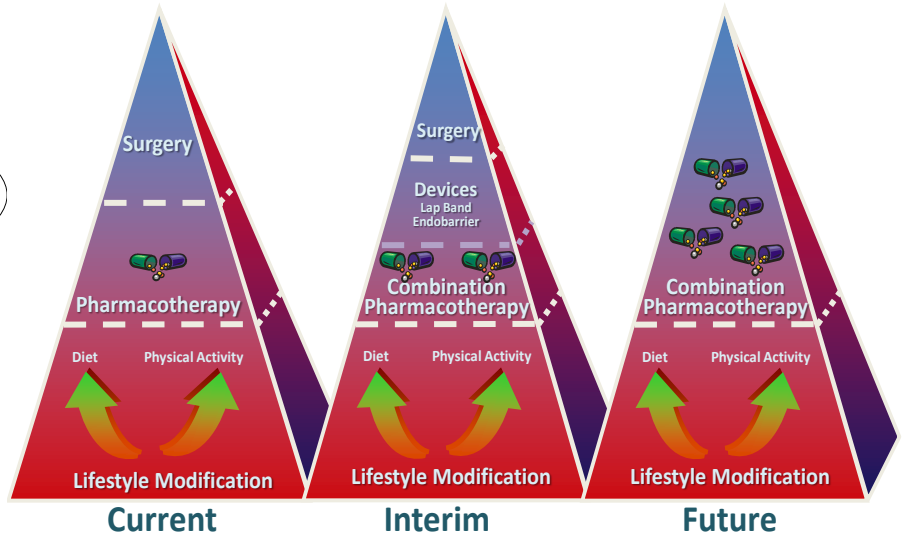
Obesity – Chronic relapsing disease

Chronic Care Management Model



Obesity Treatment Pyramid



Transdisciplinary - patient centred care

Self-management support and engaging the patient in their own care is not the same as motivated to change behaviours

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