

On-Demand Webinar

*Discover How Obesity is
Impacting Your Organization:
Strategies Beyond Workplace
Wellness*



Imagine a disease...

... affecting **>650 million** adults[†] with a **100% increase** in global prevalence since 1980^{1,2}

... linked to **2.8 million deaths** annually and the fifth leading cause of global death^{‡,3}

... that is **chronic, progressive**, associated with **relapse**, and affected by **genes, hormones** and **living environment**^{4,5}

[†]As of 2016

[‡]Due to having overweight or obesity

References: **1.** World Health Organization. Obesity and overweight. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>. **2.** The European Association for the Study of Obesity. Obesity statistics. <https://easo.org/media-portal/statistics/>. **3.** World Health Organization. 10 facts on obesity. <https://www.who.int/features/factfiles/obesity/en/>. **4.** Thaker VV. Genetic and epigenetic causes of obesity. *Adolesc Med State Art Rev.* 2017;28(2):379-405. **5.** Bray GA et al. Obesity: A chronic relapsing progressive disease process. A position statement of the World Obesity Federation. *Obesity Reviews.* 2017;18:715-23. **6.** Baum C et al. The challenges and opportunities associated with reimbursement for obesity pharmacotherapy in the USA. *Pharmacoeconomics.* 2015;33(7):643-653. **7.** Thomas et al. Low adoption of weight loss medications: A comparison of prescribing patterns of antiobesity pharmacotherapies and SGLT2s. *Obesity (Silver Spring).* 2016 Sep;24(9):1955-61. **8.** Butsch WB et al. Low priority of obesity education leads to lack of medical students' preparedness to effectively treat patients with obesity: results from the U.S. medical school obesity education curriculum benchmark study. *BMC Med Educ.* 2020;20(1):23. **9.** Kaplan LM et al. Perceptions of barriers to effective obesity care: results from the national ACTION study. *Obesity.* 2018;26:61-69.

... for which there is **limited coverage for treatment** and **only 2%** of people eligible to receive pharmacological treatments actually receive them^{6,7}

... that students leaving medical school are **not adequately prepared** to manage and **receive limited reimbursement** for providing care^{8,9}





The value of an integrated approach to obesity management

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Obesity is not simply a problem of lifestyle, but has its own pathophysiology

Health-related organizations, agencies and professional associations have recognised obesity as a **global health challenge** requiring a **“chronic disease management model”**¹



“Obesity is a chronic disease, prevalent in both developed and developing countries, and affecting children as well as adults”²



“... Obesity is a primary disease, and the full force of our medical knowledge should be brought to bear on the prevention and treatment of obesity as a primary disease entity...”⁵



“Recognizing obesity as a disease will help change the way the medical community tackles this complex issue that affects approximately one in three Americans”³



“Obesity is a multi-causal chronic disease recognized across the life-span resulting from long-term positive energy balance with development of excess adiposity that over time leads to structural abnormalities, physiological derangements, and functional impairments”⁶



“FDA agrees with these comments that obesity is a disease.... Being overweight, i.e., being more than one’s ideal weight but less than obese, however, is not a disease”⁴

Abbreviations: FDA, Food and Drug Administration.

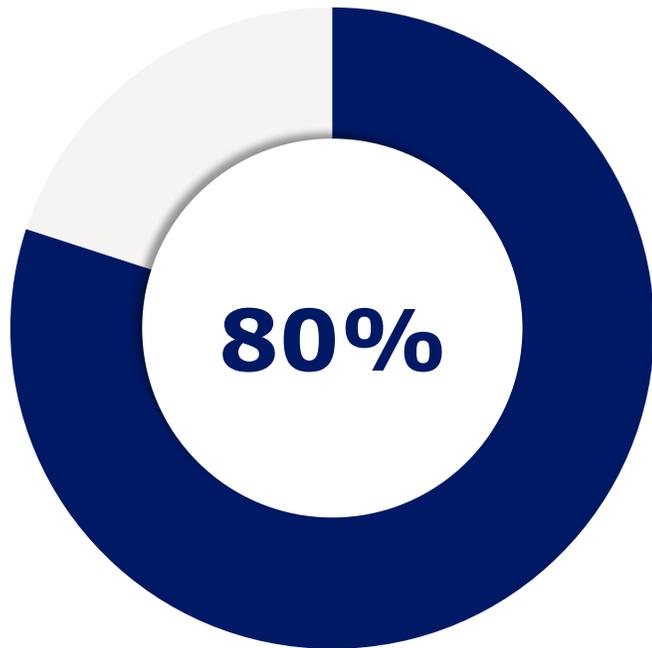
References: **1.** Jensen et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults. J Am Coll Cardiol. 2014;63(25 Pt B):2985-3023; **2.** World Health Organization. Obesity: preventing and managing the global epidemic. World Health Organ Tech Rep Ser. 2000;894:i-xii, 1-253. **3.** American Medical Association. AMA adopts new policies on second day of voting at annual meeting. <http://www.ama-assn.org/ama/pub/news/news/2013/2013-06-18-new-ama-policies-annual-meeting.page>. **4.** Food and Drug Administration. Federal Register, Part IV. 2000;65(4):1000-1050. **5.** Mechanick JI et al. American Association of Clinical Endocrinologists’ position statement on obesity and obesity medicine. Endocr Pract. 2012;18:642-648. **6.** Jastreboff et al. Obesity as a disease: The Obesity Society 2018 position statement. Obesity. 2019;27(1):7-10.



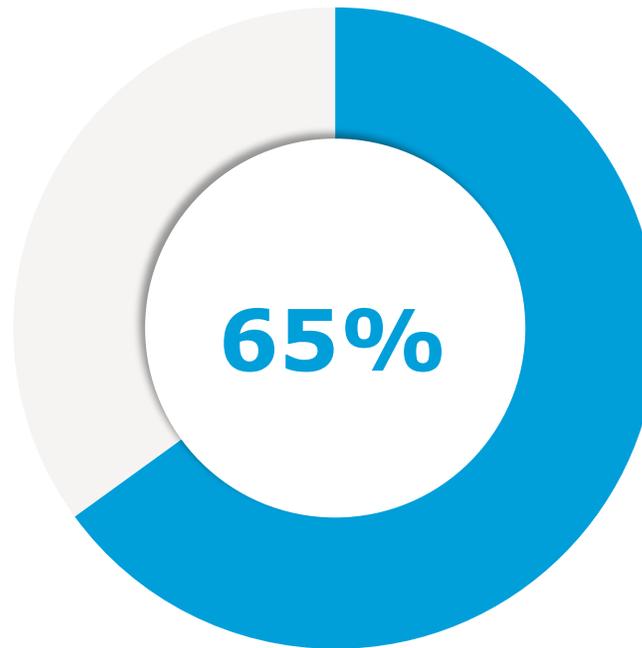
Perception of obesity



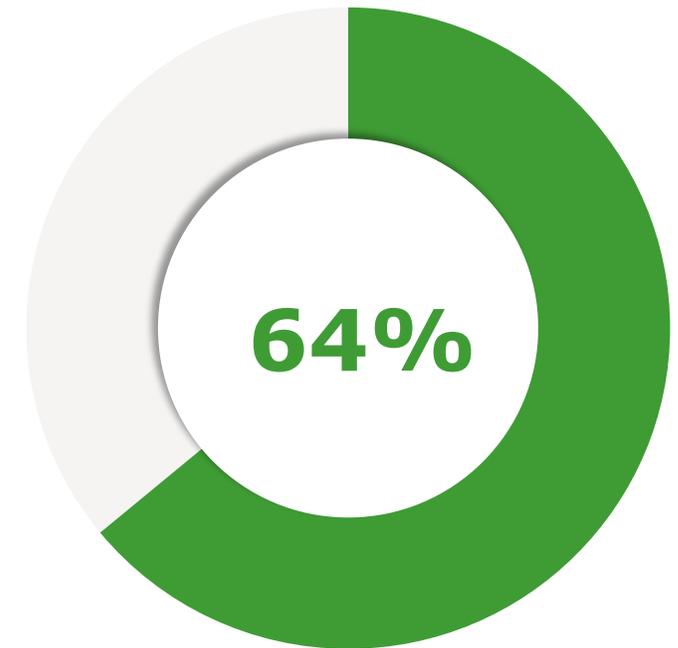
Obesity is a chronic disease (% agreement)



HCPs



PwO



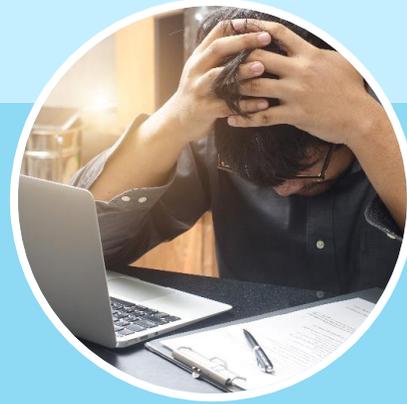
Employers

HCP, healthcare professional; PwO, people with obesity.
1. Kaplan LM et al. *Obesity (Silver Spring)* 2018;26:61-69.

Weight **stigma** impacts economic factors:



Workplace
discrimination¹



Women with overweight or obesity received hourly wages that were \$3.40 and \$8.10 **lower** than women with normal weight, respectively²



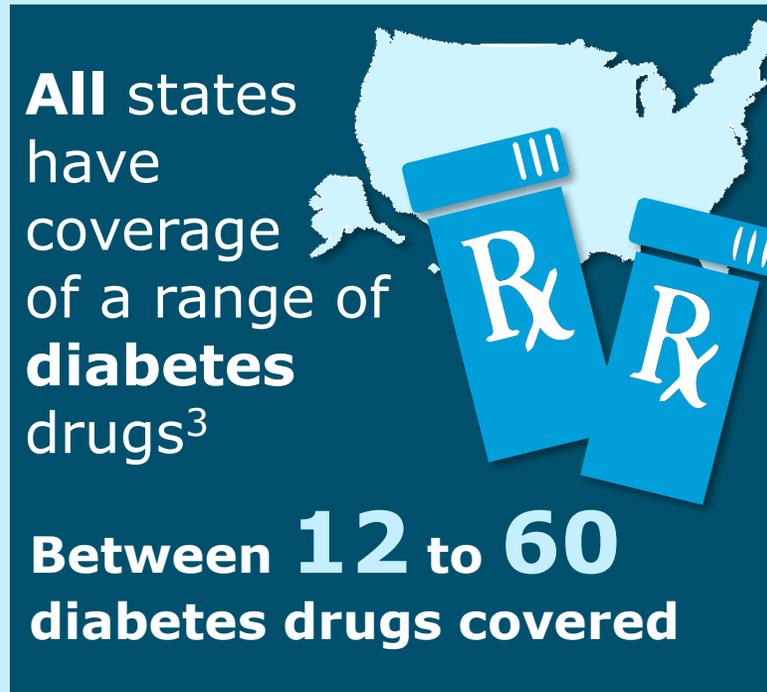
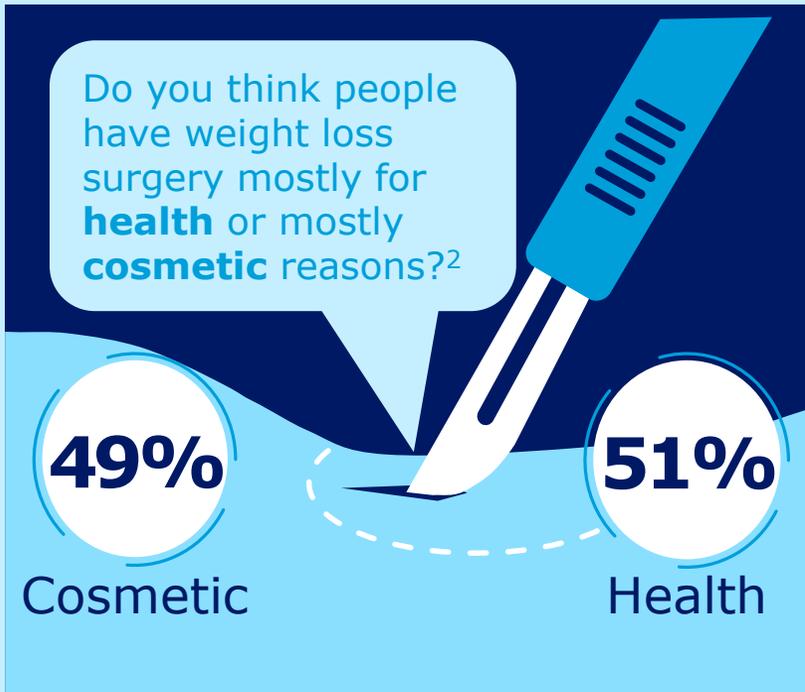
58% of hiring managers had a slight or strong preference for individuals with normal weight³

PwO, people with obesity.

1. Rubino F et al. *Nat Med* 2020;26:485–497; 2. Occupational characteristics and the obesity wage penalty. Vanderbilt University Law School. 2015. <https://ssrn.com/abstract=2379575>. Accessed May 2020; 3. Agerström J & Rooth DO. *J Appl Psychol* 2011;96:790–805.

Weight bias can impact coverage

The assumption that body weight is entirely controllable by lifestyle choices may affect coverage for obesity treatment¹



1. Rubino F et al. *Nat Med* 2020;26:485–497; 2. Dolan P et al. *JAMA Surg* 2019;154:264–266;
3. Diabetes Pharmaceuticals State Mandates. National Conference of State Legislatures (NCSL). 2016.
<https://www.ncsl.org/research/health/diabetes-pharmaceuticals-state-mandates.aspx>. Accessed May 2020;
4. Gomez G & Stanford FC. *Int J Obes (Lond)* 2018;42:495–500.

Patients who experience weight stigma have both behavioral and physiological changes

2.4x more likely to have a major depressive episode³

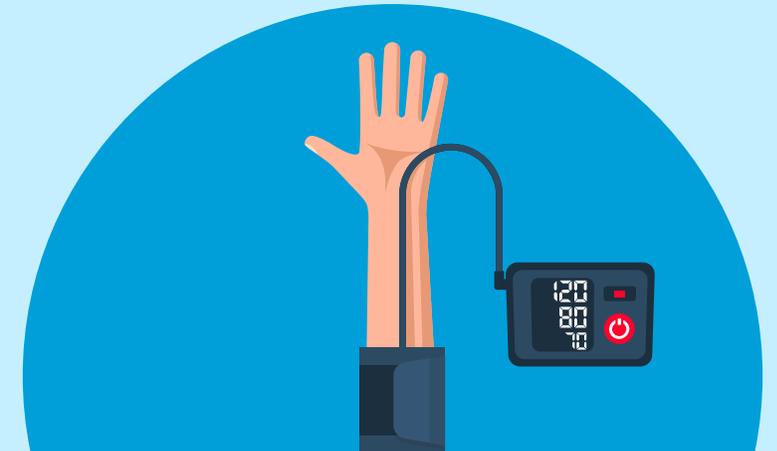
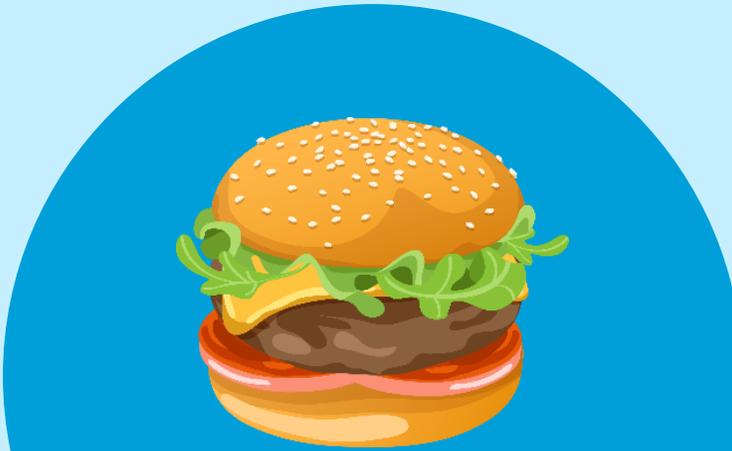
1.5x higher distress⁴ over body image^{1,2}

3.4x more calories consumed⁵

1.4x lower score on self-efficacy scale* for dietary control⁶

2.3x more likely to avoid exercise⁸

1.4x increased BP⁷



*Self-efficacy scale assessed confidence on the following questions: Could you control what you eat; avoid eating unhealthy food that you like; avoid unhealthy foods every day; stick to your diet even when you are hungry; and avoid giving in to temptation to break a diet if offered tempting foods. BP, blood pressure.

1. Puhl M et al. *Clin Diabetes* 2016;34:44–50; 2. Phelan SM et al. *Obesity reviews* 2015;16:319–326; 3. Hatzenbuehler ML et al. *Obesity (Silver Spring)* 2009;17:2033–2039; 4. Friedman KE et al. *Obesity Research* 2005;13:907–916; 5. Schvey NA et al. *Obesity* 2011;19:1957–62; 6. Major B et al. *J Exp Soc Psychol* 2014;51:74–80; 7. Major B et al. *Social Psychological and Personality Science* 2012;3:651–658; 8. Vartanian LR & Novak SA. *Obesity* 2011;19:757–762.

Current landscape in obesity management

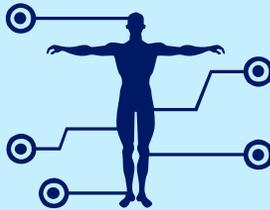
Obesity is not managed as a chronic disease¹



Weight loss
is the primary
focus of care



BMI
is the
main metric



**Obesity-driven
etiology**
of comorbidities is
not addressed

Obesity prevalence and costs are increasing^{2,3}



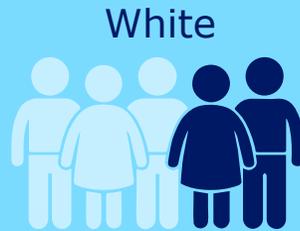
US adults have obesity



\$1.72 trillion
annual cost of chronic
diseases due to obesity

Social determinants of health affect obesity prevalence^{2,4}

Obesity incidence



Black & LatinX



~1 in 2

Less education



1.5x more

Low income



1.5x more

BMI, body mass index.

1. Kaplan LM et al. *Obesity*. 2018;26:61-9;

2. CDC. Adult obesity facts. Available at <https://www.cdc.gov/obesity/data/adult.html>. Accessed June 2020;

3. The Milken Institute. America's obesity crisis. 2018. Available from <https://milkeninstitute.org/sites/default/files/reports-pdf/Mi-Americas-Obesity-Crisis-WEB.pdf>. Accessed June 2020; 4. Ogden CL et al. *MMWR Morb Mortal Wkly Rep*. 2017;66:1369-73.



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What impact does obesity have on employers?

Healthcare costs are high



Obesity is associated with a **46% increase** in inpatient costs, a **27% increase** in non-inpatient costs, and an **80% increase** in prescription medication costs vs normal weight¹

Lost productivity costs are concerning



Obesity accounts for **per-employee** additional annual sick leave and short-term disability cost of **\$1,002** and **\$205** among workers in the US²

The future workforce is at risk



Over **one fifth (20.6%)** of 12- to 19-year-olds in the US have obesity³

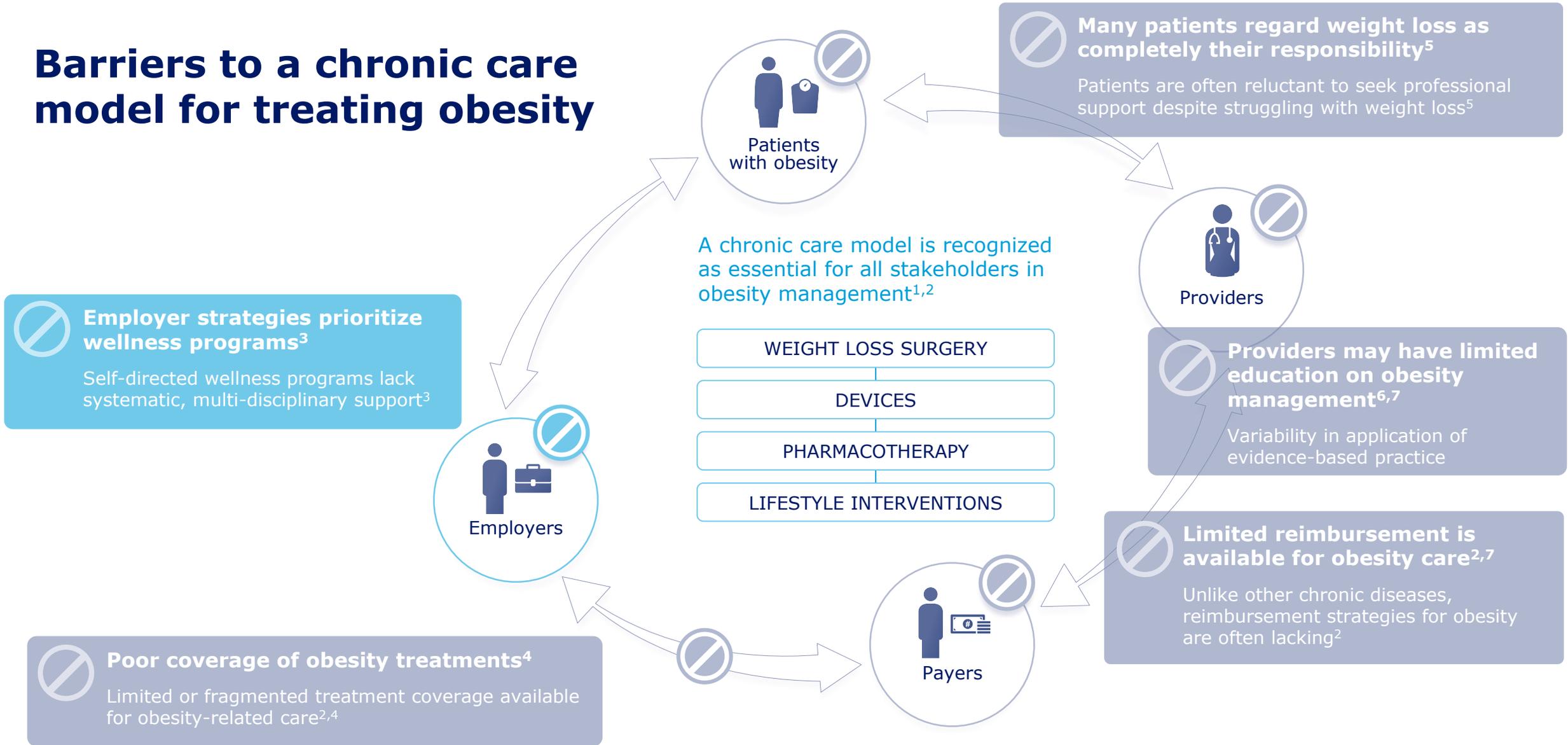


It is not getting better: the World Health Organization has declared obesity an **epidemic**⁴

References: **1.** Finkelstein et al. Annual medical spending attributable to obesity: payer- and service-specific estimates. Health Affairs. 2009. **2.** Kleinman et al. Cohort analysis assessing medical and nonmedical cost associated with obesity in the workplace. J Occup Environ Med. 2014 Feb;56(2):161-70. **3.** Centers for Disease Control. Prevalence of obesity among adults and youth: United States, 2015-2016. NCHS Data Brief 288, October 2017. Available at: <https://www.cdc.gov/nchs/data/databriefs/db288.pdf>. **4.** World Health Organization. Obesity: preventing and managing the global epidemic. Available at: https://www.who.int/nutrition/publications/obesity/WHO_TRS_894/en/.



Barriers to a chronic care model for treating obesity

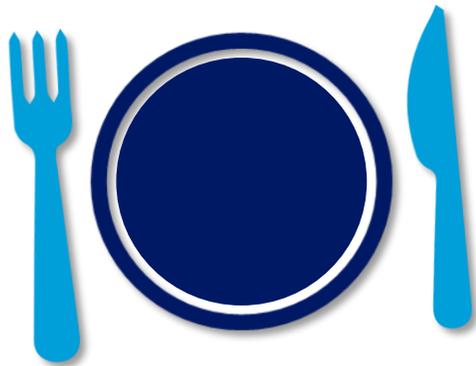


References: **1.** Dietz and Gallagher. A proposed standard of obesity care for all providers and payers. *Obesity*. 2018;27:1059-1062. **2.** Baum et al. The challenges and opportunities associated with reimbursement for obesity pharmacotherapy in the USA. *PharmacoEconomics*. 2015;33:643-632. **3.** Jinnett et al. Insights into the role of employers supporting obesity management in people with obesity: results of the national ACTION study. *Population Health Management*. 2019;22(4):308-314. **4.** Wilson et al. Obesity coverage gap: consumers perceive low coverage for obesity treatments even when workplace wellness programs target BMI. 2017;25;370-377. **5.** Kaplan et al. Perceptions of barriers to effective obesity care: results from the national ACTION study. *Obesity*. 2018;26:61-69. **6.** Forman-Hoffman et al. Barriers to obesity management: a pilot study of primary care clinicians. *BMC Family Practice*. 2006;7(35). **7.** Bornhoeft. Perceptions, attitudes, and behaviors of primary care providers towards obesity management: a qualitative study. *Journal of Community Health Nursing*. 2018;3;85-101.



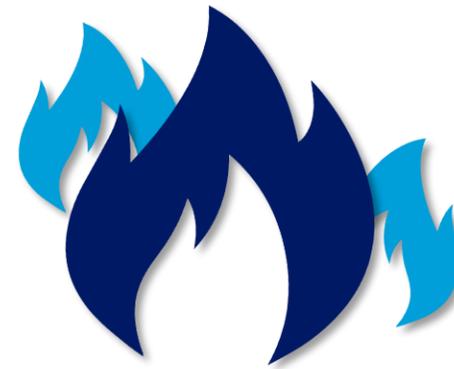
Body weight regulation: the simple view

Energy intake



↑ body weight

Energy expenditure



↓ body weight

What we know about obesity: it's not like it used to be¹

Historical view of obesity²

Energy imbalance led by
poor patient choices...



FOOD



LIFESTYLE



PHYSICAL ACTIVITY

Modern view of obesity^{2,3}



Brain chemistry and biology
determine eating behaviors



Not all calories are alike;
the type and nature are crucial



Physiological factors drive weight
regain after weight loss through dieting

References: **1.** Obesity Action Center. Take the pledge to speak out and challenge perceptions of obesity. Available at: <https://www.obesityaction.org/action-center/challenge-perceptions-of-obesity-pledge/>. **2.** Schwartz et al. Obesity Pathogenesis: An Endocrine Society Scientific Statement. Endocrine Reviews 2017;38(4):267-296. **3.** Sumithran et al. Long-term persistence of hormonal adaptations to weight loss. N Engl J Med. 2011 Oct 27;365(17):1597-604

The role of the brain in regulating appetite¹



EATING FOR HUNGER

Satiety

- GLP-1
- Peptide YY
- Oxyntomodulin
- Pancreatic polypeptide
- Amylin

Hunger

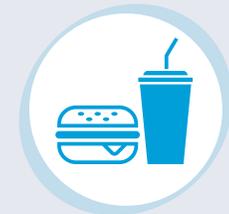
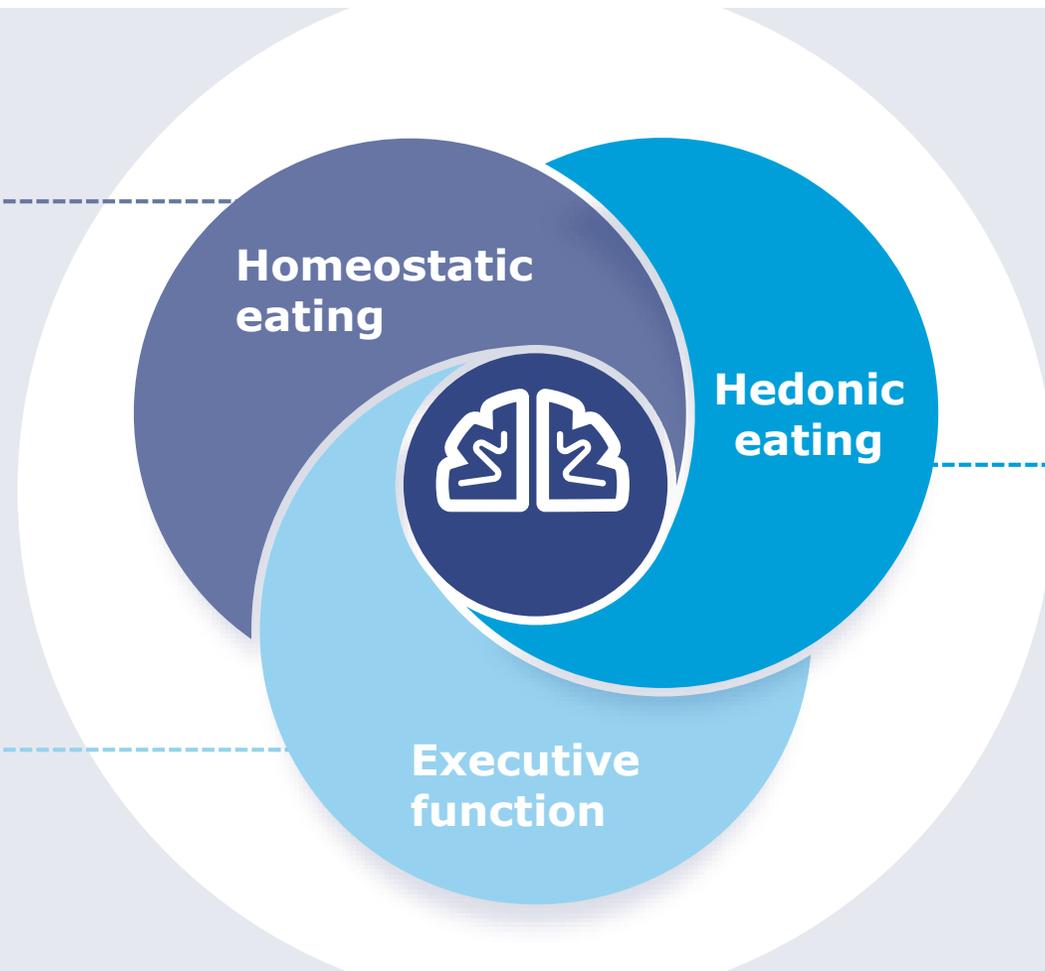
- Ghrelin



DECIDING TO EAT

Behavioral interventions

empower sustainable behaviors in controlling eating



EATING FOR PLEASURE

Dopamine

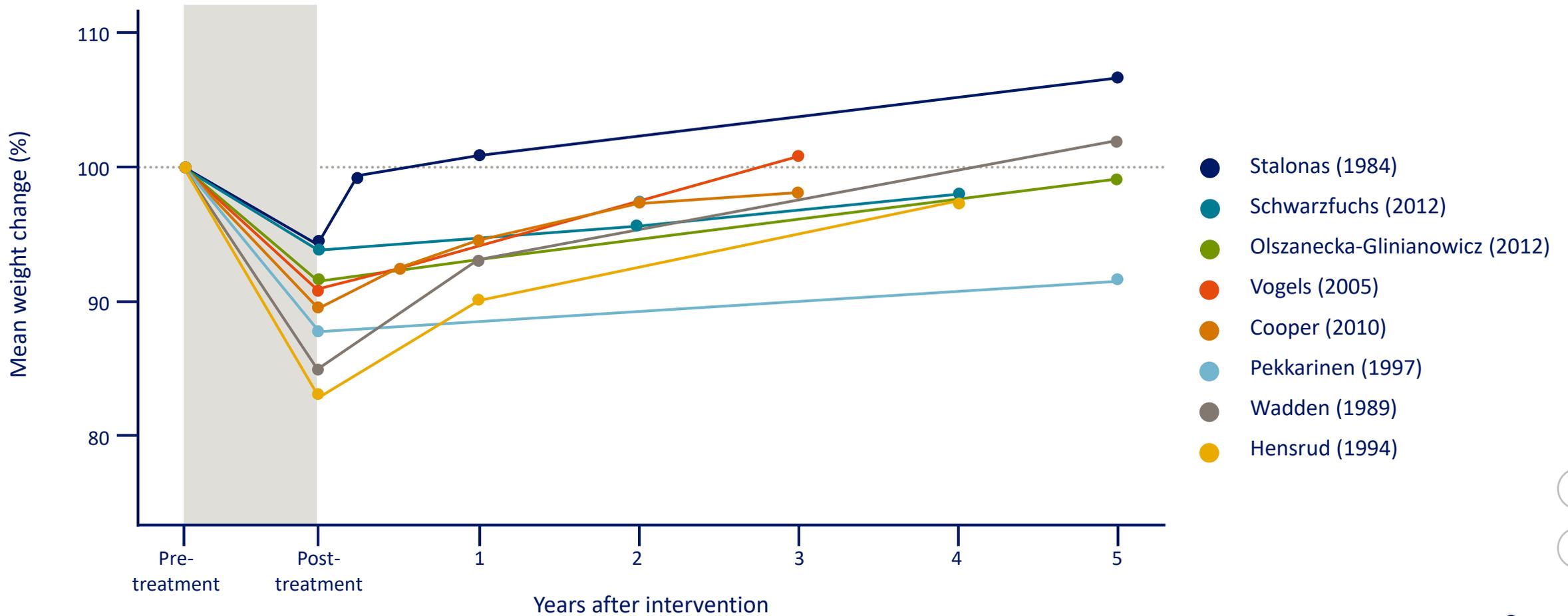
controls wanting; the motivation to eat

Opioid and cannabinoid

receptors control liking; the pleasure associated with food

References: 1. Ahima et al. Brain regulation of appetite and satiety. *Endocrinol Metab Clin North Am.* 2008;37(4):811-823.

Maintenance of weight loss is challenging

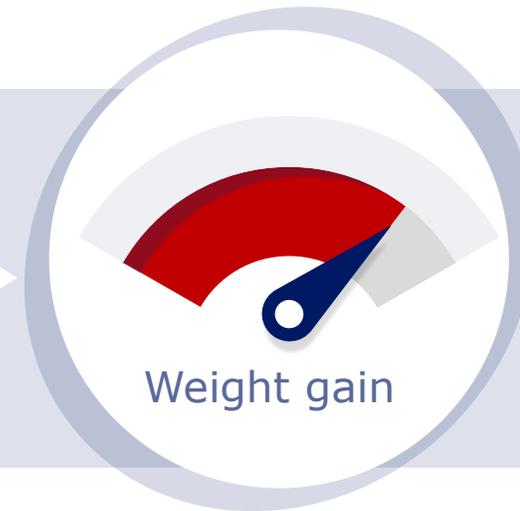
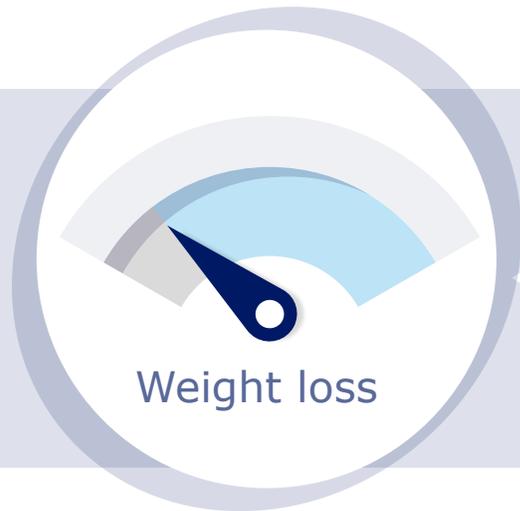


References: Nordmo M et al. *Obes Rev.* 2020. 21: e12949.



The brain defends a 'set-point' for body weight and level of adipose tissue, making sustained weight loss difficult¹

Set-point:
Adaptations that resist weight loss



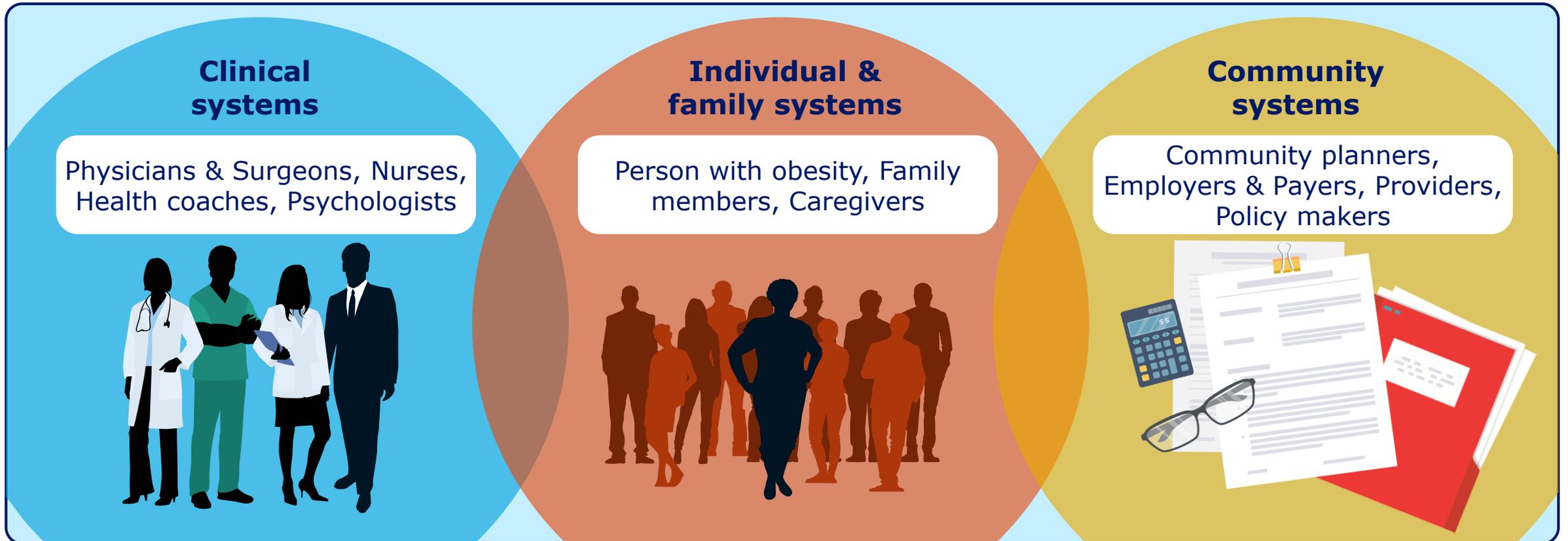
Changes in

Hormone levels (↓ satiety hormones; ↑ hunger hormones)
Metabolism (↓ energy expenditure)

References: 1. Farias et al. Set-point theory and obesity. Metab Syndr Relat Disord 2011;9:85-9.



An integrated approach to care: a model for obesity management



1. Dietz WH et al. *NAM Perspectives*. 2017; Discussion Paper, National Academy of Medicine, Washington, DC;
2. Cochrane AJ et al. *BMC Pub Health*. 2017;17:814.

AACE guidelines recommend ongoing evaluation and increasing treatment intensity in line with disease stage¹

Normal Weight



(No obesity)



BMI 18.5–24.9 kg/m²

- Healthy meal plan
- Physical activity
- Health education

Goal: Maintain healthy weight

Stage 0



No complications



Overweight
BMI 25–29.9 kg/m²
Obesity BMI ≥30 kg/m²

- Lifestyle/behavioral therapy
- Consider pharmacotherapy if lifestyle alone not effective

Goal: Prevent progressive weight gain or promote weight loss

Stage 1



One or more mild to moderate complications may be treated effectively with moderate weight loss



BMI ≥25 kg/m²

- Lifestyle/behavioral therapy
- Consider pharmacotherapy (BMI ≥27 kg/m²)

Goal: Achieve weight loss sufficient to ameliorate the complications and prevent further deterioration

Stage 2



≥1 Severe complication or requires more aggressive weight loss for effective treatment



BMI ≥25 kg/m²

- Lifestyle/behavioral therapy
- Add pharmacotherapy (BMI ≥27 kg/m²)
- Consider bariatric surgery (BMI ≥35 kg/m²)

Abbreviations: BMI, body mass index.

References: 1. American Association of Clinical Endocrinologists. Treatment algorithm for the medical care of patients with obesity. <https://www.aace.com/files/guidelines/ObesityAlgorithm.pdf>.



Current approaches to obesity care



Physical activity



Diet



Behavioral therapy



Pharmacotherapy



Surgery

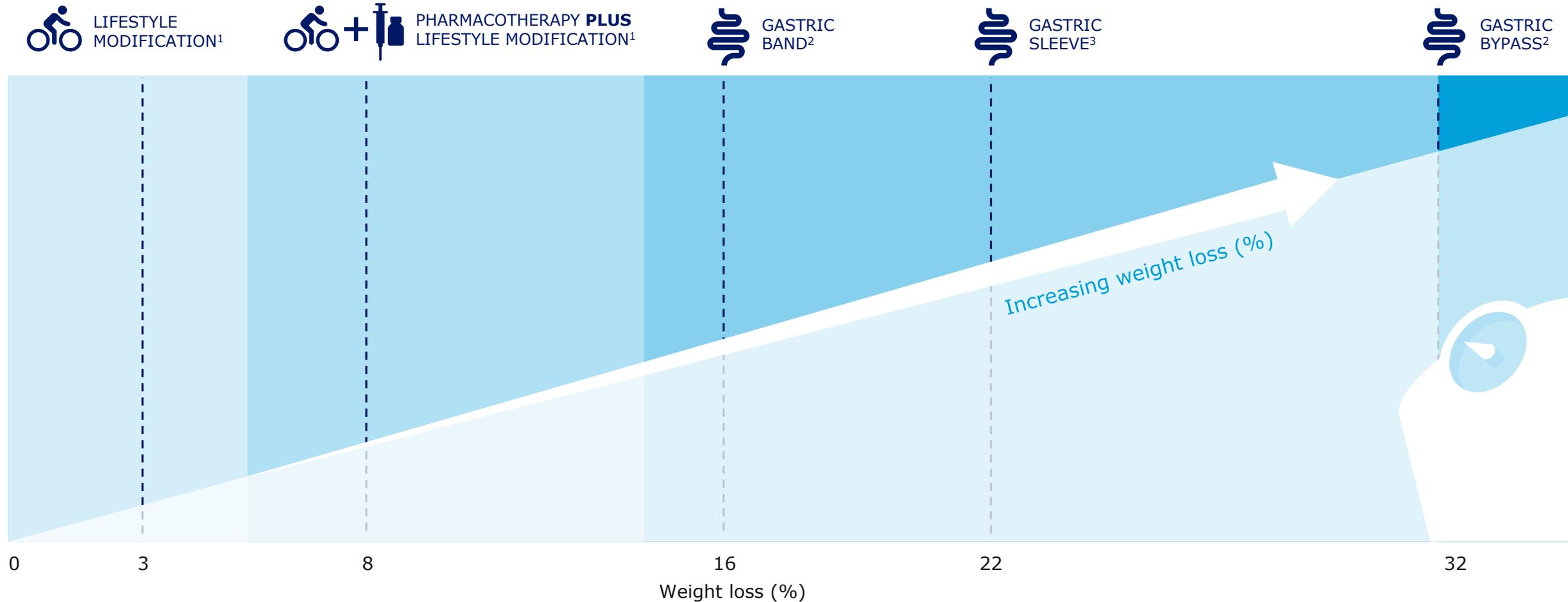
	Physical activity	Diet	Behavioral therapy	Pharmacotherapy	Surgery
Treatment guidelines	150 min moderate physical activity/week	Any eating pattern suitable for the patient	Twice-monthly individual/group counseling for >6 months	BMI \geq 27 kg/m ² with co-morbidity OR BMI \geq 30 kg/m ²	BMI \geq 35 kg/m ² with co-morbidity OR BMI \geq 40 kg/m ²
HCP adherence	~50% recommend guideline levels ¹	33% identified correct eating guidelines ¹	<20% recommend counseling for PwO ¹	40% prescribe at the defined BMI threshold ² 31% do not prescribe ²	<33% refer PwO at the defined BMI threshold ² 11% do not propose surgery ²

84% of HCPs failed to identify practices consistent with evidence-based obesity treatment guidelines¹

BMI, body mass index; HCP, healthcare professional; PwO, people with obesity.

1. Turner M et al. *Obesity*. 2018;26:665–71; 2. Petrin C et al. *Obesity Sci Pract*. 2016;2:266–71.

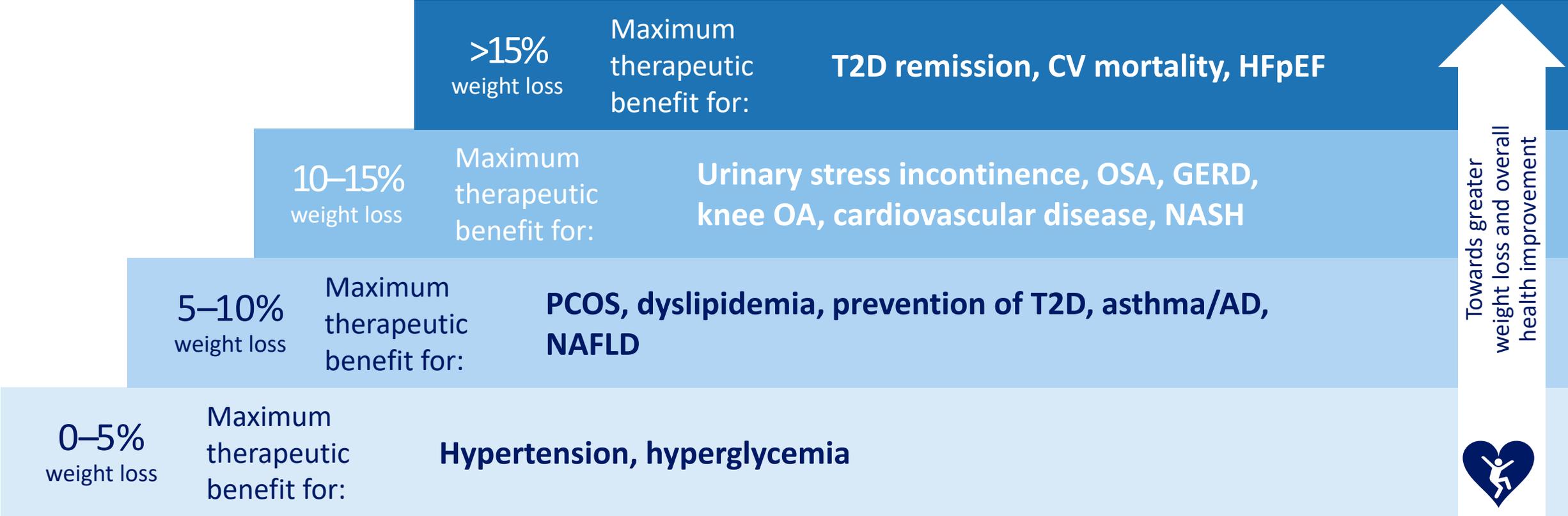
Pharmacotherapy can help to bridge the gap between lifestyle modification and more intensive surgical options



References: **1.** Jensen et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults. J Am Coll Cardiol. 2014;63(25 Pt B):2985-3023. **2.** Courcoulas et al. Weight change and health outcomes at three years after bariatric surgery among patients with severe obesity. JAMA. 2013;310(22):2416-25. **3.** Berry et al. Sleeve gastrectomy outcomes in patients with BMI between 30 and 35-3 years of follow-up. Obes Surg. 2018;28: 649-655.



Effect of weight loss on health outcomes



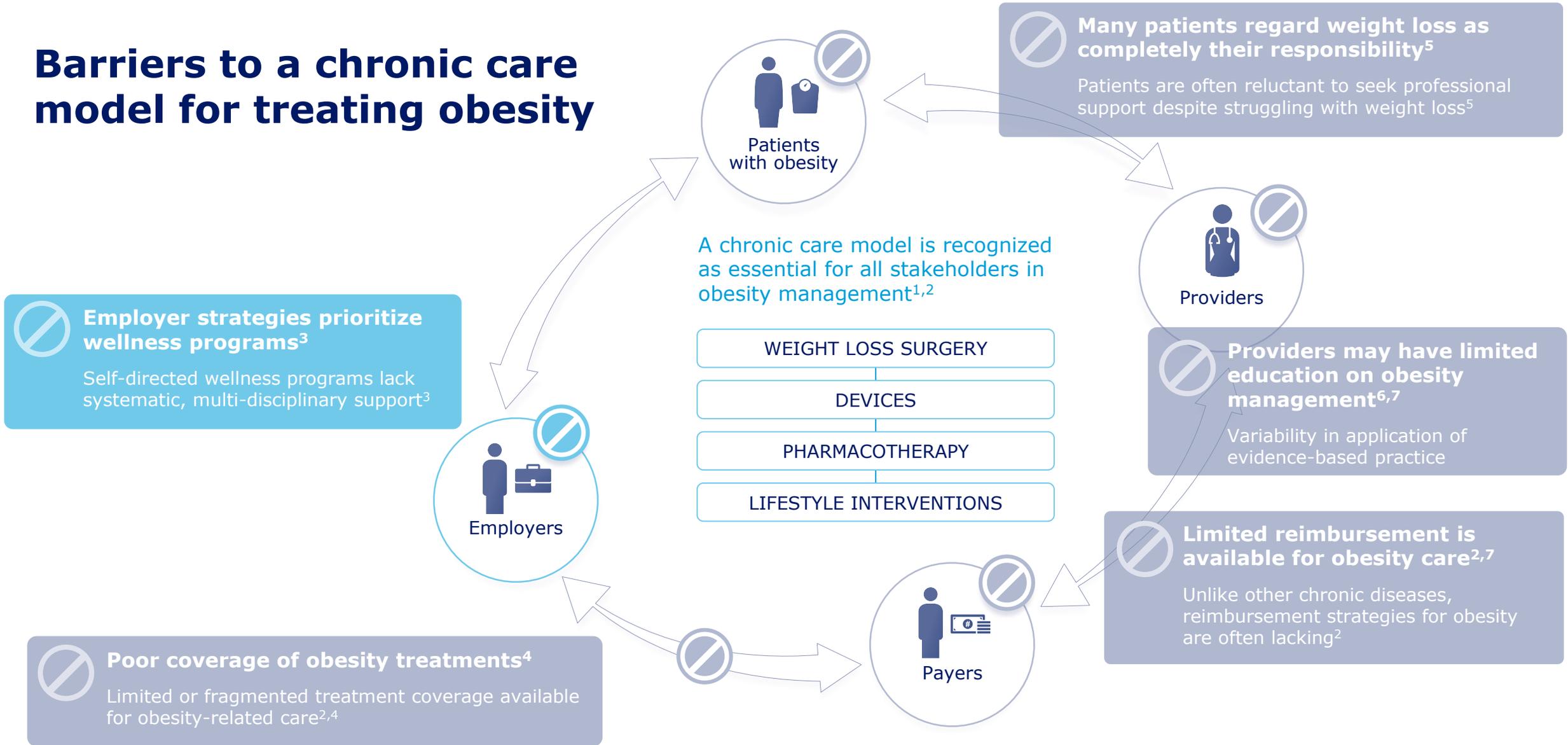
Towards greater weight loss and overall health improvement



Abbreviations: AD, airway disease; CV, cardiovascular; GERD, gastroesophageal reflux disease; HFpEF, heart failure with preserved ejection fraction; NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis; OA, osteoarthritis; OSA, obstructive sleep apnea; PCOS, polycystic ovary syndrome; TG, triglycerides.
References: Garvey WT et al. *Endocr Pract.* 2016; 22(Suppl. 3): 1–203; Look AHEAD Research Group. *Lancet Diabetes Endocrinol.* 2016; 4(11): 913–21; Lean ME et al. *Lancet.* 2018; 391(10120): 541–51; Benraoune F and Litwin SE. *Curr Opin Cardiol.* 2011; 26(6): 555–61; Sundström J et al. *Circulation.* 2017; 135(17): 1577–85.



Barriers to a chronic care model for treating obesity



References: **1.** Dietz and Gallagher. A proposed standard of obesity care for all providers and payers. *Obesity*. 2018;27:1059-1062. **2.** Baum et al. The challenges and opportunities associated with reimbursement for obesity pharmacotherapy in the USA. *PharmacoEconomics*. 2015;33:643-632. **3.** Jinnett et al. Insights into the role of employers supporting obesity management in people with obesity: results of the national ACTION study. *Population Health Management*. 2019;22(4):308-314. **4.** Wilson et al. Obesity coverage gap: consumers perceive low coverage for obesity treatments even when workplace wellness programs target BMI. 2017;25;370-377. **5.** Kaplan et al. Perceptions of barriers to effective obesity care: results from the national ACTION study. *Obesity*. 2018;26:61-69. **6.** Forman-Hoffman et al. Barriers to obesity management: a pilot study of primary care clinicians. *BMC Family Practice*. 2006;7(35). **7.** Bornhoeft. Perceptions, attitudes, and behaviors of primary care providers towards obesity management: a qualitative study. *Journal of Community Health Nursing*. 2018;3;85-101.



Q&A

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