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## *Obesity: A Complex, Multifactorial Disease*



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## Goals

- Understand complexity of contributors to obesity.
- Articulate the role of nutrition and physical activity in weight management.
- Describe at least 2 key behavioral techniques commonly used in obesity treatment.
- Identify several types of interventions.

What every healthcare provider needs to know about obesity.



## Overview

- Obesity is a metabolic disease
- Environment and personal factors have combined influences on obesity
- Unidimensional solutions do not work
- Providing access to evidence-based obesity treatment in the context of evidence-based policy that is effective and empowering is likely ideal

## BMI and Associated Disease Risk

Classification		BMI (kg/m <sup>2</sup> )	Risk
Underweight		<18.5	Increased
Normal		18.5-24.9	Normal
Overweight		25.0-29.9	Increased
Obese	I	30.0-34.9	High
	II	35.0-39.9	Very High
	III	>40	Extremely high

## BMI and Associated Disease Risk

Additional risks:

- Large waist circumference (men >40 in; women >35 in)
- 5 kg or more weight gain since age 18-20 years
- Poor aerobic fitness
- Specific races and ethnic groups
  - Asian Pacific
  - African American

## Relationship Between BMI and %BF

- The relationship between body mass index (BMI) and percent body fat is sex and age dependent; at an equivalent BMI, women and older persons have a higher percent body fat than men and younger persons
- Persons who have a large muscle mass can have an “obese” BMI despite having a normal amount of body fat, while those with excess adiposity and reduced muscle mass can have a “normal” BMI

## Obesity is Multidetermined

- Potential contributors to obesity Ania Jastreboff MD., Emily Dhurandhar Ph.D., Dillon Bailey MS., Kathryn Kaiser Ph.D., Martin Binks Ph.D.; graphics by Nellie Maroun Bailey. *The Obesity Society*, 2015.
  - internal/external intake factors
  - intake and expenditure factors
  - decreased expenditure factors

## Obesity: Medical and Psychosocial Consequences

- Psychological problems
- Dementia
- Idiopathic intracranial hypertension
- Stroke/cataracts

## Obesity: Medical and Psychosocial Consequences

- Coronary heart disease/heart failure
- Diabetes
- Dyslipidemia hypertension

## Obesity: Medical and Psychosocial Consequences

- Pancreatitis
- Cancer(s)
- Phlebitis
- Osteoarthritis

## Obesity: Medical and Psychosocial Consequences

- Gynecologic abnormalities/urinary bladder problems
- Gall bladder disease
- Renal failure
- Economics, availability, tolerance, etc.

## Obesity: Medical and Psychosocial Consequences

- Nonalcoholic fatty liver disease
- Oesophageal problems
- Pulmonary disease

## Weight Bias and Access to Obesity Care

- Weight bias
  - underlying bias has historically viewed obesity as an issue of personal responsibility
  - reflected in employment, healthcare, media, school
  - combination of bias, lack of confidence to treat and no reimbursement leads to inaction

## Treating Obesity

Having the conversation



## 5As of Adult Obesity Treatment

- ASK for permission to discuss weight
- ASSESS obesity-related risks and root causes
- ADVISE on health risks and treatment options
- AGREE on health outcomes and behavioral goals
- ASSIST in accessing appropriate resources

## Respectful Conversations

- Fact, not judgement based.
- I've noticed from your chart that you've gained \_\_\_\_ lbs. over the last \_\_\_\_ years. Would you like to discuss some options to help you with your weight?

## Respectful Conversations

- Your BMI is \_\_\_\_\_. This puts you at a greater risk for certain other medical conditions. What are your feelings about your weight?
- In our last visit we discussed the medical benefits of about a 5% weight loss. You set some goals. How have your efforts been going?

## Treating Obesity

Primary care

## Initial Assessment and Intervention

- Measure weight, height, and calculate body mass index and determine obesity classification (health risk)
- Evaluate potential underlying obesity-related influences including medications by history, physical examination, and laboratory tests

## Initial Assessment and Intervention

- Consider weight history, nutrition, physical activity, and lifestyle and determine readiness to lose weight
- Initiate treatment plan/referrals
- Discuss goals and expectations and arrange follow-up

# Tools in the Toolkit

## Treatment options

### Ideal Obesity Practice Environment

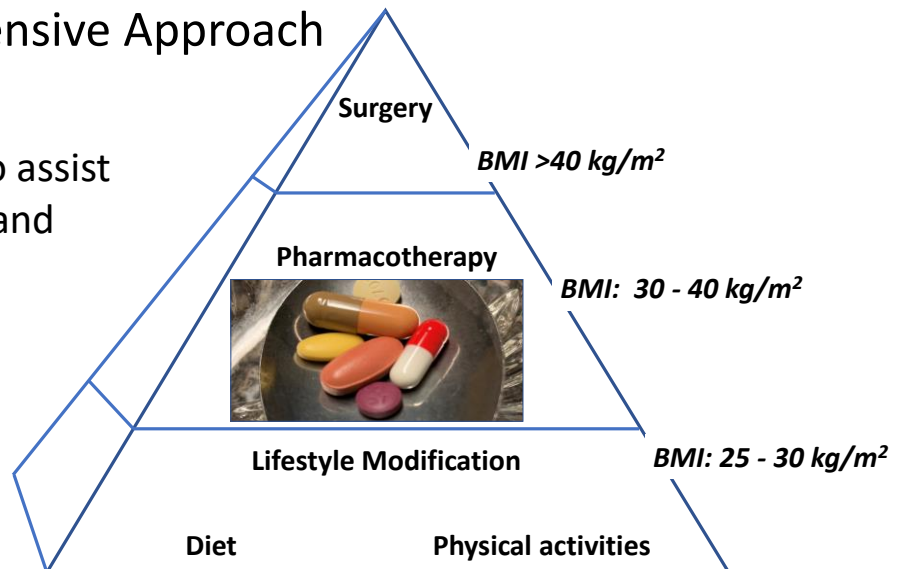
- Multidisciplinary provider team
  - physicians and other medical practitioners, registered dietitians, exercise physiologists, psychologists, health coaches
- Staff and clinicians ALL trained in health coaching

# Ideal Obesity Practice Environment

- Obesity sensitivity training
  - understanding weight bias, cultural differences toward weight and eating, recognize influence of prior negative experiences in healthcare
- Weight-friendly environment
  - wide chairs, no arms, bariatric exam tables, stools beside tables, bariatric scales with rails, large blood pressure cuffs, large gowns, sensitive décor and magazines

## Comprehensive Approach

Many ways to assist nutritionally and metabolically



## Bariatric Surgery

- Demonstrated safety and efficacy with evidence of impact on hunger-regulatory systems and broader metabolic factors
  - vertical banded gastroplasty
  - gastric bending
  - sleeve gastrectomy
  - Roux-en-Y gastric bypass

## Weight-Loss Devices

- Four types of FDA-regulated weight loss devices:
  - gastric band - band placed around the top portion of the stomach leaving only a small pouch for food
  - electrical stimulation systems - electrical stimulator is placed on the vagus nerve in the abdomen to block hunger signals

The Food and Drug Administration (FDA)

## Weight-Loss Devices

- Four types of FDA-regulated weight loss devices:
  - gastric balloon systems - inflatable balloons are placed in the stomach to take up space and delay gastric emptying
- Gastric emptying systems - tube is inserted between the stomach and outside of abdomen to drain food after eating

The Food and Drug Administration (FDA)

## Weight-Management Devices

- Two types of FDA-regulated weight management devices:
  - oral removable palatal space occupying device - worn during meals to limit bite size
  - ingested, transient, space occupying device - an ingested material that transiently occupies space in the stomach

## FDA Approved Obesity Medications

- Orlistat (adolescents and adults) OTC version available
  - lipase inhibitor; works in the gut to block fat (less calories absorbed)
- Lorcaserin
  - 5-HT<sub>2C</sub> receptor agonist (serotonergic) - activation in hypothalamus, promotes satiety
- Phentermine-topiramate ER

## FDA Approved Obesity Medications

- Appetite suppressant phentermine (TAAR1 agonist) stimulates norepinephrine (fight or flight) in hypothalamus
- Plus anti-seizure medication topiramate (sodium/calcium channel inhibition; GABA, AMPA/kainite receptors, carbonic anhydrase isoenzymes)



## FDA Approved Obesity Medications

- Naltrexone-bupropion
  - targets hypothalamus
  - naltrexone - opioid receptor antagonist, used for ETOH and opiate addiction
  - bupropion - NE DA reuptake inhibitor and possibly agonist

## FDA Approved Obesity Medications

- Liraglutide (daily injectable)
  - GLP-1 agonist
- Semaglutide (weekly injectable)
  - GLP-1 agonist

## Adult Nutrition Planning

- Various balanced nutrition regimens are appropriate and safe (e.g., Mediterranean, DASH, USDA MyPlate, AHA, moderate-low carbohydrate) with moderate caloric restriction (1200-1500 kcals)

Dietary Approaches to Stop Hypertension (DASH)  
American Heart Association (AHA) Diet  
U.S. Department of Agriculture (USDA) MyPlate

## Adult Nutrition Planning

- Nutritionally balanced partial meal replacement enhances weight loss and weight maintenance
  - shakes
  - meal replacement bars
  - frozen entrees
- With medical supervision more aggressive approaches [very low carbohydrate, total meal replacement/very-low-calorie diet (VLCD)] may be appropriate

# Physical Activity

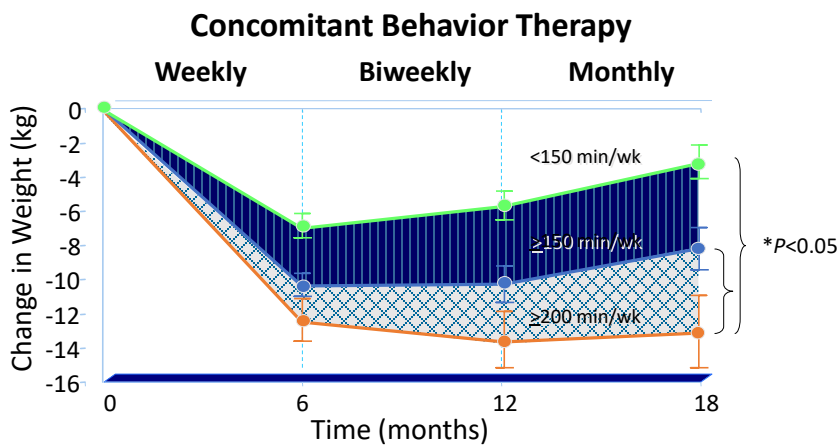
## 3 Components of Active Lives

- Move more
- ANY increase in activity is better than none
- The best activity is the one the patient will do

### 3 Components of Active Lives

- Set goals in each of the three components listed below:
  - lifestyle activity - 10,000 -15,000 steps
  - aerobic and strength exercise - variety in type and intensity
  - active leisure - explore alternatives for recreation

### Physical Activity Needed for Weight Loss Maintenance



Jakicic et. al. , JAMA 1999;282:1554.

# Diet? Exercise? Both?

Obesity/Treatment and Prevention

## **Physical activity and obesity: what we know and what we need to know\***

S.-H. Chin,<sup>1</sup> C. N. Kahathuduwa<sup>1,2</sup> and M. Binks<sup>1</sup>

## Both Diet and Exercise

- Diet + exercise interventions more effective than diet-only interventions at 6 months (8-11% WL)
- Moderate- to high-intensity aerobic exercise interventions (without prescribed diet; 3-5 X per week) also effective at 6 months (2-3% WL)
- Low-intensity walking and habitual activity (daily 'step counts') produce modest results (1-1.5% WL) at 3-6 months

## Both Diet and Exercise

- Resistance training alone does not appear to be effective in inducing weight loss
- In fact, modest weight gain was most commonly reported in these studies

Chin S, Kahathuduwa, CN, Binks M. Physical Activity and Obesity: What We Know and What We Need to Know. *Obes Rev.* 2016 Dec;17(12):1226-1244. doi: 10.1111/obr.12460. Epub 2016 Oct 14

## Both Diet and Exercise

- Typically associated with concurrent increases in FFM (and associated improvements in % body fat and other fitness parameters)
- Frequent assertions that exercise is more important for maintenance than initial WL appear not to be supported (both are important for WL)

Chin S, Kahathuduwa, CN, Binks M. Physical Activity and Obesity: What We Know and What We Need to Know. *Obes Rev.* 2016 Dec;17(12):1226-1244. doi: 10.1111/obr.12460. Epub 2016 Oct 14

# What about sedentary behavior?

Received: 24 May 2016 | Accepted: 28 November 2016  
DOI: 10.1111/ijcp.12925

**REVIEW ARTICLE**

WILEY THE INTERNATIONAL JOURNAL OF  
CLINICAL PRACTICE

## Is sedentary behaviour unhealthy and if so, does reducing it improve this?

Shao-Hua Chin | Chanaka Kahathuduwa  | Martin Binks

## What about sedentary behavior?

- Evidence linking sedentary behavior to negative health outcomes is incomplete, associational in nature
- The association between sedentary behavior and mortality is more consistent in cross-sectional, prospective, and longitudinal studies
- Interventional literature frequently fails to measure health outcomes, relying instead on changing sedentary behavior alone

## What about sedentary behavior?

- Minor improvement across a range of health parameters including plasma glucose levels, lipid profiles, diastolic blood pressure and overall cardiovascular disease risk (brief intervention periods and less than ideal study design)
- May be value in reducing sedentary behavior to have modest impact on health (impact is minor and must be considered before making largescale and potentially costly clinical and public health recommendations)

## Behavioral Strategies



## Behavioral Health History

- Demographics, social support system, and living situation
- Barriers and facilitators in home and work life
- Brief review of current medical status, compliance with all medications
- Sleep assessment, pain assessment

## Behavioral Health History

- Health and lifestyle (history and current): age of onset, dieting patterns, physical activity, successful loss/maintaining, health-related quality of life (CDC Healthy Days Measure)
- Disordered and maladaptive eating patterns; weight cycling; body image

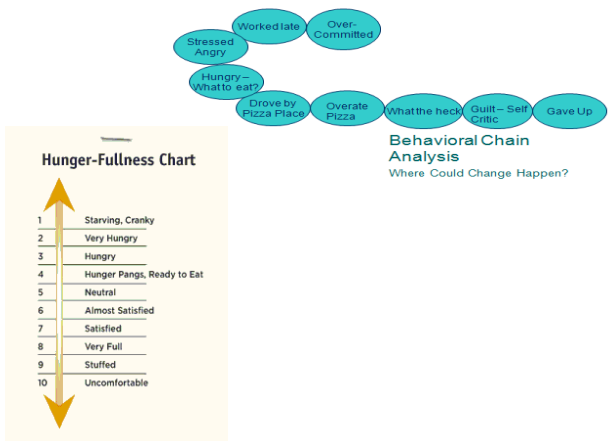
# Behavioral Health History

- Assessment of perceived motivation (weight loss readiness)
- Smoking, alcohol, drug abuse; counselling history (current), brief mental health (SCID-based) screening

## Severe combined immunodeficiency (SCID)

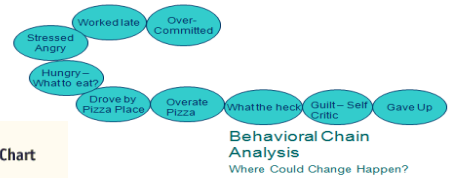
# Behavior Modification Approaches

- Goal setting and problem solving
- Reward management
- Self-monitoring
- Stimulus control
- Cognitive restructuring
- Stress and sleep management
- Relapse prevention
- Social support



# Behavior Modification Approaches

- Structured nutrition and planning
- Exercising
- Monitoring, self-awareness, and support
- Managing stress and emotions
- Finding alternatives for pleasure



## Consider all aspects of a person's life



# Coaching and Ongoing Support

## Core Philosophy of Health Coaching



## Core Philosophy of Health Coaching

- Recognize non-compliance is NOT lack of willingness but a result of barriers in need of solving
- Client's ability to change health habits is based in their psychological state, motivational level, and their current situation
- Support a client-centered, self-efficacy promoting, self-determined learner model, with a goal of empowerment

## Core Philosophy of Health Coaching

- Client-identified, proximal and achievable, goals
- ANY goal they generate is a good one - if they agree to even a very minimal goal, it may (and often does) help them to overcome inertia which often leads to significantly greater achievements

## Ongoing Coaching Relationship

- Regular and predictable contact
- Consistent solution focus
- Calls to action for participants
- Honest recognition of cost vs. benefit of change

## Ongoing Coaching Relationship

- Stress realistic expectancy - recognize barriers
- No one-size-fits-all
- Never question the desire to succeed; show commitment to the clients' success

## Benefits of Technology-Delivered Care

- Increased patient retention and participation:
  - provides opportunities for remote participation
  - flexibility of location to accommodate busy schedules
  - enhanced privacy
  - simple access via publicly available webinar utilities
  - computer and or mobile device access

Thank You

[www.NMHI.ttu.edu](http://www.NMHI.ttu.edu)



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