Obesity in Adults
A Chronic Medical Condition

Peter Jian MD, FAAFP

Assistant Professor

Department of Family and Community Medicine

Baylor College of Medicine

- Send in a bio

Objectives

- Define and characterize obesity as a chronic medical condition
- Evaluate patients affected by obesity and related conditions
- Understand the principles of obesity treatment

Background

- In 2015 – 2016, the prevalence of obesity was estimated to be:
  ~ 40% in US adults (≥ 20 years of age)
  ~ 18.5% of youths (2 - 19 years of age)

- At least since 1999, the trend towards an increase in prevalence in obesity continues to increase among adults and youth

Healthcare Costs Associated with Obesity

- Obesity-related medical care costs in the United States, in 2008 dollars, were an estimated $147 billion
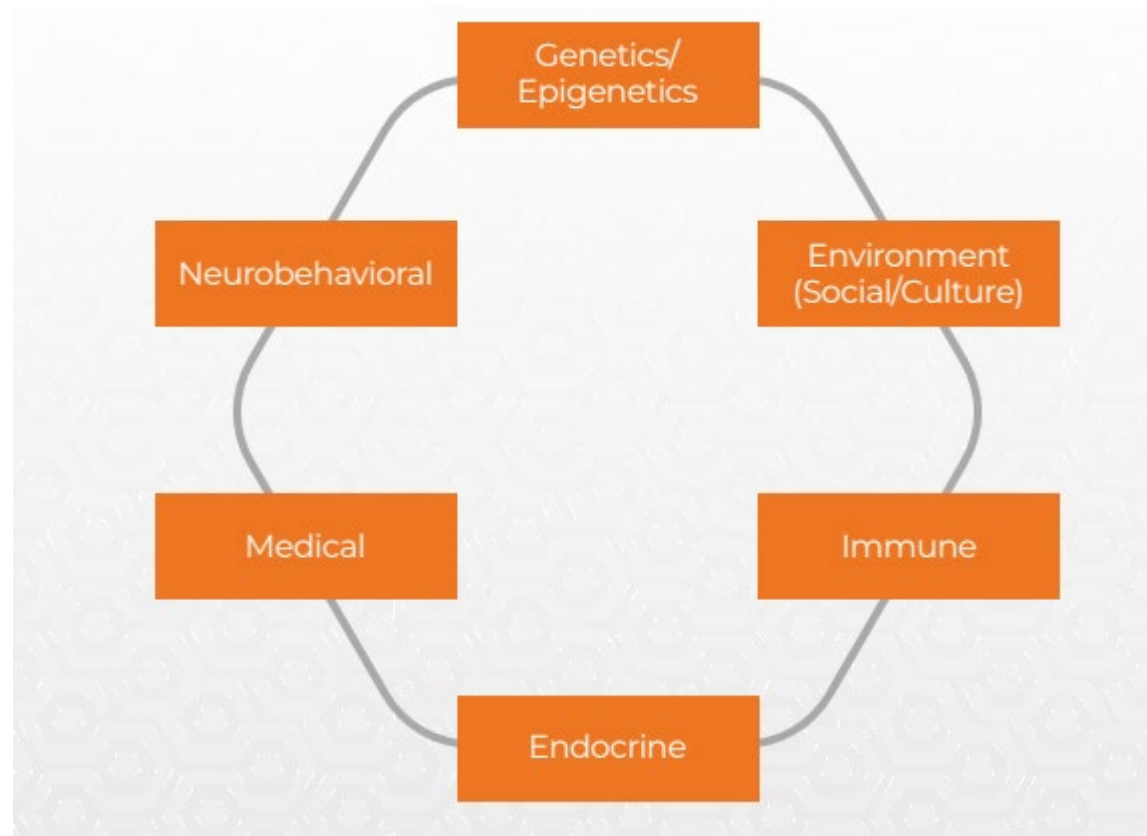
Evolved Definition of Obesity

- A chronic, progressive, relapsing, multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences. – Obesity Medicine Association (OMA)

Etiology of Obesity

- *Historically thought to be related to*
  - *'Eating too much'*
  - *Lack of will power*

Etiology of Obesity

- *Multi-factorial model*

Evolved Definition of Obesity – a Chronic Condition

- Classification
- Associated conditions
- Progressions and relapses
- Requiring ongoing care
- Leads to health risks
- Leads to complications

Obesity Classification - BMI

Normal Weight 18.5-24.9	Overweight 25.0-29.9	Class I Obesity 30.0-34.9	Class II Obesity 35.0-39.9	Class III Obesity ≥ 40

By National Institutes of Health (NIH), World Health Organization (WHO), and OMA

Normal Weight in Asians 18.5-22.9	Overweight in Asians 23-24.9	Obesity in Asians ≥ 25

Shown by numerous data and studies to be more indicative of obesity-related metabolic disorders in Asians
Adapted by some Asian countries and OMA

Obesity Classification – Waist Circumference

Men	Women
Men ≥ 40 inches ≥ 102 centimeters	**Women** ≥ 35 inches ≥ 88 centimeters
Asian Men ≥ 35 inches ≥ 90 centimeters	Asian Women ≥ 31 inches ≥ 80 centimeters

By American Heart Association (AHA) and OMA
The different cutoff More indicative of cardiometabolic risk in Asians

Obesity Classification – Body Fat Percentage

Essential Fat	Athletes	Fitness	Acceptable	Obesity
Women: 10-13%	Women: 14-20%	Women: 21-24%	Women: 25-31%	Women: ≥ 32%
Men: 2-5%	Men: 6-13%	Men: 14-17%	Men: 18-24%	Men: ≥ 25%

Expert opinions only
American Council on Exercise Classification

Clinical Complications of Obesity and Co-Existing Conditions

▶ Pulmonary - obstructive sleep apnea (OSA)

▶ Cardiovascular – hypertension (HTN, hyperlipidemia (HLD), lower extremity chronic venous disease

▶ Gastrointestinal – Gastroesophageal reflux (GERD), non-alcoholic fatty liver disease (NAFLD)

Clinical Complications of Obesity and Co-Existing Conditions

▶ Endocrine – insulin resistance, diabetes mellitus (DM), metabolic syndrome

▶ Urinary – urinary incontinence (UI)

▶ Musculoskeletal – osteoarthritis (OA), gait abnormality, falls and injuries

▶ Psychological – depressed mood, increased anxiety

Obesity – Health Consequences

- Disease-specific mortality – each 5 additional BMI (between 25 and 50) → increased mortality from
  - coronary heart disease (CHD)
  - Cerebrovascular disease (CVD)
  - DM
  - Chronic kidney disease (CKD)
  - Several types of cancer – liver, kidney, breast, endometrial, prostate, and colon
- Life expectancy – comparing to BMI below 30
  - BMI 30 - 35, reduced by 2 - 4 years
  - BMI 40 - 45, reduced by 8 - 10 years

Obesity – Caveat

- "Metabolically healthy" individuals - Some individuals are reported to have increased body fat, but without metabolic disease

Case 1 –Co-Existing Conditions and Clinical Complications

- 25 yo female with no PMH who presented for an annual preventive visits. She has no complaints today.

- ROS significant for snoring, daytime fatigue, depressed mood, and irregular menstrual bleeding

- SOC – no T/E/D

- Med - none

- Examination

  - AFVSS, weight circumference 38 inches, BMI 34

  - Liver edge 20 cm

- Labs

  - AST 105, ALT 133

  - Fasting glucose 115

  - TG 203, LDL 155

  - TSH WNL

- What stage of obesity is she in?

- What are the potential complications and co-existing conditions?

Assessment and Evaluation of Obesity

- History of Present Illness
  - Age at onset of weight gain, events associated with weight gain, previous weight loss attempts
  - Nutrition history
  - Physical activities
  - Screening for OSA
  - Screening for psychiatric conditions
  - Screening for neuroendocrine obesities in select patients

History of Present Illness - Screening for Obstructive Sleep Apnea

- STOP – snoring, tiredness, observed apnea and high blood pressure
- BANG – BMI, age, neck circumference, gender

History of Present Illness – Screening for Psychiatric Conditions

- Binge Eating Disorder (BED)
- Bulimia Nervosa (BN)
- Mental stress
- Depression
- Anxiety
- Post-traumatic stress disorder (PTSD)

DSM-5 Criteria for Binge Eating Disorder

- Episodes of binge eating
- Lack of control during episodes
- ≥ 3 of
  - Eating more rapidly
  - Eating until feeling uncomfortably full
  - Eating large amounts of food when not feeling physically hungry
  - Eating alone because of embarrassment by the amount of food consumed
  - Feeling disgusted with oneself, depressed, or guilty after overeating

DSM-5 Criteria for Binge Eating Disorder

- Occurs once a week for 3 months
- No regular inappropriate compensatory behaviors

- Severity (episodes / week)
  - Mild – 1 to 3
  - Moderate – 4 to 7
  - Severe – 8 to 13
  - Extreme – 14 or more

Case 2 – HPI and Screening for Psychiatric Conditions

- CC: 'I got heavier'

- HPI: 30 yo M with PMH of depression who presented to clinic for weight management. For the last 8 years, he has had fluctuation of weight between 245 and 265 lb. He has attempted various diets, but found himself eating large amounts of foods once or twice a week at late night even when he is not hungry. By the time he stops eating, he feels uncomfortably full and guilty.

- What diagnoses should you consider in this person?

History of Present Illness

- Neuroendocrine obesities
    - Hypothalamic obesity
    - Hypothyroidism
    - Cushing's syndrome
    - Hypogonadism
    - Growth hormone deficiency
    - Seasonal affective disorder
    - Polycystic ovary syndrome

- Genetic conditions
    - Prader Willi
    - Melanocortin 4 receptor deficiency

History of Present Illness – Physical Activity Levels

- ≥150 to 300 minutes of moderate-intensity physical activities
- Or ≥ 75 -150 minutes of vigorous-intensity aerobic activity

AND

- Muscle-strengthening activities on 2 or more days per week

- CDC Guidelines

- < 5K steps/day is sedentary
- 5K-7.5K steps/day is low active
- 7.5K-10K steps/day is somewhat active
- ~10K steps/day is active

- A good rough estimate

Review of Systems

- Heartburn
- Joint pain
- Difficulty with ambulation
- Feeling down or depressed
- Feeling anxious
- Irregular menstrual periods
- Leakage of urine

Social History

- Home environment
- Alcohol use
- Tobacco use

Case 3 – Importance of Social History

- 50 yo M with history of HLD who presented for weight management. Diet recall showed most intake from lean protein, whole grain, fruit, and vegetables. Drinks 3-6 beer daily during the weekdays, and sometime smore on the weekends. He often found himself drinking more than intended and has had unsuccessful attempts to stop or reduce drinking. No withdrawal or impaired social or interpersonal functions.

- ROS positive for occasional anxiety and depressed mood

- SOC – no T/D

- What diagnoses should you consider in this person?

Alcohol Use Disorder

- DSM-5 diagnostic criteria
  - Recurrent drinking resulting in **failure to fulfill role obligations**
  - Recurrent drinking **in hazardous situations**
  - **Continued** drinking **despite** alcohol-related social or interpersonal problems
  - Evidence of **tolerance**
  - Evidence of alcohol **withdrawal** or use of alcohol for relief or avoidance of withdrawal
  - Drinking in larger amounts or over longer periods **than intended**
  - **Persistent desire or unsuccessful attempts** to stop or reduce drinking
  - **Great deal of time** spent obtaining, using, or recovering from alcohol
  - Important activities **given up or reduced** because of drinking
  - **Continued drinking despite** knowledge of physical or psychological problems caused by alcohol
  - Alcohol **craving**

Risky Alcohol Use

- Men under age 65
  - More than 14 standard drinks per week on average
  - More than 4 drinks on any day
- Women and adults 65 years and older
  - More than 7 standard drinks per week on average
  - More than 3 drinks on any day

Medications that May Increase Body Weight

- Diabetes medications
  - Insulin
  - Sulfonylureas
  - Thiazolidinediones
  - Meglitinides
- Neurologic and mood stabilizing agents
  - Gabapentin
  - Carbamazepine
  - valproate
- Antipsychotics
  - Risperidone
  - Olanzapine

Medications that May Increase Body Weight

- Glucocorticoids

- Antihistamines

- Some antidepressants (eg, amitriptyline and mirtazapine)

- Some hormonal agents (eg, depot medroxyprogesterone acetate [DMPA])

- Beta-blockers

- Alpha-blockers

Case 4 - Medications that May Increase Body Weight

- 60 yo Caucasian F with h/o migraine, DM, and HTN who presented for care of chronic conditions. Medications include --

- Metformin 500mg BID

- Glipizide 10mg BID

- Pioglitazone 45mg daily

- Amitriptyline 25 mg daily

- Lisinopril 40 mg daily

- Metoprolol succinate 50 mg daily

- Her BMI 29

- What medications potentially associated with weight gain?

Physical Examination

- Look for co-existing conditions and complications
  - Acanthosis nigricans
  - Acne
  - Liver edge
  - Venous stasis dermatitis and ulcers
  - Joint pain and crepitus on range of motion (ROM)
  - Abnormal gait
- Look for secondary causes of obesity
  - Goiter (hypothyroidism)
  - Proximal muscle weakness, suprascapular fat pad, violaceous striae, acne, hirsutism, neuropsychological changes (Cushing's syndrome)
  - Acne and/or hirsutism (PCOS)

Diagnostic Evaluations

▶ Assessing and review obesity-related health risks

  ▶ TSH

  ▶ Lipid panel

  ▶ Hemoglobin A1c

  ▶ Liver function tests

  ▶ Abdominal ultrasounds

  ▶ EKG

  ▶ Sleep study results

▶ In select patients, consider workup for Cushing's syndrome, growth hormone deficiency, or hypothalamic obesity

Diagnostic Evaluations - Assess Body Composition

- Bioelectrical Impedance Analysis (BIA)
  - Measures impedance by body tissues to electrical current
  - Accuracy varies by equipment and hydration status

Diagnostic Evaluations - Assess Body Composition

- **Dual-energy X-ray absorptiometry (DXA)**
  - Gold standard for body composition analysis

Diagnostic Evaluations - Estimate Energy Expenditure

▶ Various Equations

  ▶ Basal metabolic rate (BMR) x activity factor

  ▶ Potentially large margin of error

  ▶ *WHO, Katch-McArdle, Cunningham equation, Harris-Benedict, Mifflin St. Jeor, etc*

  ▶ *Eg, Male: 9.99 x weight (kg) + 6.25 x height (cm) – 4.92 x age + 5*
    Female: 9.99 x weight + 6.25 x height – 4.92 x age – 161

▶ Indirect Calorimetry

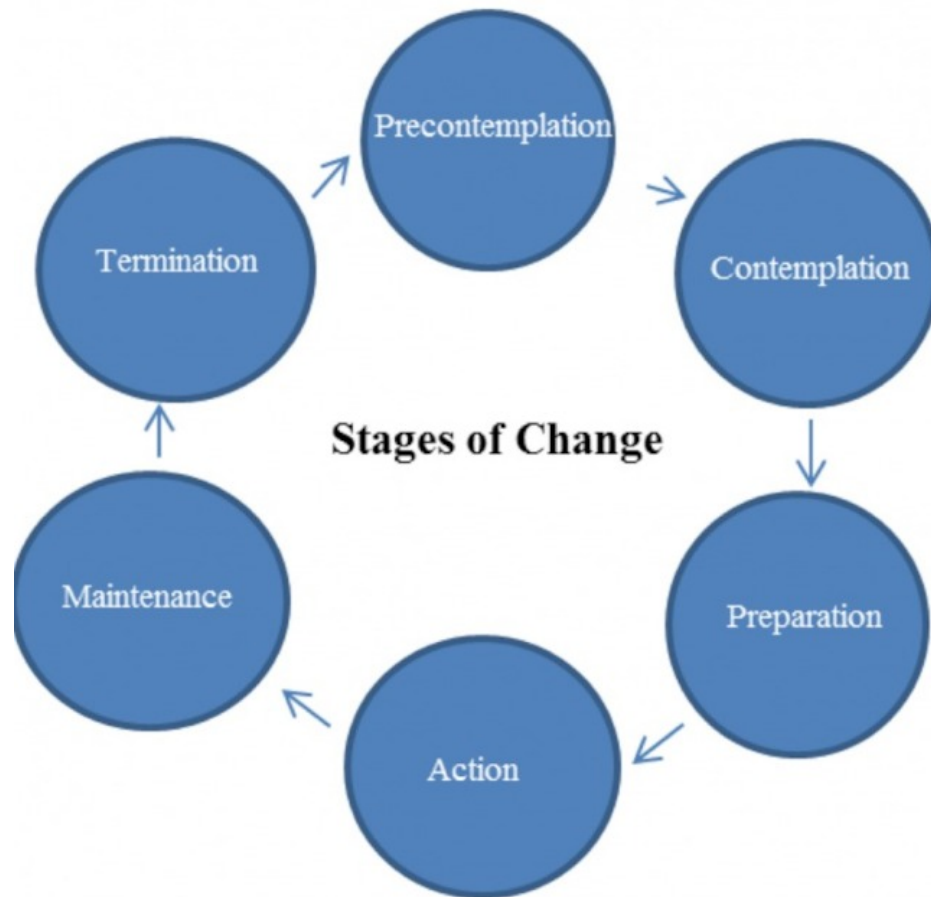 ▶ Measures oxygen consumption and carbon dioxide production

Treatment of Obesity

I. Treat and Refer Patients Based on Stages of Change

Stages of Change

Stages of Change

- Precontemplation
- Contemplation
- Preparation
- Action
- Maintenance
- Termination

Treat and Refer Patients Based on Stages of Change

- Pre-contemplation -> provide education on importance of healthier weight
- Contemplation -> move patient along the stage of change with motivational interviewing
- Preparation and action ->
  - Address specific factors that contributing to obesity
  - Refer to weight management program for structured and individualized plans

Use Motivational Interviewing Move Patients Along the Stages of Change

▶ ORAS (open ended questions, reflection, affirmation, summarize) to assess and move stages of change

▶ Developing discrepancy

▶ Resolving ambivalence

▶ Support self efficacy

▶ **Can be effectively done by primary care providers (PCPs)**

Case 5 – Treatment and Referral Based on Stages of Change

- CC: follow-up of DM

- HPI: 55 yo M with history of HTN, DM2, and HLD who presented for a 6-month DM visit. He is content with his health status and thinks his diet is healthy. Physical activities < 40 minutes/ week. A1c 6.5-7 on metformin. HLD controlled on statin. BMI 31 with 15 lb increase in weight in the last 3 years.

- What stage of change is he in?
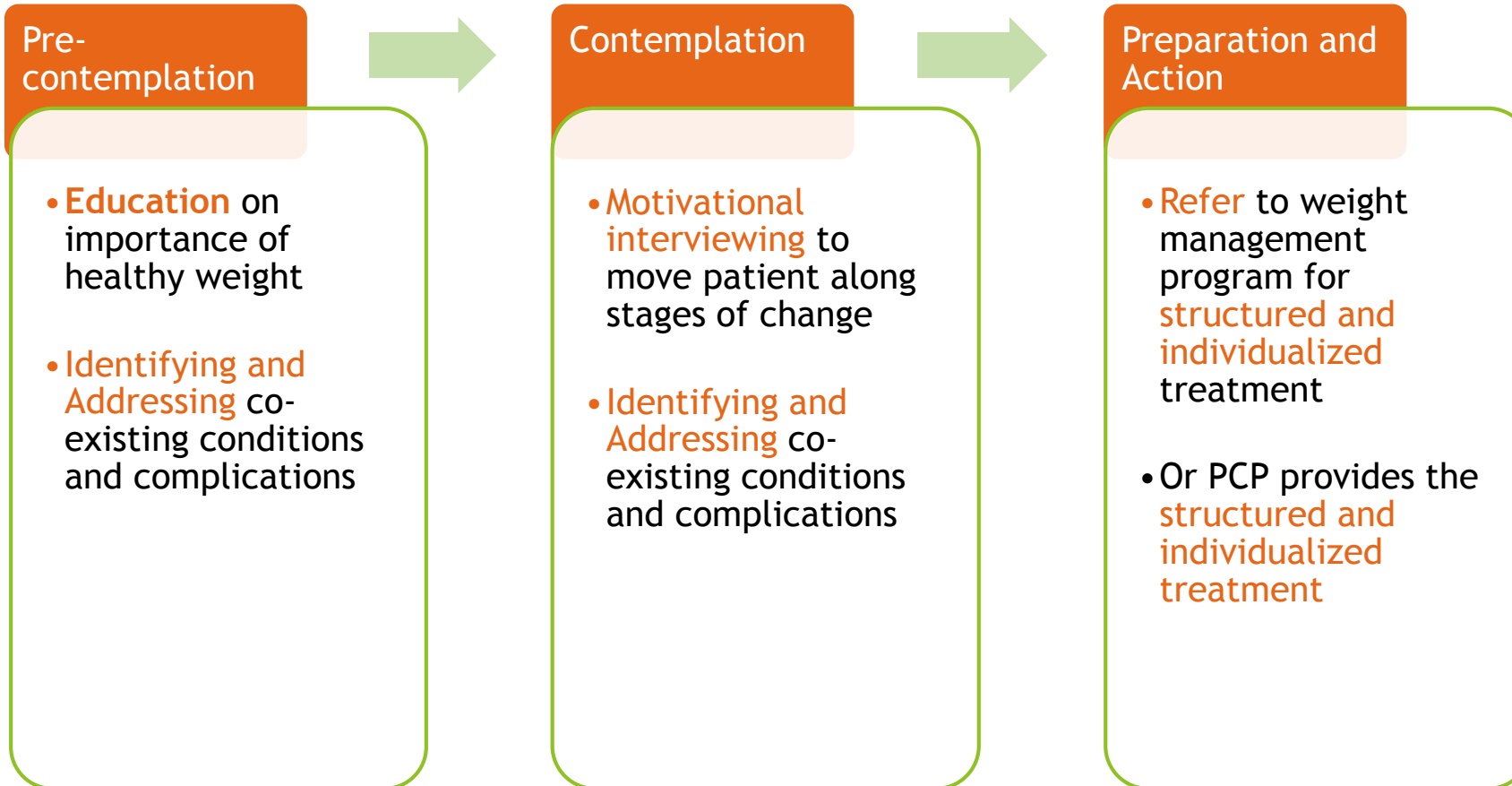
- What interventions should be considered?

Case 6 – Treatment and Referral Based on Stages of Change

- 21 yo female with obesity and PCOS who presented for weight management. She heard about weight loss medications and would like to try them if possible. Her diet recall revealed daily fast food intake. She is thinking about making better changes in her diet from time to time but have not looked into what is healthier to eat or made any definitive plans. Screening for eating disorders were negative. Physical activity level is minimal.

- Medication – metformin

- Social history – no T/E/D

- Examination - BMI 31, otherwise unremarkable

- What stage of change is she in?

- What interventions should be considered?

II. Treat People with a Chronic Medical Condition, Not 'Diagnoses'

- ▶ Goals
- ▶ Expectations
- ▶ Individualized plans
- ▶ Relapse and remission
- ▶ Be aware of weight bias
- ▶ Provide patient friendly environment

Our Team Model

Pre-contemplation

- **Education** on importance of healthy weight
- Identifying and Addressing co-existing conditions and complications

Contemplation

- Motivational interviewing to move patient along stages of change
- Identifying and Addressing co-existing conditions and complications

Preparation and Action

- Refer to weight management program for structured and individualized treatment
- Or PCP provides the structured and individualized treatment

Summary

- Obesity is a chronic, progressive, relapsing, multi-factorial medical condition that is associated with adverse health consequences.

- Evaluation of obesity should aim to identify contributing factors, secondary causes, co-existing conditions, and complications.

- Treat and refer patients based on stages of change.

- Treat people who are affected with a chronic medical condition, and not a medical diagnosis.

Thank You!

References