

The Prevention
&
Treatment
of
Metabolic Syndrome
in
Primary Care

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Disclosures & Conflicts

- None



Learning Objectives

- Brief Definition of Metabolic Syndrome
- Why Diagnosis is Important
- Prevention of Metabolic Syndrome in Adults & Children
- Treatment of Metabolic Syndrome in Adults & Children





Definition of Metabolic Syndrome

- Several definitions
- The National Cholesterol Education Program Adult Treatment Panel III is the most widely used₁



5 Definitions for Metabolic Syndrome

- **NCEP ATP3 – 2005**
- International Diabetes Foundation – 2006
- Group for the Study of Insulin Resistance – 1999
- World Health Organization - 1999
- American Association of Clinical Endocrinologists – 2003
- There is a graph in Up-To-Date that compares all 5



The National Cholesterol Education Program Adult Treatment Panel III

MUST HAVE 3 OF 5 COMPONENTS FOR DIAGNOSIS

- Must have: **Abdominal Obesity** – measured by waist circumference
women > or equal to 88cm (35in)
men > or equal to 102cm (40in)
***Need to use specific ethnic based guidelines
- Plus 2 of these:
 - **Blood Sugar** greater than 100 mg/dL or on medication
 - **BP 130/85** mmHg or higher or on medication
 - **HDL** less than 50 mg/dL in women or 40 mg/dL in men or on medication
 - **Triglycerides** greater than or equal to 150 mg/dL or on medication

Waist Circumference₁

- According to the International Diabetes Federation, waist circumference is the #1 element that needs to be considered when diagnosing metabolic syndrome
- Measurements need to be done according to ethnic group (not country of residence)
- In the US, continue to use the guidelines, in the future may be more specific to better estimate risk





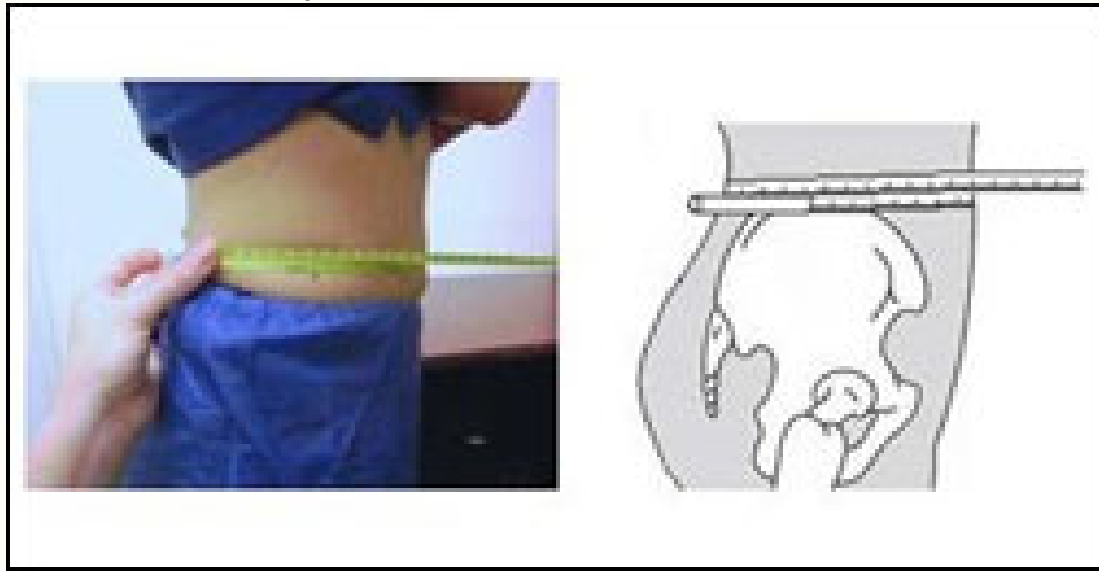
Waist Circumference Measurements by Ethnic Group₁

- Sub-Saharan Africans & Eastern Mediterranean and Middle East populations use European parameters
- Ethnic South & Central Americans use South Asian parameters

| Ethnicity | Female | Male |
|---------------------------------|--------|--------|
| White People of European Origin | >80 cm | >94cm |
| South Asians | >80 cm | >90 cm |
| Chinese | >80 cm | >90 cm |
| Japanese | >80 cm | >90 cm |

How to Measure Waist Circumference²⁶

- Measure while patient is standing
- Place measuring tape above iliac crests
- Do not pull snugly
- Measure after patient exhales



Other Possible Markers

- Elevated C-reactive Protein₁
- Elevated Interleukin (IL) – 6₁
- Plasminogen Activator Inhibitor (PAI) – 1₁
- Interleukin 1, 6, and 18, Resistin, TNF Alpha₇
- Elevated Uric Acid₇
- Prothrombotic Factors₇
- Elevated WBC's₇
- Elevated Dimethylarginine₇
- Urine Microalbumin₇





Why is Metabolic Syndrome a BIG DEAL?

- **IT IS A WARNING OF WHAT IS TO COME!**
- The #1 killer in the US is heart disease₂
- Coronary Heart Disease is inversely related to levels of HDL-C₃₃
- The risk for MI increases by 5% for every 5mg/dL below recommended values of HDL-C₃₃
- Obesity is widespread:
 - 1/3 of American adults & 1/6 of adolescents are obese₅
 - 1/4 of adults in the world are obese₅

Disorders Associated with Metabolic Syndrome

- Sleeping Disorders
- PCOS
- Chronic Renal Disease
- Fatty Liver Disease
- Hepatocellular/Intrahepatic Choleangiocarcinoma
- Elevated Uric Acid/Gout
- Dementia
- Inflammatory States?



Metabolic Syndrome

- Increases with age
- Native Americans – affects 60% of women and 45% of men
- Very common in Mexican American women
- Global Industrialization is associated with obesity increasing
- >4 hours of TV/day = 2 fold increase risk
- Over age 50, 50% of people have it
- In CVD patients, they are 3x more likely to have MI or CVA if they have Metabolic Syndrome & 50% of CAD patients have it

Start diagnosing obesity!

- We have no problem diagnosing diabetes, hypertension, hypothyroidism. Obesity should not be any different.



Diagnosing Obesity²⁹

- If there is a diagnosis, then there is an obligation to treat
- Medicare Obesity Benefit
- It provides reimbursement in primary care setting for intensive behavioral therapy with face to face counseling
- Billing Code = G0447
- 22 visits are covered per year
- Need obesity dx with associated BMI for it to pay



PREVENTION



Prevention

- Screen every patient you see
- BMI done at most every visit anyway
- Review medications
- Review family history
- Review vital signs
- Physical exam





Medications that Cause Weight Gain

Amitriptyline, Doxepin, Imipramine, Mirtazapine, Nortriptyline, Paroxetine, Phenzelzine, Chlorpromazine, Clozapine, Olanzapine, Paliperidone, Quetiapine, Risperidone, Amlodipine, Atenolol, Felodipine, Metoprolol, Nifedipine, Propranolol, Insulin, Meglitinides, Sulfonylureas, TZDs, Estrogen, Steroids, Benadryl, Lithium, Carbamazepine, Gabapentin, Pregabalin, Valproate



Medications that Cause Hypertriglyceridemia³⁴

Estrogen (not transdermal)

Oral Contraceptives

Tamoxifen

Beta Blockers

Glucocorticoids

Cyclosporine

HIV antiretroviral regimens

Retinoids



Medications that cause low HDL-C³³

Anabolic Steroids

Benzodiazepines

Beta-blockers

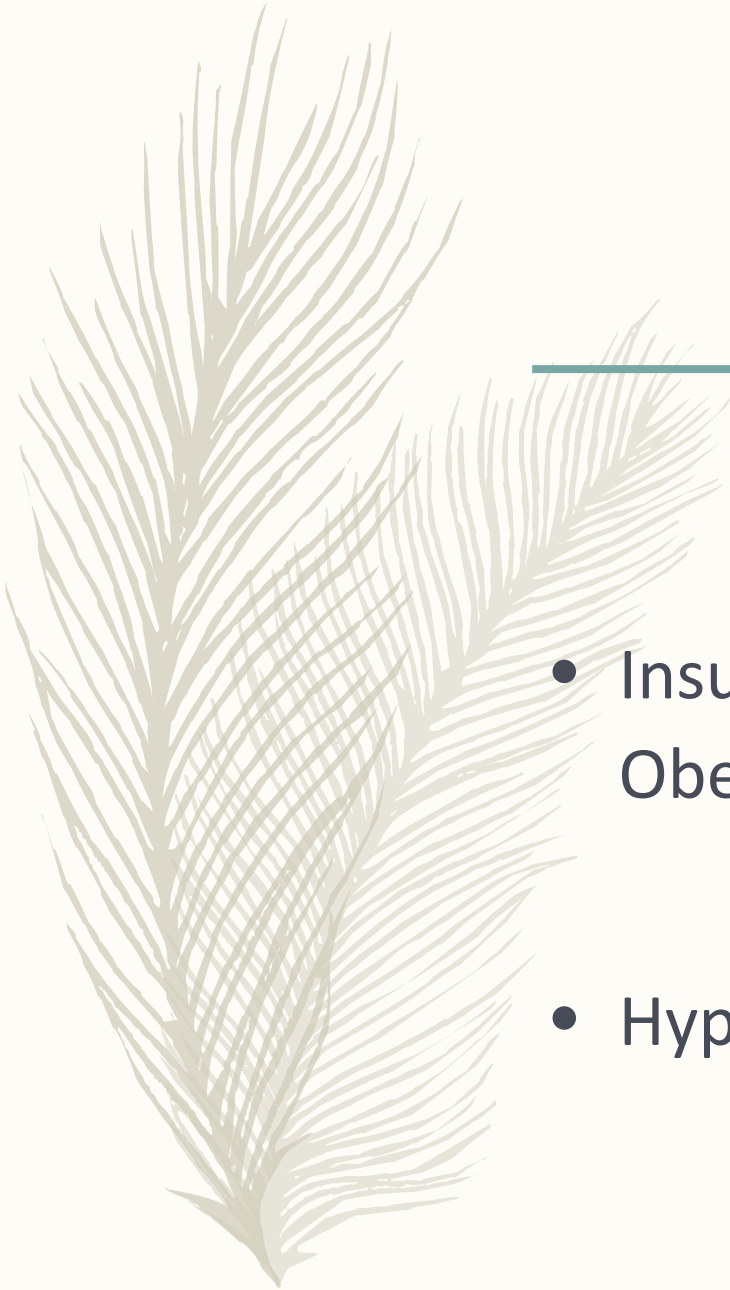


Medications that cause Hyperglycemia³⁶

Fluoroquinolones
HIV antiretrovirals
Antipsychotics (1st and 2nd generation)
Beta-Blockers
Niacin ER
Statins (low risk)
Thiazide diuretics
Vasopressors
Vasodilators (diazoxide)
Systemic Glucocorticoids
Oral Contraceptives
Progestin
Growth Hormones
Immunosuppressants

Common Physical Exam Findings

- Insulin Resistance – Acanthosis Nigricans, Visceral Obesity
- Hyperlipidemia – Eruptive Xanthomas, Lipemia Retinalis



Acanthosis Nigricans₁₁



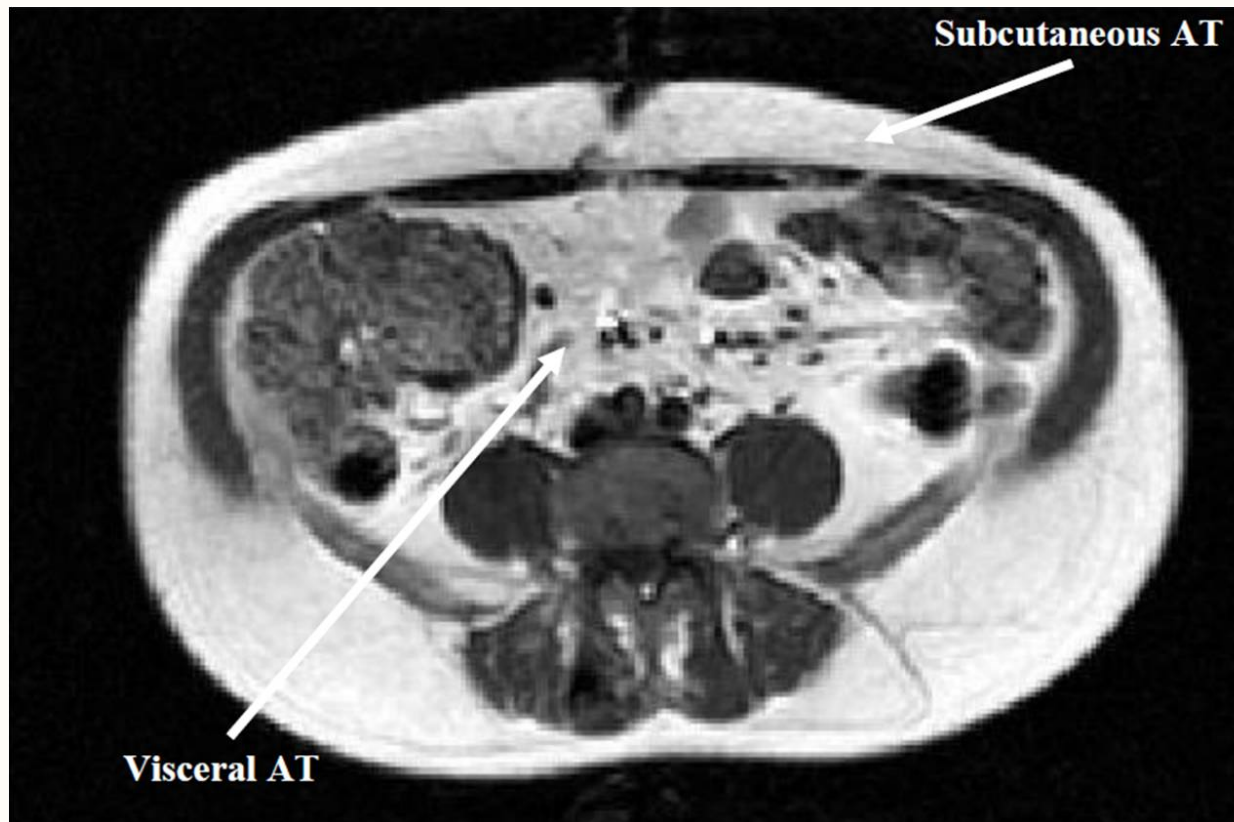
Acanthosis Nigricans₁₀



Visceral Obesity¹⁶



Visceral Obesity¹⁷



Eruptive Xanthomas¹²

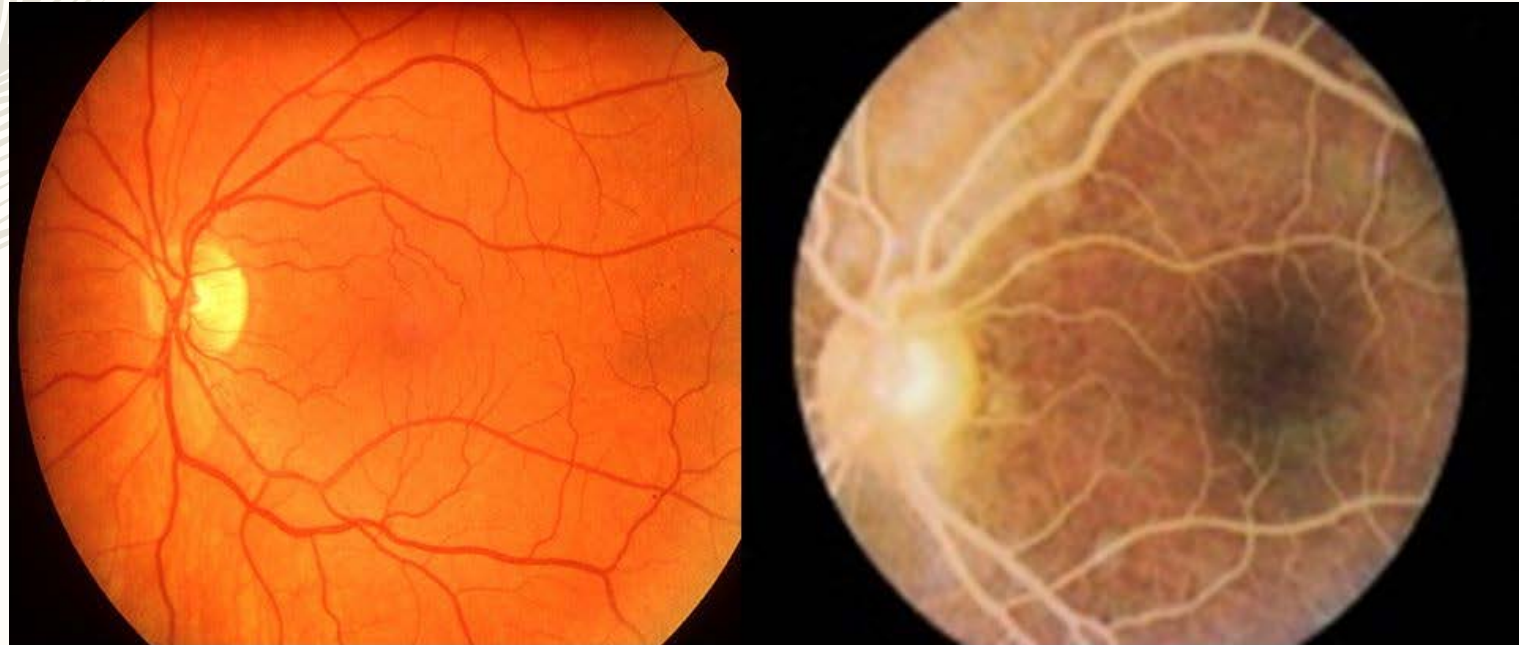
Eruptive xanthomas



Eruptive Exanthomas¹³



Lipemia Retinalis₁₄



Normal retina

Lipemia retinalis

Elevated triglycerides





Prevention
in
Adults

Key to Prevention = Weight Loss

- Focus on weight management and the other parameters like blood pressure, lipids, and glucose will also improve



Prevention

- Proven to reduce weight = Diet, Behavior Modification, & Exercise.
- Medications to reduce weight
- Surgery to reduce weight





One diet does not fit all!

Many diets are out there, we need to find one that best fits our patient.

Mediterranean Diet^{1,27}

- Fruit, veggies, nuts, whole grain, olive oil
- Most wt loss seen
- BP, lipids improve
- Insulin resistance decreases
- Inflammation decreases
- Proven to reduce cardiovascular mortality





Dietary Approaches to Stop Hypertension (DASH)^{1, 27, 38}

- 20 year anniversary in 2017
- Low sodium, high fruit/veggie/fiber/protein, low dairy, lean meat
- Drop Systolic by 10 & Diastolic by 4.7
- Triglycerides & glucose drops
- Proven to reduce risk of CAD

Low Glycemic Index Diet₁

- Reduces glucose and lipid levels





American Heart Association Diet

- High fiber (30g/day)
- Low sugar, moderate ETOH to none, lean meat, whole grain, fruits, & veggies
- Causes wt loss and drop in BP



Weight Watchers Diet³⁰

- Weight Loss
- Decreases waist circumference
- Decreases C-Reactive Protein
- Decreases A1C
- No change in blood pressure or lipids

Calorie Restriction

- This is the most important₂₂
- 500 kcal restriction per day = 1 lb/week₇
- Recommendation for women 1200-1500 kcal₂₂
- Recommendation for men 1500 –1800 kcal₂₂
- Severely obese need to restrict calories to 800-1000 kcal/day with regular physician supervision₆
- Rather than restrict foods, suggest that they add more fruits and veggies, etc₂₂



Behavior Modification⁶

- Motivational interviewing
- Encourage meal planning
- Food journaling (there is an app for that)
- Exercise planning
- Problem solving
- Recognize eating cues
- Self monitoring weight
- Counseling



The A's of Obesity Counseling¹⁵

- Ask – Permission to discuss weight & explore readiness
- Assess – Obesity related risks & root causes
- Advise – Health risk & treatment options
- Agree – Health outcomes & behavioral goals
- Assist – Accessing appropriate resources & providers



TABLE 1**THE FOUR PROCESSES OF MOTIVATIONAL INTERVIEWING**

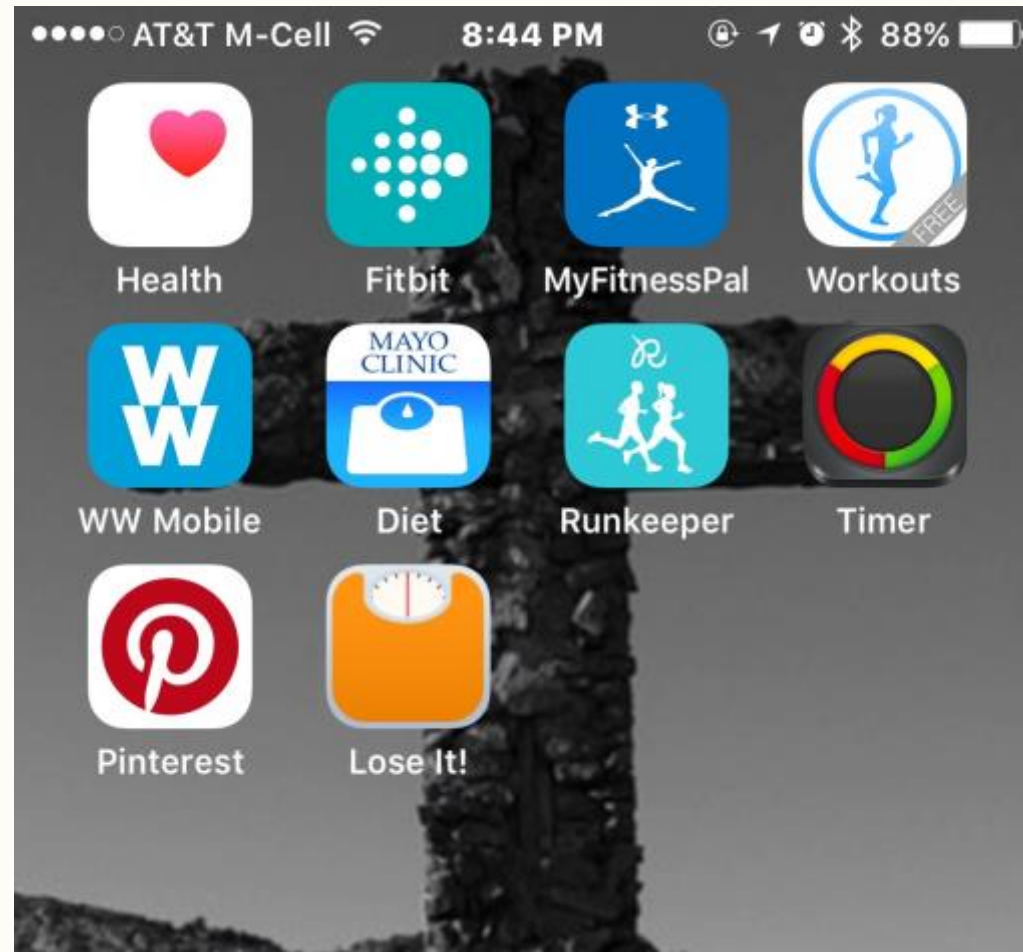
| Phase | Description |
|----------|--|
| Engaging | The provider and patient establish a working relationship. The provider makes it clear that he or she is not there to tell the client what to do. |
| Focusing | The patient–provider dyad settles on an agenda. The provider maintains patient autonomy by focusing on the patient’s most pressing concern. |
| Evoking | The provider elicits the patient’s personal reasons for change. When done successfully, the patient will be voicing the arguments for change. |
| Planning | This phase is marked by the shift from the “why” of change, to the “when” and “how.” The provider guides the patient to come up with the best options for him- or herself. |

Smart Phone Applications^{31,38}

- Apps have been shown to help with short term weight loss
- More weight loss is seen with face to face interactions
- 77% of US adults have smartphones



Examples of Smart Phone Applications



Exercise

- Sedentary life style = Increased mortality and abnormal glucose metabolism₃₉
- More exercise = more weight loss₆
- Exercise alone is not enough₂₂
- Inactivity costs \$24 billion a year in health care expenses₃
- Exercise costs nothing
- **30-40% risk reduction of myocardial infarction with brisk walking daily for only 20 minutes₃**

Exercise Recommendations₃

- Moderate Intensity Cardio - 30 min 5 days a week

Or

- Vigorous - 20 min 3 days a week

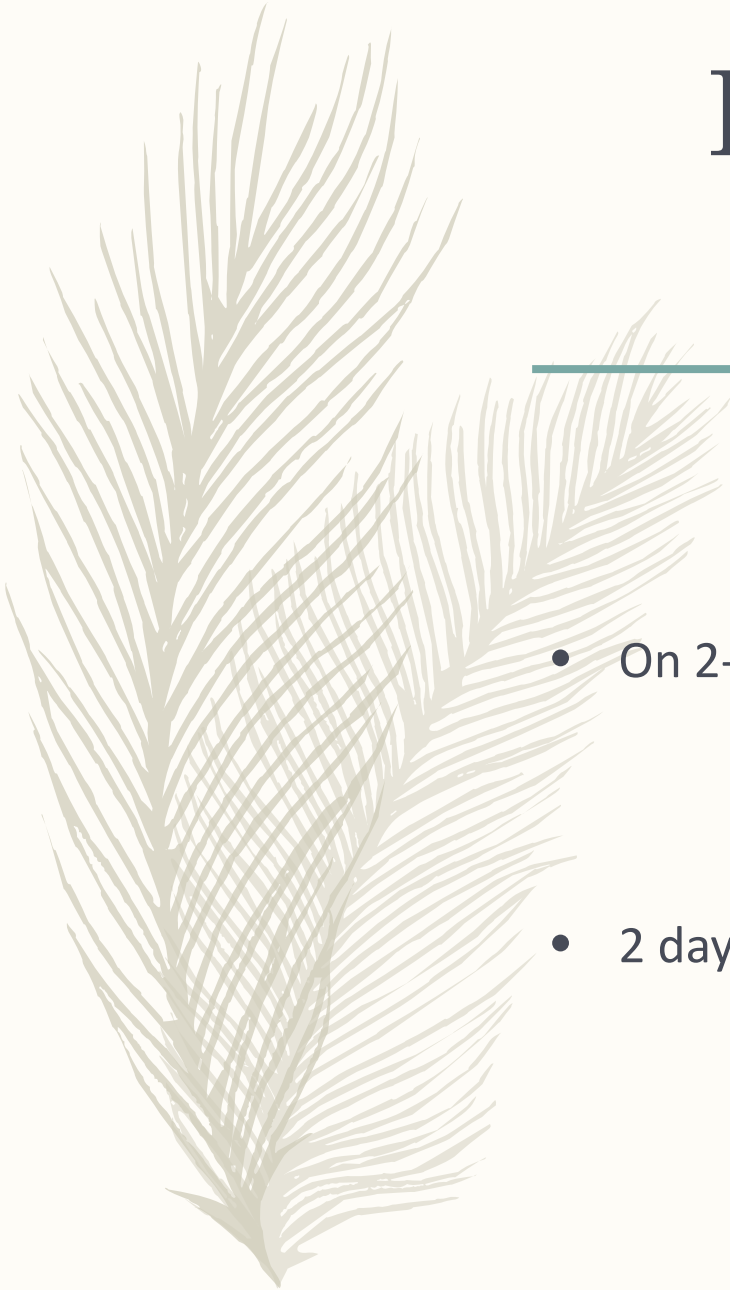
Or

- Combo to achieve total energy expenditure of greater than 500-1000 metabolic equivalent



Exercise Recommendations₃

- On 2-3 days a week - resistance exercises
- 2 days a week - flexibility exercises (60 seconds on each muscle group)



Exercise in the Elderly³⁹

- Osteoarthritis – Aquatic based exercises
- Diabetes – Aerobic + Resistance Training = lower A1C, If they have autonomic neuropathy, need stress test
- Osteoporosis – Resistance Exercises
- Cognitive Impairment – exercise decreases risk for dementia, improves cognitive function, and improves ADL's
- CVD – need stress test
- Falls – Exercising reduces falls, Tai Chi, gait training
- Pulm Dz – Match time of exercise to bronchodilator med peak, use oxygen PRN





Weight Loss Meds: When and Who²²

- Start them when weight loss goals have not been achieved and risks & benefits have been discussed
- When BMI is $> 30\text{kg}/\text{m}^2$
- Or when BMI is $> 27\text{kg}/\text{m}^2$ with co-morbid condition (DM,HTN,CH)
- Optimal duration is not clear due to inadequate studies

Weight Loss Medications

- Catecholaminergic Medications
- Absorption Inhibitors
- Selective Serotonin Receptor Agonist
- Combo Drugs
- Glucagon-Like Peptide-1 Receptor Agonist



Catecholaminergic Medications⁶

- Examples: Phentermine, Diethylpropion, Benzphetamine, Phendimetrazine
- Appetite suppressants
- Stimulates CNS activity
- Short term only



Absorption Inhibitors

- Example: Orlistat (both OTC in low dose, and prescription in higher dose)₆
- Common first choice due to lack of systemic side effects and long history₂₂
- Inhibits intestinal lipase₆
- SE: gas, diarrhea, decrease absorption of vitamins, anal leakage₆
- Lowers BP, lipids & sugar₂₂



Selective Serotonin Receptor Agonist₆

- Example: Lorcaserin (Belviq)
- Causes modest weight loss
- Expensive
- SE: possible breast tumors in animals, possible valve issues, psych effects
- DC if no more than 5% wt loss seen in 12 weeks₂₂



Combo Drugs


- Example: Naltrexone/Bupropion (Contrave) & Phentermine/Topiramate (Qsymia)
- SE: Increase suicide ideation, elevated BP, seizures, N/V/D



Glucagon-Like Peptide-1 Receptor Agonist

- Example: Liraglutide (Saxenda)
- Injectable Incretin
- Long term treatment
- SE: Possible thyroid C-cell tumor in animals, medullary thyroid carcinoma risk, papillary thyroid carcinoma, N/V/D, pancreatitis





Who should be referred for surgical weight loss?

- BMI > 40 kg/m² OR BMI > 30kg/m² who have DM, HTN, CH, OSA, NASH, arthritis, or impaired quality of life⁶
- Patients that have a lower BMI have overall better success rates – therefore refer sooner²⁸

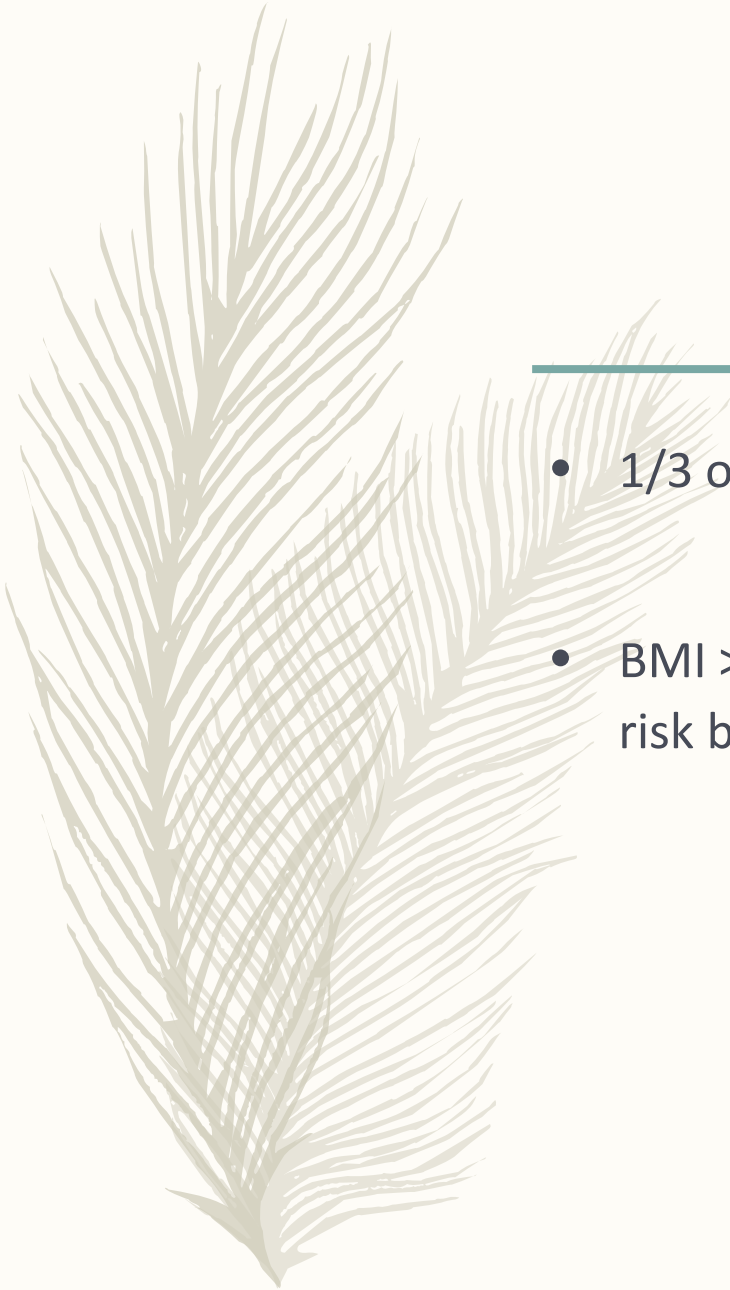


Success of Wt Loss Compared to Adjustable Lap Band²⁸

- Roux-en-Y 19x more weight loss than lap band
- Sleeve Gastrectomy 7.2x more weight loss than lap band
- Duodenal Switch Procedure 72x more weight loss than lap band

Surgical Weight Loss²⁸

- 1/3 of patients post-op have a BMI of <30 at 1 year follow up
- BMI > 30 are at 50-100% higher risk for premature death, but surgery decreases risk by 30-40%



Surgical Weight Loss₆

- Roux-en-Y Gastric Bypass

Complications in 40% of patients

- Gastric Band


60% need reoperation



Liposuction.


IT DOESN'T PREVENT OR TREAT METABOLIC SYNDROME!





Prevention
in
Children

Prevention

- 
- Best screening tool for obesity is BMI₄
 - Age 6+ should be screened₄
 - Of children ages 2-19, 1/3 are obese₄
 - Perform risk assessment – family history, ROS, VS, PE₄
 - If risk present perform fasting lipids and CMP₄
 - If risk not present perform fasting lipids₄
 - Age 2-11 no more than 1 pound of wt loss in a month₄
 - No more than 2 pounds/week if older than 11₄

Diet₄

- No particular diet recommended
- Cut sugar drinks
- Increase fruits and veggies
- Breakfast Daily
- Try to eat most meals at home with family



Choose My Plate





Obesity Behavioral Modification₄

- Ask about eating habits & activity level
- Assess motivation to change
- Cultural & socioeconomic status affects how weight is perceived
- Scare tactics don't typically work because they only see short-term effects of obesity
- Stage an intervention with family

Exercise

- Nothing recommended below age 6₃
- Age 6-17 need 60 minutes daily₃
- No TV/screen time less than 2 years of age₄
- No more than 2 hours of TV/screen time per day₄
- Activities included are the following: play, games, sports, work, transportation, recreation, PE, planned exercise
- Appropriate exercise: jump rope, running, sit-ups, weight lifting, resistance bands₃₅
- Included in the 60 minutes per day, also need muscle-strengthening 3 days per week



Be Active and Play, 60 minutes, every day!



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion
Division of Adolescent and School Health
www.cdc.gov/HealthyYouth



TREATMENT



Treatment of Metabolic Syndrome

- Increased Waist Circumference/Obesity

Already discussed weight loss

- Insulin Resistance/Elevated Blood Sugar
- Hypertension
- Hypertriglyceridemia/Low HDL



Adults

—



Treatment: Insulin Resistance/Elevated Glucose

1. Lifestyle Modification: Diet, Exercise
2. Biguanides: Enhance insulin action in liver & suppresses endogenous glucose production
3. Thiazolidinediones: Improve insulin uptake in muscles & adipose tissue and reduce inflammatory markers

Treatment: Hypertension

- #1 Lifestyle modification₁₈
- If the patient has diabetes ACE/ARB recommended₇
- Non-African American – thiazide diuretic, calcium-channel blocker, ACE inhibitor or ARB₁₈
- African American – thiazide or calcium-channel blocker₁₈

Treatment of Hyperlipidemia³²

- New recommendation: Use calculators to estimate cardiac risk and then determine type of treatment
- Framingham Risk Calculator
- Pooled Cohort Equations <http://www.cvriskcalculator.com>
- QRISK 2 Calculator <http://www.qrisk.org>
- This focused more on risk rather than numbers





Treatment of Low HDL_{7,32}

- Lifestyle modification #1 treatment
- Most pronounced increase with estrogen in postmenopausal women, fibrates, and niacin
- However, adding niacin may not provide cardiovascular benefit, adding niacin to statins are found to be harmful, niacin may also make glucose tolerance worse





Treatment of Hypertriglyceridemia

- Lifestyle modification – need weight loss of >10% to affect⁷
- Aerobic exercise!³⁴
- Current guidelines – no tx unless level >886mg/dL – treatment aimed at preventing pancreatitis³⁴
- “Dietary fat is not a primary source of liver triglycerides and higher fat diets do not raise plasma triglyceride levels in most people.”³⁴



Treatment of Hypertriglyceridemia³⁴

- Unsure if there is a CV risk reduction and mortality reduction with fibrates but will decrease level by 50%
- High dose statins reduce by 44% (Atorvastatin 80mg/Rosuvastatin 20mg)
- Combo therapy of Fenofibrate + Fluvastatin or Pravastatin are safe as they are not extensively metabolized by CYP3A4
- Fish Oil
- Nicotinic Acid – can reduce by 25% - but can cause glucose tolerance issues and combo w/ statin is harmful



Children

—

Insulin Resistance

Lifestyle modification is primary
treatment!





Hypertension₂₆

—

Treatment: Hypertension¹⁹

- Stage I Hypertension: Lifestyle modification – meds are not first line
- Stage II Hypertension: If lifestyle modifications do not lower BP, start medications
- Meds approved for treatment: Diuretics, ACE inhibitors, ARBs, beta-blockers, and vasodilators





Hypertension Medications in Children ²⁶

High Blood Pressure in Children and Adolescents

Table 5.
Recommended Dosages for Antihypertensive Agents

| <i>MEDICATION</i> | <i>INITIAL DAILY DOSAGE</i> | <i>MAXIMUM DAILY DOSAGE</i> | <i>DOSING FREQUENCY</i> |
|--|-----------------------------|-----------------------------|--------------------------|
| Angiotensin-converting enzyme inhibitors | | | |
| Benazepril (Lotensin), \geq six years of age | 0.2 mg per kg, up to 10 mg | 0.6 mg per kg or 40 mg | Once daily |
| Enalapril (Vasotec) | 0.08 mg per kg, up to 5 mg | 0.6 mg per kg or 40 mg | Once or twice daily |
| Fosinopril (Monopril), \geq six years of age and weighing $>$ 111 lb (50 kg) | 5 to 10 mg | 40 mg | Once daily |
| Lisinopril (Zestril), \geq six years of age | 0.07 mg per kg, up to 5 mg | 0.6 mg per kg or 40 mg | Once daily |
| Angiotensin II receptor blockers | | | |
| Losartan (Cozaar), \geq six years of age | 0.7 mg per kg, up to 50 mg | 1.4 mg per kg or 100 mg | Once daily |
| Valsartan (Diovan), \geq six years of age | 1.3 mg per kg, up to 40 mg | 2.7 mg per kg or 160 mg | Once daily |
| Beta blockers | | | |
| Metoprolol, extended release, \geq six years of age | 1 mg per kg, up to 50 mg | 2 mg per kg or 200 mg | Once daily |
| Propranolol | 1 to 2 mg per kg | 4 mg per kg or 640 mg | Two or three times daily |
| Vasodilator | | | |
| Hydralazine | 0.75 mg per kg | | |




| | | | |
|---|---|---|---------------------|
| | | 7.5 mg per kg or 200 mg | Four times daily |
| Minoxidil | 0.2 mg per kg, up to 5 mg (< 12 years of age), 5 mg (≥ 12 years of age) | 50 mg (< 12 years of age), 100 mg (≥ 12 years of age) | Once or twice daily |
| Other | | | |
| Calcium channel blocker: amlodipine (Norvasc), ≥ six years of age | 2.5 mg | 5 mg | Once daily |
| Central alpha agonist: clonidine (Catapres), 12 years of age | 0.2 mg | 2.4 mg | Twice daily |
| Diuretic: hydrochlorothiazide | 1 mg per kg | 3 mg per kg, up to 50 mg | Once daily |

NOTE: Other medications within these classes are considered safe but are not approved by the U.S. Food and Drug Administration for treating hypertension in children and adolescents.

Information from references 9, 10, and 29.

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Hyperlipidemia in Children



Treatment of Children with Dyslipidemia

- Lifestyle modification #1³⁷
- Long term use of statins in children unknown²⁰
- Data is limited, most information came from studies of children with familial hypercholesterolemia³⁷
- Medications should be initiated and managed by a Pediatric Lipid Specialist³⁷
- Unlike adults you don't use calculators to determine criteria: Based on lipid levels and CVD risk

Considerations for Treatment³⁷

- Age
- Severity of dyslipidemia
- Risk Factors
- Family preference



Treatment is RARE³⁷

- According to the National Heart, Lung, and Blood Institute those that meet criteria for treatment are:
 - 0.8% of children less than age 17
 - 2.5% of adolescents & young adults age 17-21



Children Age 10+ Years

- LDL >130 mg/dL (goal is <110 mg/dL or 100 mg/dL if high risk)
- Should be started on medications after failing 6 months of life style changes
- Based on risk (High Risk: DM, CRF, Kawasaki, Heart Transplant, CAD)



Children < 10 years of Age³⁷

- In general don't do it!
- Unless: VERY high risk, LDL >400 mg/dL, TG >500mg/dL





Hyperlipidemia Medications in Children³⁷

- Statins: Lovastatin, Simvastatin, Pravastatin, Rosuvastatin, Atorvastatin – use lowest dose
- Ezetimibe
- Bile Acid Sequestrants: not as effective as statin, but very safe because it isn't absorbed, but causes bloating and constipation
- Niacin: no proof that decrease CVD risk, but raises HDL
- Fish Oil: Can lower Triglycerides but can raise LDL
- Fibric Acid Derivatives: Raises HDL, Lowers triglycerides, but limited data, monotherapy only, used rarely, use when at increased risk for pancreatitis due to elevated triglycerides



Monitoring Labs in Children on Medications³⁷

- Pregnancy test before starting statin
- Every 4-6 weeks need: hepatic enzymes, fasting lipid, CK, preg
- If stable, then monitor every 6 months

OK, so this is what I do...

- I express genuine concern, and explain what being overweight means.
- I have them keep a food journal of everything they put in their mouth for one week. I have them return to discuss what they have eaten and I help them substitute the things they like with healthier options.
- Diet: Shop on perimeter of store, stay away from anything that comes through a window or in a bag or can, eat at home.
- Diet: I do not tell my patients to eat low fat, I want them to eat a diet high in healthy fats.
- Diet: I encourage the Paleo Diet. Read this book! *The Paleo Answer* by Loren Cordain & *Eat Fat Lose Weight* by Ann Louise Gittleman



More of what I do...

- Exercise: Do the things your enjoy. I show the patient in the room simple exercises
- Exercise is only 20% of losing weight, but is paramount to be fit.
- Some movement is better than none
- I schedule a follow up appointment to discuss more.
- I read up on the new fads so that I can give an educated opinion
- I refer to Oklahoma Healthy Aging Initiative – provides education and instruction for the elderly regarding diet and exercise. Locations: OKC, Tulsa, Enid, **Durant**, Lawton
- For 65 and below I do the teaching – Durant has very little resources – but search your community





Resources that I recommend to Patient

- WebMD food/exercise journal
- www.takebackyourtemple.com
- Various smart phone applications
- Various books:

The Quest for Wellness by Mark Sherwood, N.D. with Michele Neil-Sherwood, D.O.

Overeating Freedom from Food Fixation by June Hunt



WebMD[®] Food and Fitness Journal

Studies show (and successful losers have proven) that keeping track of what you eat and your activity level is **one** of the most powerful tools to help you shed unwanted pounds and keep them off for good.

Use this printable Food & Fitness Journal or check out the [personalized WebMD Food & Fitness Planner](#) to help keep you working toward your goals.

Date _____

MY FOOD JOURNAL

| Breakfast | SERVING | CALORIES |
|---------------------------------|---------|----------|
| _____ | | |
| _____ | | |
| _____ | | |
| | | SUBTOTAL |
| | | |
| Mid-Morning Snack | | |
| _____ | | |
| _____ | | |
| | | SUBTOTAL |
| | | |
| Lunch | | |
| _____ | | |
| _____ | | |
| _____ | | |
| | | SUBTOTAL |
| | | |
| Mid-Afternoon Snack | | |
| _____ | | |
| _____ | | |
| | | SUBTOTAL |
| | | |
| Dinner | | |
| _____ | | |
| _____ | | |
| _____ | | |
| | | SUBTOTAL |
| | | |
| Evening Snack | | |
| _____ | | |
| _____ | | |
| | | SUBTOTAL |
| | | |
| TOTAL CALORIES FROM FOOD | | |

MY FITNESS JOURNAL

| Activity | DURATION | CALORIES |
|------------------------------------|----------|----------|
| _____ | | |
| _____ | | |
| _____ | | |
| | | SUBTOTAL |
| | | |
| TOTAL CALORIES FROM FITNESS | | |

Summary

- Metabolic Syndrome is a big deal!
- The best prevention & treatment = Weight Loss
- Preventing Metabolic Syndrome from developing could also prevent diabetes, hypertension, stroke, myocardial infarction, cancer...




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Questions?

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