Metabolic Syndrome is a condition that represents a cluster of risk factors. People with Metabolic Syndrome are much more likely to develop chronic health conditions, including cardiovascular disease and diabetes. A diagnosis of Metabolic Syndrome is appropriate when any three of the following risk factors are present:\(^1\)

- Waist measurement > 35 inches in women and > 40 inches in men
- Elevated blood pressure or receiving treatment for hypertension
- Fasting blood glucose > 100 mg/dl or receiving treatment for diabetes
- Elevated triglycerides or receiving treatment for elevated triglycerides
- Low HDL-cholesterol or receiving treatment for low HDL-cholesterol

Obesity greatly increases the potential to develop Metabolic Syndrome.\(^1, 2\) Between 2013 and 2014, prevalence of obesity (BMI 30.0 kg/m\(^2\) – 39.9 kg/m\(^2\)) in people 20 years of age and older was 37.9%.\(^3\) That same year, the incidence of morbid obesity (BMI \(\geq\) 40 kg/m\(^2\)) was 7.7% in the same age category.\(^3\) In 2012 the United States Preventive Services Task Force (USPSTF) stated that two leading causes of preventable death were from ischemic heart disease and diabetes secondary to obesity.\(^4\) See also Clinical Practice Guidelines for Weight Management.\(^5\)

**Lifestyle Changes to Prevent the Development of Risk Factors for Metabolic Syndrome**

<table>
<thead>
<tr>
<th>Diet</th>
<th>Source Guideline</th>
</tr>
</thead>
</table>
| These dietary recommendations can improve some dyslipidemias in adults:  
- Eat vegetables, specifically those that are green and leafy  
- Choose whole grain cereal, bread, and rice  
- Reduce dairy fat intake  
- Select lean proteins, such as fish, boneless, skinless chicken or turkey, reduced-fat ground beef, eggs, legumes, and nuts  
- Use monounsaturated and polyunsaturated oils for cooking  
- Opt for unsweetened or whole fruits and no added-sugar alternatives instead of food w/added-sugar, such as colas, fruit juice, cakes, cookies, pies, candy and other snacks and sweets.  
- Personalize your caloric intake, adapted for cultural preferences and/or health conditions, as appropriate  
- Consider the DASH diet, the USDA Food Pattern, or the AHA diet  
- Limit alcohol consumption | 6/Page 12 Table 5 7 |
| These dietary recommendations can help achieve and maintain an optimal blood pressure in adults:  
- Follow the dietary recommendations for improvement of some dyslipidemias (above)  
- Reduce dietary sodium consumption to 2,400 mg/d or less  
  - Consider greater restraints for lower blood pressure targets  
  - Note that reducing sodium consumption by 1,000 mg/d has been proven to improve blood pressure readings  
  - Observe the nutritional facts panel when shopping and make selections based on those items w/the lower sodium content. | 6/Page 12 Table 5 7 |
Choose items labeled as low or reduced sodium or no-salt added
Opt for fresh or frozen vegetables over alternative packaging
At-home meal preparation is optimal for control and awareness of ingredients
- Consider a sodium restricted DASH diet
- Limit alcohol consumption

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Source Guideline</th>
</tr>
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| These physical activity recommendations can help improve some dyslipidemias and blood pressure in adults:
  - Reduce periods of inactivity throughout the day
  - Engage in aerobic activity, which should be carried out in no less than ten-minute sessions w/multiple sessions carried out every day/week.
    - Moderate intensity:
      - Should consist of no less than 150 minutes of activity/week
      - May be increased to 300 minutes of activity (or more)/week as tolerated
    - Vigorous intensity:
      - Should consist of no less than 75 minutes of activity/week
      - May be increased to 150 minutes of activity (or more)/week as tolerated
    - Intensity levels may be combined and should span over recommended time periods
  - Incorporate strength training as tolerated for added health benefits
  - Increasing physical activity beyond recommendations is appropriate (as tolerated) and can lead to achievement of added health benefits

Consider these additional points when starting a physical activity program:
- Develop an individualized exercise plan, considering the presence of chronic or debilitating physical illness, current fitness level and physical abilities
- Introduce physical activity gradually and increase in frequency and intensity as tolerated
- Considering a diverse array of physical activities tailored to individual tastes and preferences to increase the chance for successful implementation and maintenance
- Observe appropriate safety precautions to avoid injury, discouragement, and delay in achieving an exercise plan goals
### Metabolic Syndrome Source Guideline

1. U.S. Department of Health and Human Services, National Heart, Lung, and Blood Institute, What Is Metabolic Syndrome? 
   [http://www.nhlbi.nih.gov/health/health-topics/topics/ms](http://www.nhlbi.nih.gov/health/health-topics/topics/ms)


   [http://circ.ahajournals.org/content/129/25_suppl_2/S102](http://circ.ahajournals.org/content/129/25_suppl_2/S102)

   [http://circ.ahajournals.org/content/early/2013/11/11/cir.0000437740.48606.d1](http://circ.ahajournals.org/content/early/2013/11/11/cir.0000437740.48606.d1)

7. U.S. Department of Health and Human Services, National Heart, Lung, and Blood Institute, Heart-healthy eating. 
   [http://www.nhlbi.nih.gov/health/health-topics/topics/heart-healthy-lifestyle-changes/heart-healthy-eating](http://www.nhlbi.nih.gov/health/health-topics/topics/heart-healthy-lifestyle-changes/heart-healthy-eating)

8. U.S. Department of Health and Human Services, 2008 Physical Activity Guidelines for Americans, Be Active, Healthy, and Happy! 