



**2019 Clinical Practice Guideline**

**Metabolic Syndrome Guidelines**

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:<sup>1</sup>

- 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.<sup>1, 2</sup> Between 2013 and 2014, prevalence of obesity (BMI 30.0 kg/m<sup>2</sup> – 39.9 kg/m<sup>2</sup>) in people 20 years of age and older was 37.9 %.<sup>3</sup> That same year, the incidence of morbid obesity (BMI ≥ 40 kg/m<sup>2</sup>) was 7.7 % in the same age category.<sup>3</sup> 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.<sup>4</sup> See also Clinical Practice Guidelines for Weight Management.<sup>5</sup>

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

<b>Diet</b>	<b>Source Guideline</b>
<p>These dietary recommendations can improve some dyslipidemias in adults:</p> <ul style="list-style-type: none"> <li>• Eat vegetables, specifically those that are green and leafy</li> <li>• Choose whole grain cereal, bread, and rice</li> <li>• Reduce dairy fat intake</li> <li>• Select lean proteins, such as fish, boneless, skinless chicken or turkey, reduced-fat ground beef, eggs, legumes, and nuts</li> <li>• Use monounsaturated and polyunsaturated oils for cooking</li> <li>• 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.</li> <li>• Personalize your caloric intake, adapted for cultural preferences and/or health conditions, as appropriate</li> <li>• Consider the DASH diet, the USDA Food Pattern, or the AHA diet</li> <li>• Limit alcohol consumption</li> </ul>	<p>6/Page 12 Table 5 7</p>
<p>These dietary recommendations can help achieve and maintain an optimal blood pressure in adults:</p> <ul style="list-style-type: none"> <li>• Follow the dietary recommendations for improvement of some dyslipidemias (above)</li> <li>• Reduce dietary sodium consumption to 2,400 mg/d or less               <ul style="list-style-type: none"> <li>○ Consider greater restraints for lower blood pressure targets</li> <li>○ Note that reducing sodium consumption by 1,000 mg/d has been proven to improve blood pressure readings</li> <li>○ Observe the nutritional facts panel when shopping and make selections based on those items w/the lower sodium content.</li> </ul> </li> </ul>	<p>6/Page 12 Table 5 7</p>

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<ul style="list-style-type: none"> <li>○ Choose items labeled as low or reduced sodium or no-salt added</li> <li>○ Opt for fresh or frozen vegetables over alternative packaging</li> <li>○ At-home meal preparation is optimal for control and awareness of ingredients</li> <li>● Consider a sodium restricted DASH diet</li> <li>● Limit alcohol consumption</li> </ul>	
<b>Physical Activity</b>	
<p>These physical activity recommendations can help improve some dyslipidemias and blood pressure in adults:</p> <ul style="list-style-type: none"> <li>● Reduce periods of inactivity throughout the day <ul style="list-style-type: none"> <li>○ Engage in aerobic activity, which should be carried out in no less than ten-minute sessions w/multiple sessions carried out every day/week. <ul style="list-style-type: none"> <li>▪ Moderate intensity: <ul style="list-style-type: none"> <li>● Should consist of no less than 150 minutes of activity/week</li> <li>● May be increased to 300 minutes of activity (or more)/week as tolerated</li> </ul> </li> <li>▪ Vigorous intensity: <ul style="list-style-type: none"> <li>● Should consist of no less than 75 minutes of activity/week</li> <li>● May be increased to 150 minutes of activity (or more)/week as tolerated</li> </ul> </li> <li>▪ Intensity levels may be combined and should span over recommended time periods</li> </ul> </li> <li>○ Incorporate strength training as tolerated for added health benefits</li> <li>○ Increasing physical activity beyond recommendations is appropriate (as tolerated) and can lead to achievement of added health benefits</li> </ul> </li> </ul>	<p>6/Page 12 Table 5 8/Pages 21 - 34</p>
<p>Consider these additional points when starting a physical activity program:</p> <ul style="list-style-type: none"> <li>● Develop an individualized exercise plan, considering the presence of chronic or debilitating physical illness, current fitness level and physical abilities</li> <li>● Introduce physical activity gradually and increase in frequency and intensity as tolerated</li> <li>● Considering a diverse array of physical activities tailored to individual tastes and preferences to increase the chance for successful implementation and maintenance</li> <li>● Observe appropriate safety precautions to avoid injury, discouragement, and delay in achieving an exercise plan goals</li> </ul>	<p>8/Pages 29 - 38</p>

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### 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>
2. Ervin RB. Prevalence of metabolic syndrome among adults 20 years of age and over, by sex, age, race and ethnicity, and body mass index: United States, 2003–2006. National health statistics reports; no 13. Hyattsville, MD: National Center for Health Statistics. 2009. <https://www.cdc.gov/nchs/data/nhsr/nhsr013.pdf>
3. Cheryl D. Fryar, M.S.P.H., Margaret D. Carroll, M.S.P.H., and Cynthia L. Ogden, Ph.D., Division of Health and Nutrition Examination Surveys. National Center for Health Statistics, Health E-Stats, July, 2016; Prevalence of Overweight, Obesity, and Extreme Obesity Among Adults Aged 20 and Over: United States, 1960-1962 Through 2013-2014. [http://www.cdc.gov/nchs/data/hestat/obesity\\_adult\\_13\\_14/obesity\\_adult\\_13\\_14.pdf](http://www.cdc.gov/nchs/data/hestat/obesity_adult_13_14/obesity_adult_13_14.pdf)
4. U.S. Preventive Services Task Force, Weight Loss to Prevent Obesity-Related Morbidity and Mortality in Adults: Behavioral Interventions. Available at: <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/obesity-in-adults-interventions1>
5. Jensen MD, Ryan DH, Apovian CM, Ard JD, Comuzzie AG, Donato KA, Hu FB, Hubbard VS, Jakicic JM, Kushner RF, Loria C, Millen BE, Nonas CA, Pi-Sunyer FX, Stevens J, Stevens VJ, Wadden TA, Wolfe BM, Yanovski SZ. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Circulation*. 2013;00:000–000. [http://circ.ahajournals.org/content/129/25\\_suppl\\_2/S102](http://circ.ahajournals.org/content/129/25_suppl_2/S102)
6. Eckel RH, Jakicic JM, Ard JD, de Jesus JM, Houston Miller N, Hubbard VS, Lee I-M, Lichtenstein AH, Loria CM, Millen BE, Nonas CA, Sacks FM, Smith SC Jr, Svetkey LP, Wadden TA, Yanovski SZ. 2013 AHA/ACC guideline on lifestyle management to reduce cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2014;63:2960–84. <http://circ.ahajournals.org/content/early/2013/11/11/01.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>
8. U.S. Department of Health and Human Services, Physical Activity Guidelines for Americans, Be Active, Healthy, and Happy! Available at: [https://health.gov/paguidelines/second-edition/pdf/Physical\\_Activity\\_Guidelines\\_2nd\\_edition.pdf](https://health.gov/paguidelines/second-edition/pdf/Physical_Activity_Guidelines_2nd_edition.pdf)