

# ***ACC/AHA Guidelines on Lifestyle Management to Reduce Cardiovascular Risk***

**AHA Scientific Sessions  
Nov 20, 2013**

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# Lifestyle Workgroup Members

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# Charge of Lifestyle Workgroup

## Lifestyle Recommendations:



Evidence Review on Diet and Physical Activity (in the absence of weight loss) to be integrated with the recommendations of the Blood Cholesterol and High Blood Pressure Panels



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# Lifestyle Workgroup Critical Questions

**CQ1** Among adults, what is the effect of dietary patterns and/or macronutrient composition on CVD risk factors, when compared to no treatment or to other types of interventions?

**CQ2** Among adults, what is the effect of dietary intake of sodium and potassium on CVD risk factors and outcomes, when compared to no treatment or to other types of interventions?

**CQ3** Among adults, what is the effect of physical activity on blood pressure and lipids when compared to no treatment, or to other types of interventions?



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# Lifestyle Inclusion/Exclusion Criteria

- Searches included adults  $\geq 18$  years
- With and without CVD risk factors/CVD
- Normal, overweight, obese
- Excluded weight change  $\pm 3\%$
- Excluded cross-sectional studies
- Used systematic reviews/meta-analyses in some cases
- Sample sizes
  - $\geq 50$ –100 (risk factor assessments)
  - 500 (hard outcomes)
- Date range 1998-2009
  - Sodium extended to April 2012
  - Dietary fat and cholesterol accepted evidence back to 1990



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# Article Selection Process

	Screened	Sample Size Sufficient	Eligible	Reviewed
CQ1	6086	3768	1237	28
CQ2	1382	749	271	46
CQ3	867	NA	184	26



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# Lifestyle Topics: Dietary Patterns

- Mediterranean Diet
  - BP and Lipids
- DASH and DASH variations
  - BP and lipids, and in subpopulations
- High vs. Low Glycemic Diets
  - BP and Lipids



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# Mediterranean Diet and BP

Counseling to eat a Mediterranean-style dietary pattern compared to minimal advice to consume a low-fat dietary pattern, in free-living middle-aged or older adults (with type 2 DM or at least three CVD risk factors)

↓ BP by 6–7/2–3 mmHg

In an observational study of healthy younger adults, adherence to a Mediterranean-style dietary pattern was associated with

↓ BP 2–3/1–2 mmHg

**Strength of evidence: Low**



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# Mediterranean Diet and Lipids

Counseling to eat a Mediterranean-style dietary pattern compared to minimal or no dietary advice, in free-living middle aged or older adults (with or without CVD or at high risk for CVD) resulted in **no consistent effect on plasma LDL-C, HDL-C, and TG**; in part due to substantial differences and limitations in the studies.

**Strength of evidence: Low**



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# DASH (Dietary Approaches to Stop Hypertension)

- Two RCTs (6 citations) evaluating the DASH pattern met eligibility criteria.
- **DASH dietary pattern description**
  - higher in vegetables, fruits, and low-fat dairy products
  - higher in whole grains, poultry, fish and nuts
  - low in sweets, sugar-sweetened beverages, and red meats
  - low in saturated fat, total fat, and cholesterol
  - high in potassium, magnesium, calcium
  - rich in protein and fiber



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# DASH and BP

When all food was supplied to adults with blood pressure 120–159/80–95 mmHg and both body weight and sodium intake were kept stable, the DASH dietary pattern, when compared to a typical American diet of the 1990s,

↓ BP 5–6/3 mmHg



**Strength of evidence: High**



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# DASH Subpopulations, BP and Lipids

- In patients who would benefit from ↓ in BP and lipids, the DASH dietary pattern, when compared with the typical American diet of the 1990s, ↓ BP and ↓ LDL-C similarly in
  - women and men
  - African American and non-African Americans
  - older and younger adults
  - hypertensive and non-hypertensive adults

**Strength of evidence: High**



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# Glycemic Index/Load Dietary Approaches

- Three RCTs evaluating glycemic index met eligibility criteria.
- There is insufficient evidence to determine whether low-glycemic diets vs. high-glycemic diets affect lipids or BP for adults without DM.
- The evidence for this relationship in adults with DM was not reviewed.

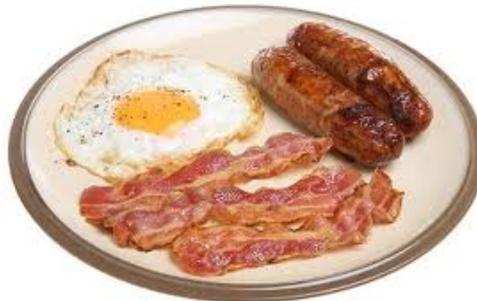


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# Dietary Fat and Cholesterol

- Three trials evaluating saturated, *trans* fat and dietary cholesterol.
- In addition a search was conducted for meta-analyses and systematic reviews from 1990 to 2009.
  - Four systematic reviews and meta-analyses met inclusion criteria.



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# Saturated Fat

Food supplied to adults in a dietary pattern that achieved a macronutrient composition of 5–6% saturated fat, 26–27% total fat, 15–18% protein, and 55–59% CHO compared to the control diet (14–15% saturated fat, 34–38% total fat, 13–15% protein, and 48–51% CHO)

↓ LDL-C 11–13 mg/dL in two studies

↓ LDL-C 11% in another study.

**Strength of evidence: High**

\* Note: Saturated fat was not an isolated change.



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# Trans Fat

In controlled feeding trials among adults, for every 1% of energy from *trans* MUFA replaced with 1% of energy from:

– MUFA or PUFA

- ↓ LDL-C by 1.5 and 2.0 mg/dL, respectively.

– SFA, MUFA, or PUFA

- ↑ HDL-C by 0.5, 0.4 and 0.5 mg/dL, respectively.

– MUFA or PUFA

- ↓ TG by 1.2 and 1.3 mg/dL.

**Strength of evidence: Moderate IIA**



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# Dietary Cholesterol

- There is insufficient evidence to determine whether lowering dietary cholesterol reduces LDL-C.



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# Sodium and BP: Overall Results

In adults aged 25–80 years with BP 120–159/80–95 mmHg, reducing sodium intake lowers BP.

*Strength of evidence: High*



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# Sodium and BP in Subpopulations

In adults with prehypertension or hypertension, reducing sodium intake lowers BP in women and men; African American and non-African American adults; and older and younger adults.

***Strength of evidence: High***

Reducing sodium intake lowers BP in adults with either prehypertension or hypertension when eating either the typical American diet or the DASH dietary pattern. The effect is greater in those with hypertension.

***Strength of evidence: High***



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# Sodium and CHD/CVD Outcomes

A ↓ in sodium intake of ~1,000 mg/day ↓ CVD events  
by ~30%.

**Strength: Low**

Higher dietary sodium intake is associated with a greater risk of fatal and nonfatal stroke and CVD.

**Strength: Low**

There is insufficient evidence to determine the association between sodium intake and the development of CHF.

There is insufficient evidence to assess the effect of ↓ dietary sodium intake on CVD outcomes in patients with existing CHF.



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# Physical Activity Guidelines

- The *2008 Physical Activity Guidelines Advisory Committee Report* was used as the starting point for evidence review.
- Additionally, a systematic search identified 8 meta-analyses from 2001 onwards and 5 systematic reviews rated fair to good that addressed this question and were included as the evidence base.



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# Effect of Physical Activity on Lipids

- Among adults, aerobic physical activity, as compared to control interventions,
  - ↓ LDL-C 3.0-6.0 mg/dL on average.
  - ↓ non-HDL-C 6.0 mg/dL on average.
  - has no consistent effect on HDL-C or TG.

***Strength of evidence – Moderate - IIA***



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# Effect of Resistance Training on Lipids

- Among adults, **resistance training**, as compared to control interventions that average 24 weeks in duration and include  $\geq 3$  days/week, 9 exercises performed for 3 sets and 11 repetitions at an average intensity of 70% of 1-maximal repetition
  - $\downarrow$  LDL-C, TG, and non-HDL-C by 6.0-9.0 mg/dL
  - No effect on HDL-C

**Strength of evidence – Moderate - IIA**



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# Now the Evidence-Based Guidelines



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# Diet Pattern Recommendations for LDL-C and BP Lowering

**Advise adults who would benefit from LDL-C  
or BP lowering to:**

- Consume a dietary pattern that emphasizes intake of vegetables, fruits, and whole grains; includes low-fat dairy products, poultry, fish, legumes, non-tropical vegetable oils and nuts; and limits intake of sweets, sugar-sweetened beverages and red meats.

***Strength of evidence: Strong IA***



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# Diet Pattern Recommendations for LDL-C and BP Lowering

**Advise adults who would benefit from LDL-C  
or BP lowering to:**

- Adapt this dietary pattern to appropriate calorie requirements, personal and cultural food preferences, and nutrition therapy for other medical conditions (including diabetes mellitus).
- Achieve this pattern by following plans such as the DASH dietary pattern, the USDA Food Pattern, or the AHA Diet.

***Strength of evidence: Strong IA***



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# Diet Pattern Recommendations for LDL-C Lowering

**Advise adults who would benefit from LDL-C lowering to:**

- Aim for a dietary pattern that achieves 5% to 6% of calories from saturated fat.
- Reduce percent of calories from saturated fat.
- Reduce percent of calories from *trans* fat.

***Strength of evidence: Strong IA***



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# Diet Recommendations for BP Lowering

**Advise adults who would benefit from LDL-C or BP lowering to:**

- Lower sodium intake.

***Strength of evidence – Strong I***

- Consume no more than 2,400 mg of sodium/day and that a further ↓ of sodium intake to 1,500 mg/day can result in even greater ↓ in BP.
  - Even without achieving these goals, ↓ sodium intake by at least 1,000 mg/ day ↓ BP. ***Strength - Moderate IIA***
- Combine the DASH dietary pattern with ↓ sodium intake.

***Strength of evidence – Strong I***



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# Physical Activity Guidelines: Lipids and BP

- In general, advise adults to engage in aerobic physical activity to ↓ LDL-C and non-HDL-C
  - 3 to 4 sessions a week
  - lasting on average 40 min per session
  - involving moderate-to-vigorous intensity physical activity.

***Strength of evidence – Moderate IIA***



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# What's New in Lifestyle?

- Recommendations based on in-depth systematic reviews
  - Previous reports used different methods and structure
  - More depth, less breadth
- **More emphasis on dietary patterns**
- **More data provided to support**
  - **saturated and *trans* fat restriction**
  - **dietary salt restriction**
- Evidence to support dietary cholesterol restriction in those who could benefit from ↓ LDL-C is inadequate.



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# Thank You!



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