NEW GUIDELINES FOR CHOLESTEROL MANAGEMENT:
WHAT HAS CHANGED?

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ACTIVITY DESCRIPTION
Cholesterol and triglycerides are the major lipids circulating in the human body. They are transported as complexes of lipids and proteins known as lipoproteins. The three major classes of lipoproteins are low-density lipoproteins (LDL), high-density lipoproteins (HDL), and very-low-density lipoproteins (VLDL). Hyperlipidemia is a group of disorders characterized by an excess of serum cholesterol, especially low-density lipoproteins and/or excess triglycerides. It is classified as either primary hyperlipidemia (genetic or familial) or secondary hyperlipidemia which can be caused by age, diabetes mellitus, hypothyroidism, Cushing’s syndrome, chronic kidney disease, or cholestatic disorders. Several drug classes have been linked to secondary hyperlipidemia, including; HIV protease inhibitors, atypical antipsychotics, corticosteroids, isotretinoin, beta-blockers, thiazide diuretics,azole antifungals, cyclosporine, tacrolimus and some types of oral contraceptives. Several studies have established a definitive association between elevated levels of LDL cholesterol and the risk of cardiovascular disease.

TARGET AUDIENCE
The target audience for this activity is pharmacists in hospital, community, and retail pharmacy settings.

LEARNING OBJECTIVES
After completing this activity, the pharmacist will be able to:

- Identify the 5 main differences between the 2013 AHA/ACC lipid guidelines and 2002 Adult Treatment Panel-III guidelines.
- Recognize the four patient population groups that would benefit from HMG CoA reductase inhibitor (statin) therapy based on the new ACC/AHA treatment guidelines.
- Recommend a statin therapy based on a patient’s risk level.

ACCREDITATION

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Cholesterol and triglycerides are the major lipids circulating in the human body. They are transported as complexes of lipids and proteins known as lipoproteins. The three major classes of lipoproteins are low-density lipoproteins (LDL), high-density lipoproteins (HDL), and very-low-density lipoproteins (VLDL). Hyperlipidemia is a group of disorders characterized by an excess of serum cholesterol, especially low-density lipoproteins and/or excess triglycerides. It is classified as either primary hyperlipidemia (genetic or familial) or secondary hyperlipidemia which can be caused by age, diabetes mellitus, hypothyroidism, Cushing's syndrome, chronic kidney disease, or cholestatic disorders. Several drug classes have been linked to secondary hyperlipidemia, including; HIV protease inhibitors, atypical antipsychotics, corticosteroids, isotretinoin, beta-blockers, thiazide diuretics, azole antifungals, cyclosporine, tacrolimus and some types of oral contraceptives. Several studies have established a definitive association between elevated levels of LDL cholesterol and the risk of cardiovascular disease.

In 1988, the National Heart, Lung, and Blood Institute (NHLBI) began publishing the National Cholesterol Education Program - Adult Treatment Panel (NCEP-ATP) guidelines for hyperlipidemia management. Since its inception ATP-I has been updated once in 1993 (ATP-II) and again in 2002 (ATP-III). However, in 2011 in response to the report from the Institute of Medicine on the development of trustworthy clinical guidelines, the NHLBI Advisory Council recommended that the NHLBI focus specifically on reviewing the highest-quality evidence and partner with other organizations. Accordingly, in June 2013 the NHLBI initiated collaboration with the American College of Cardiology (ACC) and the American Heart Association (AHA) to complete and publish these guidelines.

The 2013 AHA/ACC lipid guidelines provide a new approach to the treatment of hyperlipidemia, which deviates from the ATP-III guidelines in a number of ways. The purpose of this article is to highlight the key differences between the current and previous guidelines. These differences include treatment population, goals of therapy, selection of lipid lowering medications, a new risk calculator and safety and monitoring of regimen.
Identification of Treatment Population

The first difference is the patient population that is likely to benefit from statin therapy. The 2013 AHA/ACC lipid guidelines identify four groups whom are likely to benefit from statin therapy. These 4 patient groups include the following (see Table 1):

- History of arteriosclerotic cardiovascular disease (ASCVD)
- LDL-cholesterol > 190 mg/dl
- Between 40 and 75 years of age with a history of diabetes
- Between 40 and 75 years of age and a 10-year ASCVD Risk > 7.5%

Therapeutic Goals

The second key difference is the goals of hyperlipidemia therapy (Table 2). In previous guidelines, therapy was targeted towards a specific LDL and non-HDL goal based on the presence of comorbidities. However, the advisory panel for AHA/ACC recommended that the goal of therapy should be cardiovascular event reduction. The best way to accomplish this is for patients identified as statin eligible, as stated above, to be on the maximum tolerated statin intensity regardless of their LDL level. The guidelines discuss specifically using high and moderate intensity statins to accomplish this goal. More information about statin intensity will be provided later in the article.

Selection of Lipid-lowering medications

In the ATP-III guidelines, selection of the lipid lowering agent depended on several factors. The first consideration was the patient’s lipoprotein profile and whether there were additional lipid abnormalities beyond an elevated LDL. Second, the magnitude of change needed to reach the goal of therapy was considered. Finally, concomitant drug therapies that may increase the risk of side effects and/or the presence of other medical disorders that may influence drug metabolism were considered. Statins are usually the drug of choice due their effectiveness in lowering LDL and tolerability by most patients. However, the ATP-III guidelines gave prescribers the option to initiate patients on alternative lipid-lowering agents first (Table
3) and if the patient did not have an adequate response to then change therapy to a statin or use the statin in combination with a non-statin to achieve target LDL goals.

On the other hand, the new ACC/AHA guidelines focus on optimizing statin based therapy for cardiovascular event risk reduction. The new guidelines classify statins based on their lipid lowering intensity (Table 4). Patients receive either moderate- or high-dose statin therapy depending on which of one of the four “statin benefit groups” they fit into. High-intensity options lower the LDL by approximately 50% and include; 20 or 40 mg of rosuvastatin daily or 40 or 80 mg of atorvastatin daily. Patients who should receive a high-intensity statin including the following; patients with clinical ASCVD, LDL >190, and patients with diabetes AND estimated 10-year ASCVD risk ≥7.5%. In general it is recommended that patient start on the highest dose and titrate down if they develop adverse events. According to the new guidelines, moderate-intensity therapy is acceptable for patients who are 40 - 75 years of age with diabetes AND have an estimated 10-year ASCVD risk <7.5%, patients with an LDL of 70 mg/dL - 189 mg/dL, patients who have no evidence of clinical ASCVD, and patients with a 10-year risk of ASCVD that is less than 7.5% or patients who are 75 years of age or older with ASCVD.

Another major change in the new hyperlipidemia guideline is the downgrading of treatment options other than statins. Per the ACC/AHA expert panel, “Non-statin therapies do not provide acceptable ASCVD risk reduction benefits compared to their potential for adverse effects in the routine prevention of ASCVD”. This recommendation is anticipated to eventually lead to a reduction in the number of prescriptions for ezetimibe, ezetimibe-containing products, bile acid sequestrants, fibrates, niacin, niacin-containing products and omega-3 fatty acids.

**New Risk Calculator**

The ACC/AHA guidelines now utilize a pooled cohort risk assessment instead of the Framingham Risk Calculator, to estimate 10-year and lifetime risks for a patient to develop ASCVD, defined as coronary death or nonfatal myocardial infarction, or fatal or nonfatal stroke. The information required to estimate ASCVD risk includes age, sex, race, total cholesterol, HDL cholesterol, systolic blood pressure, blood pressure lowering medication use, diabetes status,
and smoking status. This tool is available through www.my.americanheart.org either as a mobile application or a web-based calculator.\textsuperscript{6}

As a result of new recommendations in the 2013 ACC/AHA hyperlipidemia guidelines, the number of adults receiving statin therapy in the United States is expected to increase from 43.2 million to 56.0 million. Most of this increase (10.4 million of 12.8 million) would occur among adults without a history of cardiovascular disease. Among adults between the ages of 60 and 75 years without cardiovascular disease who are not receiving statin therapy, the percentage of those who would be eligible for such treatment would increase from 30.4\% to 87.4\% among men and from 21.2\% to 53.6\% among women.\textsuperscript{7,8}

\textbf{Statin Safety & Monitoring}

Another difference between the guidelines is the recommendations for monitoring statin therapy. Both guidelines agree that the following items should be assessed regularly; adherence to medication and lifestyle modifications, therapeutic response to statin therapy, and safety. Refer to Table 5 for a comparison of recommended monitoring.

\textbf{Liver function tests:}

The 2013 ACC/AHA guidelines recommend against routine monitoring of liver function tests (LFTs) but recommend that baseline LFTs be obtained in all patients prior to statin therapy initiation. The guidelines state that based on recent randomized clinical trials the incidence of transaminitis in individuals on high-dose statin therapy is less than 1.5\% over 5 years. Elevation in LFTs associated with low- or moderate-intensity statin therapy occurred at rates similar to those seen with placebo or no statin treatment controls.

\textbf{Creatinine Kinase:}

The 2013 ACC/AHA guidelines recommend against routine CK monitoring. In contrast to the ATP-III guidelines, which recommend evaluation of CK levels prior to therapy initiation and again if a patient presents with symptoms of muscle pain, the new guidelines recommend evaluating CK initially only if the patient is at high risk for developing adverse muscle events.
These include patients with personal or family history of statin intolerance or muscle disease, have clinical signs and symptoms of muscle disease, or are on concomitant drug therapy that might increase the risk for myopathy. Some examples of medications which can increase the risk for myopathy include fibrates such as gemfibrozil and niacin. The guidelines provided an algorithm to avoid unnecessary discontinuation of statin therapy due to muscle pain complaints (Figure 1).  

**Diabetes:**

There is moderate evidence that patients on statin therapy are at risk of developing new onset of diabetes mellitus (Number needed to harm [NNH] = 100 in primary prevention and 500-1000 in secondary prevention). The new guidelines recommend that patients who develop diabetes while on statin therapy should adhere to a heart healthy diet, engage in physical activity, achieve and maintain a healthy body weight, cease tobacco and to continue statin therapy.

**Triglycerides (TG)**

The AHA/ACC could not find evidence that starting triglyceride-lowering medication therapy for TG levels of 500-1000 mg/dL lowered the risk of hyperlipidemic pancreatitis. The guidelines recommend evaluating and addressing secondary causes of elevated TG levels and as first line implementing diet and lifestyle modifications for these patients rather than starting them on triglyceride lowering medication. The AHA/ACC guidelines now recommend that therapies targeted at TG be initiated when the value is > 1000 mg/dl. Table 6 compares the triglyceride management recommendations for each of the guidelines.

**Summary**

In conclusion, the new 2013 ACC/AHA hyperlipidemia guidelines have made several key changes in the recommendations for treating hyperlipidemia. It is now recommended that a cardiovascular risk calculator be used as an initial assessment to determine whether the patient
is a candidate for statin therapy. Four groups were found by the supporting literature to benefit the most from statin therapy. Once a patient is a candidate for statin therapy, it is no longer recommended to titrate therapy to a specific LDL goal. On the contrary he/she should be on the maximum tolerable statin intensity to ensure maximum cardiovascular risk reduction. It is no longer recommended to utilize other non-statin therapy as a monotherapy or concurrently with statins due to lack of supporting evidence. Even though the new guidelines were made based on the currently available supporting evidences, more studies are needed to further evaluate the effectiveness of these new guidelines.

**Sidebar: Determining Statin Intensity**

Mrs. Smith is a 70 year old white woman with hypertension, who presents in your Pharmacotherapy Clinic. She takes the following medications: Aspirin 81 mg PO daily, Lisinopril 20 mg PO daily and hydrochlorothiazide 25 mg PO daily. She denies use of tobacco products. You also have the following information available from her clinic visit. Her systolic blood pressure in clinic today is 120 mmHg. Her last cholesterol panel was check approximately 3 months ago and indicates a total cholesterol of 180 mg/dl and an HDL of 43 mg/dl. She tells you she has never taken medication for high cholesterol. What is her risk status (http://my.americanheart.org/professional/StatementsGuidelines/Prevention-Guidelines_UCM_457698_SubHomePage.jsp)

a. 3.5  
b. 5.4  
c. 7.6  
d. 11.3
If you were able to navigate successfully to the web page and download the risk calculator spreadsheet, you found that her risk status was 11.3. Clearly Mrs. Smith requires treatment. Which of the following would be the best choice of medication therapy to initiate?

a. Atorvastatin 40 mg because she has an indication for moderate to high-intensity statin therapy
b. Pravastatin 20 mg because she doesn’t have any risk factors
c. Fluvastatin 20 mg because she’s at low risk
d. Pitavastatin 1 mg because it’s the cheapest

Having read the case carefully you would know that “a” is the correct response because has an LDL between 70 mg/dl and 189 mg/dl with no diabetes and a 10-year ASCVD risk ≥ 7.5% and should be treated with moderate to high-intensity statin therapy. She agrees to start therapy, however 8 weeks later she presents back in your clinic/store and states “I want my money back. I hurt all OVER and this medicine is the only new thing I’ve done. This is awful stuff.” What is your correct course of action and why?

a. Give her back her money because she’s clearly discontented with her therapy
b. Hold the medication and restart at a lower dose when symptoms have resolved
c. Stop the drug and tell her to limit fried foods
d. Tell her to try acetaminophen for the muscle aches because she must continue therapy

The correct answer is B. The patient is complaining of mild to moderate symptoms that have developed during statin therapy. Based on the muscle weakness algorithm it would be appropriate to discontinue the medication at this time, monitor for resolution of symptoms, and restart the medication at a lower dose.
Table 1: Patient populations likely to benefit from statin therapy

<table>
<thead>
<tr>
<th>ATP-III&lt;sup&gt;1&lt;/sup&gt;</th>
<th>2013 AHA/ACC&lt;sup&gt;4&lt;/sup&gt;</th>
</tr>
</thead>
</table>
| • Coronary heart Disease patients (CDH)  
  o Acute Coronary Syndrome  
  o Myocardial Infarction  
  o Stable or unstable angina  
  o Revascularization procedures  
  ▪ Coronary angiography  
  ▪ Coronary artery surgery  
  o Other atherosclerotic diseases  
  ▪ Peripheral vascular Disease  
  ▪ Abdominal aortic aneurysm  
  ▪ Carotid artery disease  | • Clinical Atherosclerotic Cardiovascular Disease (ASCVD)  
  o Acute Coronary Syndrome  
  o Myocardial Infarction  
  o Stable or Unstable Angina  
  o Revascularization Procedures  
  o Stroke or Transient Ischemic Attack  
  o Peripheral Arterial Disease Atherosclerotic in Origin |
| • CHD risk equivalent  
  o Diabetes mellitus (type I or II)  
  o 2+ risk factors  
  ▪ Cigarette smoking  
  ▪ Hypertension (BP ≥140/90 mmHg or on antihypertensive medication)  
  ▪ Low HDL cholesterol (<40 mg/dL)  
  ▪ Family history of premature CHD (CHD in male first-degree relative <55 years; CHD in female first-degree relative <65 years)  | • LDL > 190 mg/dL  
 • Diabetes mellitus (type I or II) AND Age 40-75 years  
 • 10-year ASCVD Risk > 7.5% AND Age 40-75 years  
 | • 20% Calculated 10 year CHD Risk |
Table 2: Goals of hyperlipidemia therapy

<table>
<thead>
<tr>
<th>ATP-III¹</th>
<th>2013 AHA/ACC⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment LDL goals based on lipid serum levels and risk stratification</td>
<td>• Cardiovascular events risk reduction</td>
</tr>
<tr>
<td>• CHD and CHD Risk Equivalent &lt;100 mg/dL</td>
<td>• Treating to a target LDL goal is not recommended</td>
</tr>
<tr>
<td>• Framingham 10 year risk &gt;20% &lt;100 mg/dL</td>
<td>• Use maximum tolerated statin intensive therapy</td>
</tr>
<tr>
<td>• Multiple (2+) Risk Factors&lt;130 mg/dL</td>
<td></td>
</tr>
<tr>
<td>• 0–1 Risk Factor &lt;160 mg/dL</td>
<td></td>
</tr>
</tbody>
</table>

¹ Heavy smoker, uncontrolled hypertension, strong family history of premature CHD, or very low HDL cholesterol

Table 3: Recommended lipid-lowering agents

<table>
<thead>
<tr>
<th>ATP-III¹</th>
<th>2013 AHA/ACC⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td>• HMG CoA reductase inhibitors (statins)</td>
<td>• HMG CoA reductase inhibitors (statins)</td>
</tr>
<tr>
<td>o Atorvastatin, fluvastatin, lovastatin, pitavastatin, pravastatin &amp; simvastatin</td>
<td>o Atorvastatin, fluvastatin, lovastatin, pitavastatin, pravastatin &amp; simvastatin</td>
</tr>
<tr>
<td>• Bile acid sequestrants</td>
<td>• Adjunct therapy (statin + nonstatin) is not recommended due to lack of supporting evidence</td>
</tr>
<tr>
<td>o Cholestyramine, colestipol &amp; colesvelam</td>
<td></td>
</tr>
<tr>
<td>• Nicotinic acid derivatives</td>
<td></td>
</tr>
<tr>
<td>o Niacin extended release</td>
<td></td>
</tr>
<tr>
<td>• Fibric acid derivatives (fibrates)</td>
<td></td>
</tr>
<tr>
<td>o Gemfibrozil, fenofibrate</td>
<td></td>
</tr>
<tr>
<td>• Antilipemic Agent</td>
<td></td>
</tr>
<tr>
<td>o Ezetimibe</td>
<td></td>
</tr>
<tr>
<td>• Omega-3 fatty acids</td>
<td></td>
</tr>
</tbody>
</table>
Table 4: AHA/ACC statin classification\textsuperscript{5}

<table>
<thead>
<tr>
<th>High-Intensity Statin Therapy</th>
<th>Moderate-Intensity Statin Therapy</th>
<th>Low-Intensity Statin Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily dose lowers LDL by approximately ≥50%</td>
<td>Daily dose lowers LDL by approximately 30% to &lt;50%</td>
<td>Daily dose lowers LDL by &lt;30%</td>
</tr>
<tr>
<td><strong>Atorvastatin (40)–80 mg QD</strong></td>
<td><strong>Atorvastatin 10 (20) mg QD</strong></td>
<td><strong>Simvastatin 10 mg QD</strong></td>
</tr>
<tr>
<td><strong>Rosuvastatin 20 (40) mg QD</strong></td>
<td><strong>Rosuvastatin (5) 10 mg QD</strong></td>
<td><strong>Pravastatin 10–20 mg QD</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Simvastatin 20–40 mg QD</strong></td>
<td><strong>Lovastatin 20 mg</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Pravastatin 40 (80) mg QD</strong></td>
<td><strong>Fluvastatin 20–40 mg BID</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Lovastatin 40 mg QD</strong></td>
<td><strong>Pitavastatin 1 mg QD</strong></td>
</tr>
<tr>
<td></td>
<td><em>Fluvastatin XL 80 mg QD</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Fluvastatin 40 mg BID</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Pitavastatin 2–4 mg QD</em></td>
<td></td>
</tr>
</tbody>
</table>

Bold = evaluated in RCTs and demonstrated a reduction in major cardiovascular events.
Italics = approved by the U.S. FDA but not tested in RCTs
Individual responses to statins might vary in clinical practice.
BID: Twice daily; QD: once daily

Table 5: Statin monitoring

<table>
<thead>
<tr>
<th>ATP-III\textsuperscript{1}</th>
<th>2013 AHA/ACC\textsuperscript{5}</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fasting Lipid panel</strong></td>
<td>Evaluate initially, approximately 4-12 weeks after starting, then annually or more frequently if indicated.</td>
</tr>
<tr>
<td></td>
<td>Evaluate initially, approximately 4-12 weeks after starting, then annually or more frequently if indicated.</td>
</tr>
<tr>
<td><strong>Liver function test (AST &amp; ALT)</strong></td>
<td>Evaluate initially, approximately 12 weeks after starting, then annually or more frequently if indicated.</td>
</tr>
<tr>
<td></td>
<td>Evaluate initially, and then only if patient is developing symptoms suggesting hepatotoxicity.</td>
</tr>
<tr>
<td><strong>Muscle soreness, tenderness or pain</strong></td>
<td>• Evaluate muscle symptoms and CK initially.</td>
</tr>
<tr>
<td><strong>Creatinine Kinase (CK)</strong></td>
<td>• Evaluate muscle symptoms at each follow-up visit.</td>
</tr>
<tr>
<td></td>
<td>• Obtain a CK when persons have muscle soreness, tenderness, or pain.</td>
</tr>
<tr>
<td></td>
<td>• Evaluate CK initially if patient believed to be at increased risk for adverse muscle events.</td>
</tr>
<tr>
<td></td>
<td>• CK should not be routinely measured in individuals receiving statin therapy.</td>
</tr>
<tr>
<td></td>
<td>• If patient present with muscle weakness follow the algorithm (Figure 1).</td>
</tr>
</tbody>
</table>
### Table 6: Triglyceride management

<table>
<thead>
<tr>
<th>ATP-III</th>
<th>2013 AHA/ACC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Borderline High Triglycerides (150–199 mg/dL):</strong></td>
<td><strong>Borderline High Triglycerides (150–999 mg/dL):</strong></td>
</tr>
<tr>
<td>- Implement diet and lifestyle modifications</td>
<td>- Implement diet and lifestyle modifications</td>
</tr>
<tr>
<td>- Body weight control</td>
<td>- Body weight control</td>
</tr>
<tr>
<td>- Regular physical activity</td>
<td>- Regular physical activity</td>
</tr>
<tr>
<td>- Smoking cessation</td>
<td>- Smoking cessation</td>
</tr>
<tr>
<td>- Restriction of alcohol use</td>
<td>- Restriction of alcohol use</td>
</tr>
<tr>
<td>- Avoid high carbohydrate intakes (&gt;60% of calories)</td>
<td>- Avoid high carbohydrate intakes (&gt;60% of calories)</td>
</tr>
<tr>
<td><strong>High Triglycerides (200–499 mg/dL):</strong></td>
<td><strong>Very High Triglycerides (≥500 mg/dL):</strong></td>
</tr>
<tr>
<td>- First line: Implement diet and lifestyle modifications</td>
<td>- First line: Triglyceride-lowering drugs (fibrate or nicotinic acid)</td>
</tr>
<tr>
<td>- Second line: Use Statin/Niacin/Fibrates</td>
<td>- Second line: Implement diet and lifestyle modifications</td>
</tr>
<tr>
<td><strong>Very High Triglycerides (≥500 mg/dL):</strong></td>
<td><strong>Very High Triglycerides (≥1000 mg/dL):</strong></td>
</tr>
<tr>
<td>- First line: Triglyceride-lowering drugs (fibrate or nicotinic acid) in addition to statin</td>
<td>- Add Triglyceride-lowering drugs (fibrate or nicotinic acid) in addition to statin</td>
</tr>
<tr>
<td>- Second line: Implement diet and lifestyle modifications</td>
<td>- Implement diet and lifestyle modifications</td>
</tr>
</tbody>
</table>
Figure 1: Muscle weakness algorithm

Obtain history of prior or current muscle symptoms to establish a baseline before initiating statin therapy

Unexplained severe muscle symptom or fatigue develop during statin therapy
- Discontinue Statin
  - Evaluate creatine kinase (CK), serum creatinine & myoglobinuria
  - If muscle symptoms resolve and if no other contraindications exists
    - Establish a casual relationship between the statin and muscle symptom: Give patient a the original or lower dose of the same statin
      - Casual relationship exists
        - Discontinue statin until symptoms resolve
      - No relationship between statin and muscle symptoms exists
        - Use a low dose of a different statin and gradually increase dose as tolerated
    - No relationship between statin and muscle symptoms exists
      - Resume statin original dose

Mild-moderate muscle symptoms develop during statin therapy
- Discontinue Statin
  - Evaluate patient for other conditions (hypothyroidism, reduced renal or hepatic function, rheumatologic disorders, steroid myopathy, vitamin D deficiency or primary muscle diseases)
  - If after 2 months without statin treatment, muscle symptoms or elevated CK levels did not resolve completely, consider other causes of muscle disease listed above

No relationship between statin and muscle symptoms exists
References:


ACTIVITY TEST

1. Which of the following statements is true regarding the recommendations in the 2013 ACC/AHA guidelines?
   A. An LDL of 70 should be the goal for all patients who are candidates for statin therapy
   B. A multi-drug approach should be used as often as possible for patients with hyperlipidemia
   C. Once the LDL target is reached, the clinician should then focus on increasing the patient’s HDL
   D. The pooled cohort risk assessment should be used to determine risk for ASCVD

2. Which of the following patients has an indication for a statin use based on 2013 ACC/AHA guidelines?
   A. 50 year old female with an LDL of 160
   B. 45 year old male with ASCVD Risk = 4.3%
   C. 40 year old male with ASCVD Risk = 7.5%
   D. 20 years old female with diabetes

3. A 47 year old woman was diagnosed with diabetes. She had no other significant past medical history. Based on the 2013 ACC/AHA guidelines, if indicated, what dose of atorvastatin should be initiated?
   A. Atorvastatin 10 mg daily
   B. Atorvastatin 20 mg daily
   C. Atorvastatin 40 mg daily
   D. She should not be on a statin

4. Patient MB will be started on a rosuvastatin 20 mg daily. Based on 2013 ACC/AHA guidelines, the patients’ liver function tests should be checked
   A. Initially and then every 3 month
   B. Initially and then every 12 month
   C. Initially and only when liver dysfunction suspected
   D. Every 6 weeks from starting the regimen

5. Which medication should NOT be used with a stain as it increases the risk of myopathy?
   A. Oral contraceptives
   B. Corticosteroids
   C. Gemfibrozil
   D. Metformin
6. A 56 year old man is currently receiving atorvastatin 40 mg daily. He presents to the pharmacy complaining of muscle pain and would like to discontinue atorvastatin and use an alternative medication. Based on 2013 ACC/AHA guidelines, which of the following is the correct approach to manage his muscle pain?
   A. Switch atorvastatin to ezetimibe
   B. Hold atorvastatin until symptom resolve and continue at a 20 mg dose
   C. Don’t hold atorvastatin just decrease atorvastatin to 20 mg
   D. Stop atorvastatin completely

7. Which of the following statements correctly identifies a difference between the 2013 AHA/ACC lipid guidelines and 2002 Adult Treatment Panel-III guidelines?
   A. The 2013 guidelines recommend specific LDL targets, whereas the 2002 guidelines recommend treating with the maximum tolerated intensity statin
   B. The 2013 guidelines recommend treating with the maximum tolerated intensity statin, whereas the 2002 guidelines recommend treating to specific LDL targets
   C. The 2013 guidelines recommend using the Framingham Risk Assessment tool, whereas the 2002 guidelines recommend using the CAGE criteria to determine risk
   D. The 2013 guidelines recommend using the CAGE criteria to determine risk, whereas the 2002 guidelines recommend using the Framingham risk Assessment tool

8. Based on the 2013 ACC/AHA guidelines, patients should receive fibrates or niacin when their triglyceride level is ____?
   A. 150-199 mg/dL
   B. 200-499 mg/dL
   C. 500-999 mg/dL
   D. >1000 mg/dL

9. A patient with a triglyceride level of 550 mg/dL should receive which of the following therapies based on the 2013 ACC/AHA guidelines as a first line intervention?
   A. Niaspan ER
   B. Lifestyle modification
   C. HMG CoA reductase inhibitors
   D. Fibrates

10. A 43 year old man recently suffered a myocardial infarction (clinical ASCVD) and his primary care practitioner prescribed rosuvastatin 10 mg daily. Based on 2013 ACC/AHA guidelines the correct rosuvastatin dose should be which of the following?
    A. Rosuvastatin 10 mg daily
    B. Rosuvastatin 20 mg daily
    C. Rosuvastatin 40 mg daily
    D. Patient does not need rosuvastatin

Please submit your final responses on freeCE.com. Thank you.