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Choking vs. CPR: Correlation to Code Status

By Mary Burkart, RN

The 2010 American Heart Association guidelines indicate chest compressions & rescue breathing are given to a choking victim when that person becomes unresponsive. How do these guidelines correspond with a resident's selected code status?

Choking & sudden cardiac arrest are two very different events with VERY different causes! It's important to determine the cause of the unresponsiveness.

Choking indicates a foreign body is in the airway leading to coughing, gasping, the universal choking sign (hands around the neck), inability to speak and a panicked expression. The person starts off conscious & very aware of what's happening. If abdominal thrusts (AKA 'the Heimlich Maneuver') are ineffective, the person will collapse and become unresponsive. It's at this stage that chest compressions start. The pressure provided by chest compressions is the same as during abdominal thrusts. The purpose continues to be dislodging the foreign body. Sometimes the very act of becoming unresponsive relaxes the throat muscles enough the foreign body can easily be seen & removed.

Activate emergency services now! Anyone who has been unresponsive during a choking episode should be seen by a physician.

The heart usually continues to beat when the choking victim becomes unresponsive, at least for a while. Performing chest compressions until emergency assistance arrives gives the victim a chance to regain consciousness, the foreign body be dislodged, etc. Once at the hospital, special instruments can be used to help dislodge the foreign body.

A sudden cardiac arrest is just that; the heart itself stops beating normally. The most common arrhythmia is ventricular fibrillation, where the heart quivers instead of beats. The victim is pulseless & is not breathing or is not breathing normally.

A 'Do Not Resuscitate' (DNR) order comes into play in this event. If the person has chosen a DNR-Comfort Care (DNR-CC) or DNR Comfort Care Arrest (DNR-CCA), nothing extraordinary or invasive will be done.

If the person has chosen to be a 'Full Code', chest compressions, rescue breathing, & notification of emergency services commence.

Chest compressions provided to a cardiac arrest victim are a way to keep blood circulating and to buy time until more advanced care can be provided by the squad/emergency department.

When performing chest compressions, it's important to remember our objective. Is it a respiratory issue or a cardiac issue? What was occurring immediately before the incident? What is the victim doing? Are there any witnesses?

While the actual technique for performing chest compressions is the same for both choking and cardiac arrest, it's

the sequence of events and desired outcome that determine what we do. DNR status does not mean we do not treat a choking episode as a medical emergency!

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Guidelines For The Treatment Of High Blood Cholesterol

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In 2013, the American College of Cardiology and American Heart Association (ACC/AHA) published updated guidelines for the treatment of high blood cholesterol, replacing the previous guidelines, the third report of the Adult Treatment Panel III (ATP III). The new guidelines brought about a paradigm shift in treating high cholesterol based on evidence from randomized controlled trials, meta-analyses, and observational studies. This article will briefly review the current cholesterol guidelines focusing on how they differ from the previous guidelines and the main points that health care providers should take away from them.

The biggest and most apparent change in the guidelines was the elimination of the recommendation to treat high cholesterol to specific goal LDL (bad cholesterol) levels. This practice was replaced with recommendations focused on reducing the risk of cardiovascular events such as heart attack and stroke. Previously, it was thought that treating blood cholesterol to a specific goal number was associated with cardiac benefit. For example, ATP III recommended that physicians treat patients to an LDL goal of less than 100 mg/dL or 70 mg/dL for the prevention of cardiovascular events. Because of this practice, it was not uncommon for physicians to use several different classes of cholesterol-lowering medications (such as niacin, bile acid sequestrants, fibrates, etc.) on top of statins to try to achieve a patient's goal LDL, exposing them to increased risk of side effects. The new ACC/AHA guidelines did not find any evidence in their review of literature to reinforce this practice. They found that reduced cardiovascular risk was associated with specific doses of statins (moderate or high intensity), rather than treating to a specific LDL goal number; this suggests that statins may have additional benefits outside of their ability to reduce LDL cholesterol. Statins inhibit HMG-CoA reductase, an enzyme involved in the production of blood cholesterol. The new guidelines define moderate intensity statin therapy as a statin that will potentially lower LDL cholesterol by 30-50% from baseline and high intensity statin therapy as a statin that will potentially lower LDL cholesterol by 50% or more from baseline. Accordingly, the new guidelines no longer recommend non-statin cholesterol lowering therapy, because there was no evidence of cardiovascular risk reduction in treating simply to lower LDL cholesterol numbers.

The new guidelines also outline four major groups of patients that will most likely benefit from statin therapy. These groups include:

- Patients with clinical atherosclerotic cardiovascular disease (ASCVD, defined as heart attack, stroke, peripheral vascular disease, or any other disease assumed to be related to atherosclerosis)
- Patients with an LDL > 190 mg/dL
- Patients with diabetes, age 40-75, with an LDL of 70-189 mg/dL, and without ASCVD
- Patients without ASCVD or diabetes with an LDL of 70-189 mg/dL and an estimated 10 year cardiovascular risk of >7.5%

For patients in group one who already have clinical ASCVD, high intensity statin therapy is recommended. Patients with an LDL level >190 mg/dL are also recommended to have high intensity statin therapy. Deciding which statin intensity to use in the last two benefit groups can be determined by the patient's 10-year cardiovascular risk. An ASCVD risk estimator was developed to determine a patient's 10-year risk of having a cardiovascular event and can be found online or as a free mobile app (<https://goo.gl/qGrypD>). The risk estimator takes into account the patient's sex, age, race, total cholesterol, HDL cholesterol, systolic blood pressure, the presence of diabetes, whether or not the patient is treated for hypertension, and if he/she is a smoker. For patients falling into the diabetes benefit group, it is recommended to use a moderate intensity statin unless that patient's 10-year cardiovascular risk is greater than 7.5%, in which case a high intensity statin is recommended. For patients falling into the fourth benefit group, a moderate or high intensity statin may be used depending on physician and patient judgment.

The guidelines also make special mention of considerations for patients over the age of 75, as they are at higher risk for developing side effects due to statin therapy. Statin drugs have a fairly common side effect of muscle aches and pains, known as myopathy. Myopathy is even more evident in the elderly population. This side effect, coupled with patient specific factors such as comorbid diseases and taking multiple medications can contribute to decreased quality of life and falls in the elderly. The guidelines do state that in patients over the age of 75 already receiving high intensity statin therapy, it is potentially appropriate to continue therapy, as long as the patient is tolerating a high intensity statin without significant side effects. For patients over the age of 75 being newly started on statin therapy, the guidelines state that moderate intensity statins should be used, even if the patient would otherwise be a candidate for high intensity statins.

In addition to these changes, the new guidelines have also changed the recommended monitoring for both statin therapy and cholesterol in general. A liver enzyme test called an ALT should be performed at baseline and repeated only if symptoms of liver toxicity appear after statin initiation. Creatinine kinase should only be checked in individuals with a history of muscle symptoms, as they are at higher risk for myopathy with statin therapy; creatinine kinase can then be checked if muscle symptoms appear after statin initiation and compared to baseline. LDL cholesterol levels should still be checked at baseline,

Guidelines for Thyroid Disease Screening

The US Preventive Services Task Force (USPSTF) recently updated its clinical guidelines on screening for thyroid dysfunction. Conflicting with recommendations from the American Thyroid Association (ATA) and the American Academy of Clinical Endocrinology (AACE), the USPSTF still advises against routine screening of thyroid-stimulating hormone (TSH) levels in non-pregnant, asymptomatic adults. Instead, the expert panel recommends targeted TSH screening for patients with certain risk factors.

Factors that place patients at greater risk for elevated TSH levels include older age, Caucasian ethnic background, type 1 diabetes, Down syndrome, and external-beam radiation in the head and neck area, according to the USPSTF. Other factors include family history of thyroid disease, goiter, and previous hyperthyroidism.

Risk factors associated with low TSH levels include female gender, older age, African ancestry, low iodine intake, and chronic use of medications containing an iodine moiety—most prominently amiodarone. Patients with a personal or family history of thyroid disease are also at risk of developing low TSH levels.

After detection of out-of-range TSH levels, non-pregnant patients should be monitored with multiple TSH readings over 3 to 6 months, the USPSTF recommends.

Thyroid abnormalities may also be associated with certain symptoms. Thyroid hormone deficiencies, which are among the most common endocrine diseases, may manifest with fatigue, weight gain, and hair loss. Patients may complain of feeling cold, even when temperatures are normal. Constipation is another common yet nonspecific finding.

Because thyroid disease is a clinical diagnosis, there is no consensus on TSH levels that definitively require treatment. As TSH levels may not always agree with symptoms, some patients may fall into the category of subclinical hypothyroidism or hyperthyroidism. These patients may receive treatment even though TSH levels are not strictly consistent with thyroid disease.

As a general rule, updated screening guidelines from the USPSTF suggest patients with TSH levels <0.1 mIU/L—and especially those with Graves' disease or nodular thyroid disease—should receive treatment with antithyroid medication, such as methimazole, or nonreversible thyroid ablation therapy. Conversely, non-pregnant patients with TSH levels ≥ 10 mIU/L will generally require treatment with thyroid hormone replacement therapy. Continued monitoring is important for patients with subclinical TSH abnormalities, as they often progress to overt hypothyroidism or hyperthyroidism.

Clinically relevant points for pharmacists managing patients with thyroid disorders include:

Screening:

- The ATA recommends beginning TSH screening in all adults at age 35, with repeat tests every 5 years.

Source: Pharmacy Times, Michael R. Page, PharmD, RPh

- The AACE recommends routine TSH screening in older patients, with no specified age.
- The USPSTF continues to recommend against routine screening for thyroid disease among non-pregnant adults.

Treatment:

- Guidelines recommend taking levothyroxine with water at the same time each day—either 30 to 60 minutes before breakfast, or 4 hours after the last meal of the day (at bedtime).
- Medications that can cause thyroid abnormalities include lithium, interferon alpha, amiodarone, or excess iodine ingestion (including iodine from dietary sources).
- TSH levels vary throughout the day (lowest in the late afternoon, highest at bedtime), so blood tests are merely an estimate of thyroid function, and may vary 40% to 50% between readings in the absence of any change in thyroid function.
- A total thyroid replacement dose constitutes 1.6 μg per kilogram of ideal body weight; doses in this range should not be used in patients with subclinical hypothyroidism.
- Patients should not start levothyroxine at the total thyroid replacement dose; rather, the dose should be titrated based on TSH levels.
- The elderly and patients with heart disease require lower starting doses of levothyroxine, slower dosage titration, and 20% to 25% lower replacement doses than younger patients.
- Dosing may start based on TSH levels (eg, 25 μg daily for TSH levels 4 to 8 mIU/L, 50 μg daily for TSH 8-12 mIU/L, and 75 μg daily for TSH >12 mIU/L). Further adjustments should generally be gradual, so pharmacists should question any prescription advancing a dose by more than 1 increment (eg, going directly from 25 μg to 75 μg daily)
- Explain to patients that normalization of TSH levels is not instantaneous and may take several months. The expectation of prompt TSH normalization leads many patients to believe generics do not work as well as brand-name thyroid replacement products.

Pregnancy:

- TSH should be measured immediately after conception. Goal TSH levels are 2.5 mIU/L in the first trimester, while levels of 3 and 3.5 mIU/L are acceptable in the second and third trimesters.
- Women who are pregnant or planning a pregnancy should not use levothyroxine with liothyronine together; levothyroxine alone is preferred.
- Levothyroxine doses may need to be increased during pregnancy, and may be reduced after delivery.

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4-12 weeks after initiation of therapy, and then every 6-12 months. However, this is not to monitor goal cholesterol levels, but rather to assure that there is an appropriate response to therapy and that the patient is being compliant with their medication and lifestyle modifications.

These new guidelines offer significant changes in the way we approach treating high cholesterol and cardiovascular disease. The major changes and points to take away include: clinicians are now guided to treat patients with the goal of reducing cardiovascular risk such as heart attacks and stroke, rather than treating to specific blood cholesterol goals; non-statin lipid lowering therapy in general is no longer recommended due to the lack of evidence that they reduce cardiovascular risk when added to statin therapy; four major groups of patients were identified that would benefit the most from statin therapy; a cardiovascular risk estimator was developed to help physicians decide what intensity of statin therapy may be appropriate for specific patients. It's important to remember that the changes that were made were made based off of evidence found in peer reviewed literature. It may take time for prescribing habits and approaches to treatment reflect the new guidelines since it has been over 10 years since the publication of the last lipid guidelines, but keeping these changes in mind will make the transition easier.

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