Drug & Poison Information Center—Faculty of Pharmacy—Tanta University

Drug & Poison Information Bulletin

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Statin therapy & the risk of new-onset type 2 diabetes

Several clinical trials of cardiovascular disease (CVD) prevention with statins have reported increased risk of type 2 diabetes (T2DM) with statin therapy.

In 2015, a Finnish study conducted on 8749 non-diabetic men with the age of 45 to 73 years, concluded that statin therapy appeared to increase the risk for T2DM by 46%, even after adjustment for confounding factors.

Data from the *Australian Longitudinal Study on Women's Health* showed also, among almost 8400 women aged 76 to 82 years, the risk of new-onset diabetes ranged from 17% with the lowest statin doses to 51% with the highest doses.

In addition, findings from *Diabetes Prevention Program* (DPP) study which were published in 2017**,** are consistent with these previous studies that statin use greatly increases the risk of T2DM.

The DPP study was conducted on 3234 patients and showed that statin use was associated with a higher T2DM risk of approximately 30% in individuals at high risk of the disease even after considering other known risk factors and confounders.

The mechanisms contributing to effects of statins to modify diabetes risk are poorly understood. A meta-analysis by *Baker et al.* showed that statins have different effects on insulin sensitivity in non-diabetic subjects with simvastatin

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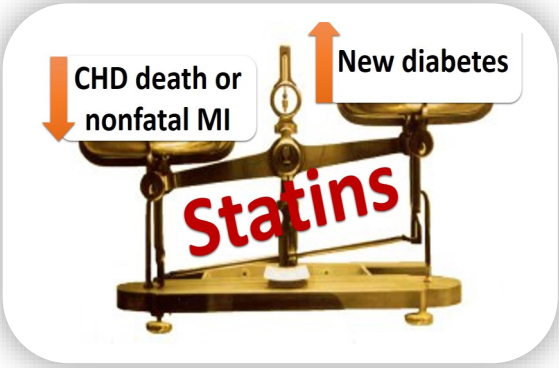
decreasing insulin sensitivity, pravastatin increasing sensitivity, and atorvastatin and rosuvastatin showing no effect.

While in vitro data suggested that some statins may impair insulin signaling and reduce expression of the insulin-responsive glucose transporter, GLUT-4, with no evidence of an effect of statins to modify insulin resistance. Overall, an acceleration of typical glycemic deterioration, rather than a unique or statin-specific mechanism was suggested.

Despite the evidence, the researchers assert that the healthcare advice remains unchanged, as the benefits outweighs the risks.

Researchers from DPP study stated that for individual patients, a potential modest increase in diabetes risk clearly needs to be balanced against the consistent and highly significant reductions in myocardial infarction, stroke, and cardiovascular death associated with statin treatment.



They add that glucose status should be monitored and healthy lifestyle behaviors reinforced in high-risk patients who are prescribed statins for cardiovascular disease prophylaxis.

References:

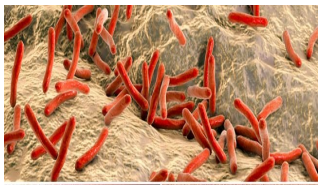
1. *Statin Use Raises Diabetes Risk 'Even in High-Risk Patients'. https://www.medscape.com/viewarticle/887472#vp_1. Accessed November 2017.*
2. *Crandall JP, Mather K, Rajpathak SN, et al. Statin use and risk of developing diabetes: results from the Diabetes Prevention Program. BMJ Open Diab Res Care. 2017; 5:e000438.*
3. *Statins Increase Diabetes Risk by up to 50% in Older Women. https://www.medscape.com/viewarticle/877626. Accessed November 2017.*
4. *Largest Risk for Diabetes with Statins Yet Seen, in New Study. https://www.medscape.com/viewarticle/840884. Accessed November 2017.*

By: Amr Nowair, B.Sc.

Old drugs that are still good drugs in 2018

Antimicrobials:

- Isoniazid: First synthesized in 1912. Activity against tuberculosis was identified in 1945.
- Penicillin: Discovered in 1928. Use as an antibiotic began in the 1940s.
- Sulfa.
- Tetracycline: Was patented in 1955.



Cardiovascular agents:

- Aspirin: Has been marketed since 1899.
- Digoxin.
- Nitroglycerin: First used in 1867.
- Spironolactone: Was introduced in 1959.
- Non-loop diuretics.
- Warfarin: Its effect was first noted in 1920s.

Drugs for diabetes and endocrine disorders:

- Corticosteroids.
- Insulin: Was identified in 1869. First used in humans in the 1920s.
- Metformin: First synthesized in 1920s. First tested for diabetes in 1957.
- Propylthiouracil.

Pain management:

- Acetaminophen: Was discovered in 1884.
- Morphine: First sold in 1827.
- Naloxone.

Rheumatologic agents:

- Allopurinol: Its effect was discovered in 1950s. FDA approved in 1966.
- Colchicine.

Neurologic and psychiatrics agents:

- Ergotamine.
- Lithium: Used as pharmacologic agent since the 1870s. FDA approved in 1970.

Reference: Old Drugs That Are Still Good Drugs in 2018. https://www.medscape.com/slideshow/old-drugs-6009394. Accessed January 2018.

By: Bassant Maher, B.Sc.

What should you know about Clenbuterol??

Clenbuterol is a β_2 agonist which commonly used as bronchodilator. It causes also an increase in aerobic capacity, central nervous system stimulation, blood pressure, fat burning, and oxygen transportation. Clenbuterol was originally intended to treat asthma in horses, but has gained controversial popularity for aiding weight loss and bodybuilding.

In some European and Latin American countries, clenbuterol is approved as an asthma drug for humans too. But, in the United States (U.S.), it is a banned substance for this purpose. In addition, in many countries, clenbuterol is banned for animals that will be consumed by humans.

Clenbuterol can be used as a weight-loss aid because it can increase a person's metabolism. As well as reducing body fat and weight, it also allows the user to retain both muscle mass and body strength at the same time. Clenbuterol became known as a celebrity diet secret because of its apparent use by celebrities and famous athletes. While, the *World Anti-Doping Agency* have banned the use of clenbuterol at all times, both in and outside of competition.

Dosage

* Athletes and bodybuilders taking clenbuterol will often work on a program cycle that includes on and off periods. Such a program could mean two days taking clenbuterol and two days without taking any, or perhaps a week taking the drug followed by a week of none.
* Dosage can vary, depending on factors that include gender and tolerance. When used in Europe and Latin America in cases of asthma, the recommended dose is 0.02–0.04 mg daily.

* It can be taken orally or injected. Both methods have risks. Injections can cause scarring or air bubbles to form in the blood, while tablets can affect the liver.

Risks and side effects

- The reason clenbuterol is banned in so many countries and has become so controversial is that many side effects are associated with it.
- Many of the side effects are the same as those associated with amphetamines, including: anxiety, shaking, headaches, abnormal sweating, and raised body temperature.
- Clenbuterol can also associated with heart palpitations, problems with blood pressure, atrial fibrillation, tachycardia, and cardiac hypertrophy which in turn can lead to a heart attack and eventually death.
- In addition, clenbuterol contains dopamine. Dopamine is closely associated with addiction. As such, clenbuterol can be highly addictive.
- In 1994, 140 people in Spain were hospitalized after eating meat tainted by clenbuterol. Similarly, in 2006, 336 people in China were poisoned after eating pork that contained it.
- The *Department of Emergency Medicine* in Newton, MA, reported two cases of people brought in for treatment because of clenbuterol use. The men were bodybuilders, aged 18 and 22 years, and had heart palpitations, nausea, vomiting, and chest pain shortly after taking clenbuterol.
- The *Peking Union Medical College* in Beijing, China, found that low doses of clenbuterol had minimal effects when tested on rabbits. However, medial doses had significant effects on the animals' heart rates, and higher doses could even lead to death.

Reference: What is clenbuterol. https://www.medicalnewstoday.com/articles/319927.php. Accessed November 2017.

By: Bassant Maher, B.Sc.

How to manage hypertension in kids & teenagers?

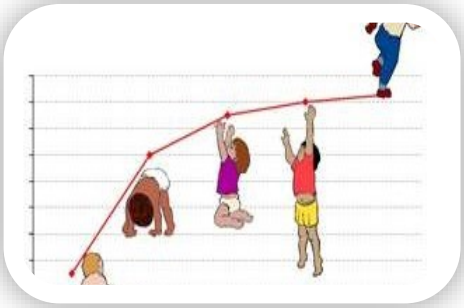
Overview:

In children, the normal range for blood pressure (BP) is determined by the child's gender, age, and height. The normal range is expressed as a percentile, similar to charts used to track children's growth.

Kids are considered hypertensive if their BP is at the 95th percentile or higher for their age, sex, and height. Or 130/80 mmHg or higher for teens 13 and older.

Blood pressure is separated into 3 categories based upon the child's BP percentile:

- **Normal BP:** Both systolic and diastolic BP <90th percentile.
- **Elevated BP:** Systolic and/or diastolic BP ≥90th percentile but <95th percentile or if BP exceeds 120/80 mmHg (even if <90th percentile for age, gender, and height).
- **Hypertension:** Hypertension is defined as either systolic and/or diastolic BP ≥95th percentile measured on three or more separate occasions, or if BP exceeds 130/80 mmHg.



Symptoms:

A slow increase in BP doesn't cause any symptoms. However, a sudden increase in BP in children and adolescents can cause headache, vomiting, seizures, and may lead to heart failure.

What about the management?!

A-Emphasize lifestyle changes first

1-Recommend the *5-2-1-0* approach :

- ***5*** or more fruits and veggies.
- ***2*** hours max. recreational screen time (The time spent using a device like: computer, TV..etc).
- ***1*** hour or more physical activity.
- ***0*** sugary drinks, otherwise drinking more water every day.

2- Suggest reasonable goals for overweight or obese kids

Such as 5%:10% weight loss in a year, or not gaining weight as they grow.

B-Medication therapy

- Recommend drug therapy if BP remains elevated for 6 months...or sooner in kids with diabetes, kidney disease,…etc.
- Advise starting with an angiotensin converting enzyme inhibitor (**ACEI)** (lisinopril,...etc), angiotensin II receptor blocker (**ARB)** (valsartan,...etc), or long-acting dihydropyridine calcium channel blocker (**CCB)** (amlodipine,…etc).
- Lean toward a **CCB** for teenage girls...since ACEIs and ARBs are linked to severe fetal toxicity if used during pregnancy.
- Stick with an **ACEI** or **ARB** for kids with diabetes or kidney disease with proteinuria to help slow nephropathy.
- Advise saving thiazide diuretics and beta-blockers as alternatives.

References:

1. *Patient education: High blood pressure in children (Beyond the Basics). https://www.uptodate.com/contents/high-blood-pressure-in-children-beyond-the-basics, Accessed December 2017.*
2. *Flynn JT, Kaelber DC, Baker-Smith CM, et al. Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents. Pediatrics. 2017;140(3):e20171904*
3. *Ferguson MA, Flynn JT. Rational use of antihypertensive medications in children. Pediatr Nephrol. 2014;29(6):979-988*

By : *Marwa EL-Sayed, PGCPD*

Egypt upcoming conferences

⇒ ***Pulmonary Medicine Update Conference 2018***, will take place from 14th February to the 15th February 2018 at the Learning Resource Center, Kasr Al Ainy, Cairo, Egypt.

⇒ ***The Clinical Oncology Department Assiut University***, organized by the Arab Organizers will take place on 20th February 2018 at the Assiut University in Al Hamraa Ath Thaneyah, Egypt.

⇒ ***The Egyptian Society of Cardiology***, organized by the Egyptian Society of Cardiology will take place from 26th February to the 1st March 2018 at the Fairmont Heliopolis Hotel Cairo in Cairo, Egypt.

⇒ ***The Arab International Pharmacy Conference***, organized by the Arab Association of Pharmacy Progress will take place from 17th March to 19th March 2018 at the Fairmont Towers Heliopolis in Sheraton Al Matar, Egypt.

⇒ ***The Pan Arab Conference On Diabetes***, will take place from 27 March to 30 March 2018 at the Intercontinental City Stars in Cairo, Egypt.

⇒ ***The Egyptian Congress Of Pediatric Pulmonology***, will take place from 8th May to 11th May 2018 at the Bibliotheca Alexandria in Alexandria, Egypt.

By: Mai Mousa, Pharm D.

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