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Pregnancy Complications and Cardiovascular Disease Death

50-Year Follow-Up of the Child Health and Development Studies Pregnancy Cohort

Pregnancy reveals important clues about mothers' risk of heart disease. In a 2015 study based on Child Health and Development Studies (CHDS) mothers, we found that complications during pregnancy predict a woman's risk of dying from heart disease later in life.



Due to the incredible scope and breadth of the information and data that our CHDS moms provided, we were able to look at combinations of pregnancy events. And due to the long-term nature of this enduring cohort, we were also able to see how risk associated with these events changed over the course of our mothers' lives. These are some of the rich and novel features of the CHDS.

What did the study find? The major findings of the study were:

1) Risk of heart disease death increased dramatically for certain combinations of pregnancy complications:

- Mothers who had pre-existing high blood pressure (diagnosed before pregnancy) in combination with a pre-term delivery (delivery before the 37th week of pregnancy) had a 7-fold increased risk.
- Mothers who had pre-existing high blood pressure in combination with either pre-eclampsia (a condition marked by high blood pressure during pregnancy and protein in urine), or a smaller baby than what is normal for the gestational age, had a 5-fold increased risk.
- Mothers who had gestational high blood pressure (diagnosed during pregnancy) in combination with a pre-term delivery had a 5-fold increased risk of heart disease death.

2) Women who had pre-eclampsia early in pregnancy (by the 34th week) had a 6-fold higher risk of premature heart disease death, occurring by age 60.

3) Two new markers of risk for heart disease were identified:

- The presence of sugar in urine during pregnancy
- A particular pattern of change in hemoglobin (a protein in red blood cells responsible for carrying oxygen to the lungs and removing carbon dioxide) during pregnancy

Why are women with pregnancy complications at higher risk of heart disease? Pregnancy puts tremendous stress on a woman's cardiovascular system. It is not clear if the cardiovascular demands of pregnancy contribute to onset of heart disease or if pregnancy simply unmasks a cardiovascular system that is already vulnerable.

Why is this study important? Heart disease is the number one killer of both women and men in the United States, accounting for 1 in every 4 deaths. Being able to identify women who are at higher risk of heart disease based on their pregnancy experiences will help prevent heart disease death by early identification and treatment. Doctors can easily and cheaply take a comprehensive pregnancy history to assess women's risk. Using this information, doctors can also help women who have had pregnancy complications make decisions about treating high blood pressure and high cholesterol.

You can find more information about this study here:

<http://www.cbsnews.com/news/pregnancy-complications-may-signal-heart-trouble-later-in-life/>

If you wish to read the published article in Circulation, it is available here:

file:<http://circ.ahajournals.org/content/circulationaha/early/2015/09/14/CIRCULATIONAHA.113.003901.full.pdf>

Going from Fitness Slacker to Fitness Tracker – by Marie Loverde

Prevention of heart disease (and many other chronic diseases as well) includes regular exercise and a healthy diet. Here is a very interesting article that tells about a fun way to engage in regular exercise.



My family gave me my fitness tracker for Mother's Day in 2014. In fact, six

weeks later when I found it buried in a stack of “life’s stuff”, I didn’t recognize it at first. I begrudgingly took it out of the box and tried to use it. I was inconsistent at first, forgetting to wear it every day and almost putting it in the wash, as it was still attached to my clothes. Gradually, I grew accustomed to checking my statistics, even trying to outdo myself on a daily and weekly basis. For most of my working life, I have used my lunch time for walking, especially since I have worked in some very scenic places. I could only guess at how much exercise I was getting since I could never figure out how to properly program a pedometer. But once I figured out the tracker, I was hooked. By the fall, I never neglected to bring it with me, looking forward to the message I was greeted with when I first picked it up each morning.

As I used the tracker, I discovered I would be periodically awarded with badges when I achieved a built-in goal, like traveling the number of steps equal to climbing the Empire State Building. I enjoyed collecting the badges even though they didn’t mean anything to anyone but me. I had so much fun with it, I got my husband his own fitness tracker for Father’s Day the following year. That is when we discovered we could compete with each other as well as with some long distance relatives who had the same equipment.

Some co-workers of mine have acquired the tracker in the last six months. Suddenly, all those people who had pledged to walk with me at lunch finally started to do so. We are competing with each other using the challenges built into the system. We joke around about threatening to wait until everyone has gone to bed and jumping on the treadmill at home to ensure we are the winner. We also have begun to share other aspects of our “journey” such as tips about eating healthy, doing different forms of exercise other than walking, and taking up a collection to purchase a juicer for our kitchen for staff to use.

Not everyone is consistent and faithful every week but there are enough of us that we have a real sense of community. The fun we have been having is infectious as our numbers keep expanding. This month, we put the challenge out to our whole staff (800+ employees spread across 22 sites) inviting all to participate in a fitness challenge. It will pit employees from each site against all others in the hopes of acquiring the most steps. The prize is a trophy which will travel to the winning site each month, bragging rights, and of course, the grand prize, a healthier self!

Ask Barbara:

In every newsletter we plan to answer questions from readers like you! So please [email the CHDS](#) with your health concerns or questions and we will choose one to answer in future e-newsletters. **If your question is chosen you will win a \$10 Amazon gift card!** Remember to provide your name and best contact information in your email so that we can get in touch with you if you are the winner. **The question below was asked by a reader of our Winter 2016 newsletter. Please keep the questions coming!**

Dear Barbara: *“Why is a coronary calcium score not used on a routine basis to determine the necessity of cholesterol medications? Too much weight is given to cholesterol levels alone.”*

Dear CHDS Cohort Member: This is an excellent question – thank you. I hope my answer below is clear but please let me know if you have any further questions after reading it.

First a little background. Atherosclerosis is a disease where plaque, made up of fat, cholesterol, calcium and other materials, build up on the inside of blood vessels. As time goes by the plaque hardens and can block the flow of blood through the vessels and arteries. Atherosclerosis is a leading contributor to heart disease but it is a silent disease, meaning there are no symptoms, until there is major blockage or damage to the heart. Coronary artery calcium (CAC), which can be detected and measured on a CT scan, is a good indicator of atherosclerosis. Unfortunately, CAC has significant drawbacks including cost and exposure to radiation from the CT scan.

So when should CAC be used as a screening tool to identify and treat people who are at risk of heart disease? **Here is what the American College of Cardiology has to say. *“Simply knowing the results of a CAC test does not improve health directly, but that knowledge can help clinicians and their patients make better decisions together about therapies for primary prevention of coronary heart disease”*** That said the guidelines for how best to use the CAC test results are complicated. CAC is not recommended for people with low risk of heart disease because the effects of radiation exposure do not outweigh the benefits of obtaining the test results. People who would benefit most from CAC testing are those with moderate risk of heart disease because the test results can inform their doctor about the best course of treatment, particularly regarding the use of cholesterol lowering drugs such as statins.

For more information, please see this statement by the American College of Cardiology: <http://www.acc.org/latest-in-cardiology/articles/2016/06/14/09/17/when-is-measuring-a-coronary-artery-calcium-score-cost-effective>

For more information about CAC testing recommendations, please see this “Position Statement” by the American Heart Association: https://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_437479.pdf



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